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## Notice to Development Tools Customers

**Important:**

All documentation becomes dated, and Development Tools manuals are no exception. Our tools and documentation are constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our website ([www.microchip.com](http://www.microchip.com)) to obtain the latest version of the document.

Documents are identified with a DS number located on the bottom of each page. The DS format is DS<DocumentNumber><Version>, where <DocumentNumber> is an 8-digit number and <Version> is an uppercase letter.

**For the most up-to-date information**, see the WebHelp version of this document at [onlinedocs.microchip.com/](http://onlinedocs.microchip.com/).

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## 1. About the Installer and License Manager

This topic introduces the installers and license managers used in conjunction with MPLAB® XC C Compilers.

### MPLAB XC C Compilers

Please see the [MPLAB XC C compiler webpage](#) on the Microchip website for downloads and documentation concerning these compilers. The PRO compiler license gives you increased levels of code optimization.

### XC Installer

The GUI installer will install a FREE compiler on your PC. After the installation, you can license the compiler for use to enable:

- PRO: advanced optimizations and other features.
- Functional Safety: PRO + functional safety operation.
- MPLAB Analysis Tool Suite: full code coverage, MISRA check, and thread safety check.

The installer is supported by the operating systems supported by the compilers. See your compiler documentation (release notes/readme) for supported operating systems.

### FAQs

For a list of frequently asked questions (FAQs) concerning compiler installation and licensing, please see the following links:

- Compiler FAQs tab of [MPLAB XC C compiler webpage](#).
- FAQs section of Developer Help page [MPLAB® XC8 C Compiler](#).

## 2. Installing Your Compiler

When you install an MPLAB XC C compiler, you are installing an unlicensed (free) compiler. This means that you have access to the basic amount of code optimization and support. For greater optimization and support, navigate to the licensing site (listed near the end of the installation), acquire a PRO or evaluation license, and activate the license.

### 2.1 Basic Compiler Installation

This section describes the basic flow of the compiler installation. Specific installs are referenced in other sections.

#### 2.1.1 Installation Considerations

Considerations for installing a compiler on certain operating systems are listed below. For operating system support for your compiler, see the release notes/readme.

##### Windows® 10 Customers

If you have trouble running the installer, you can try running in Compatibility mode. To set this mode:

1. Right click on the installer executable and select Properties.
2. In the File Properties window, click on the Compatibility tab.
3. Under Compatibility mode, click the "Run the program in compatibility mode for" check box and select a Windows OS version.
4. If you are not sure what Windows OS version to choose, select **Run compatibility troubleshooter**.

##### Linux® Customers

You may need to make the installer file executable. In a terminal window, go to the directory where you downloaded the installer and run the command:

```
chmod u+x xc8-vX.XX-linux-installer.run
```

where `xc8` is the MPLAB XC C compiler used in this example and `x.xx` represents the version.

Then as root or using `sudo`, run the installer:

```
sudo ./xc8-vX.XX-linux-installer.run
```

Follow the installer dialogs to complete the installation.

##### macOS® Customers

Go to the location where you downloaded the installer. Double click on the downloaded file to unpack it and run the installer:

```
xc8-vX.XX-osx.app
```

where `xc8` is the MPLAB XC C compiler used in this example and `x.xx` represents the version.

You may get a warning message window. You can click on "Open" to continue.

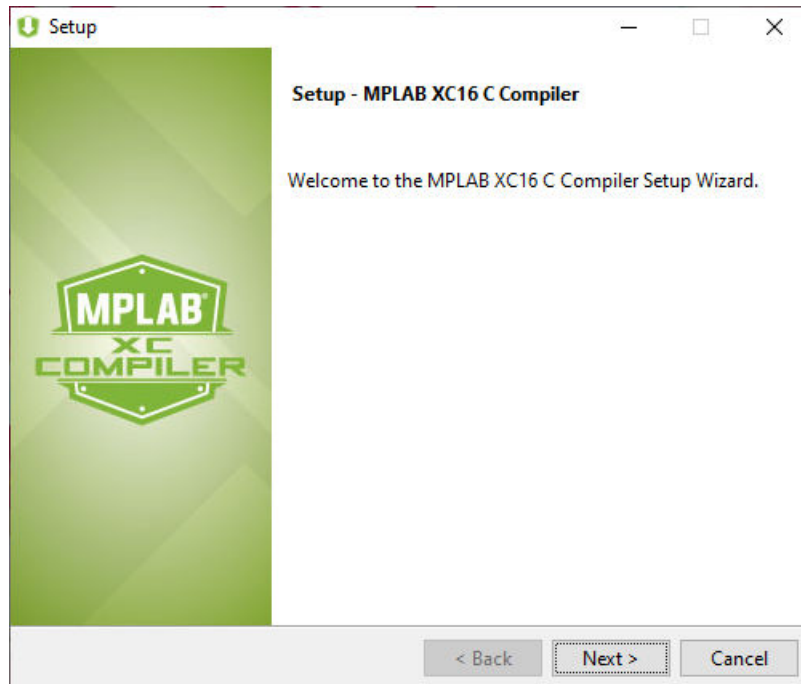
Your computer's login and password need to be entered if you have enabled that protection for new installations. If you don't have a password enabled you can just click on **OK** to continue.

Follow the dialogs to complete the installation.

#### 2.1.2 Welcome

Launch the compiler installation executable. A compiler splash screen briefly displays and then the Welcome screen. Click the **Next** button to continue.

Figure 2-1. Welcome Screen



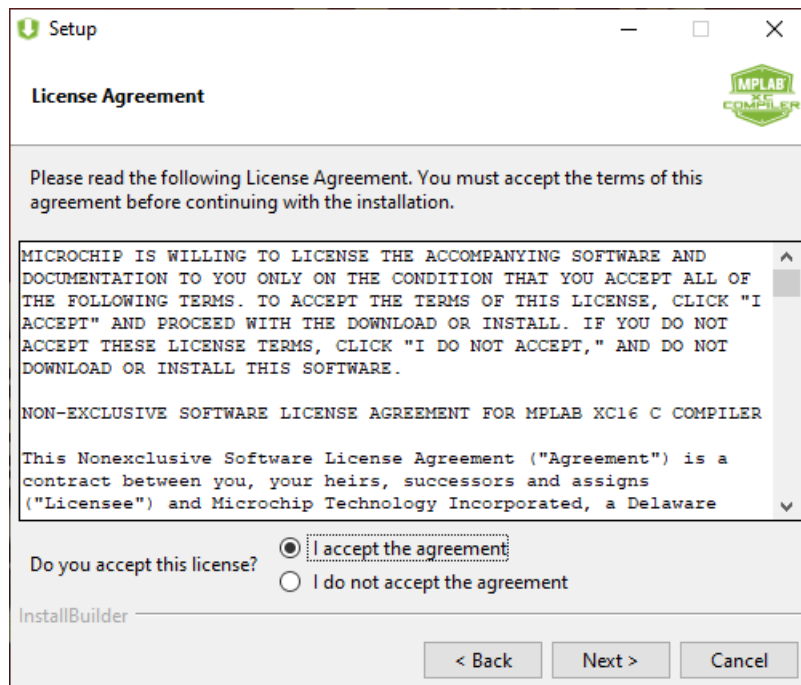
### 2.1.3 License Agreement

Read and accept the license agreement. Once enabled, click the **Next** button to continue.

If you do not agree, the installation terminates.

A copy of this agreement is also available under the compiler installation directory as `License.txt`.

Figure 2-2. License Agreement Screen

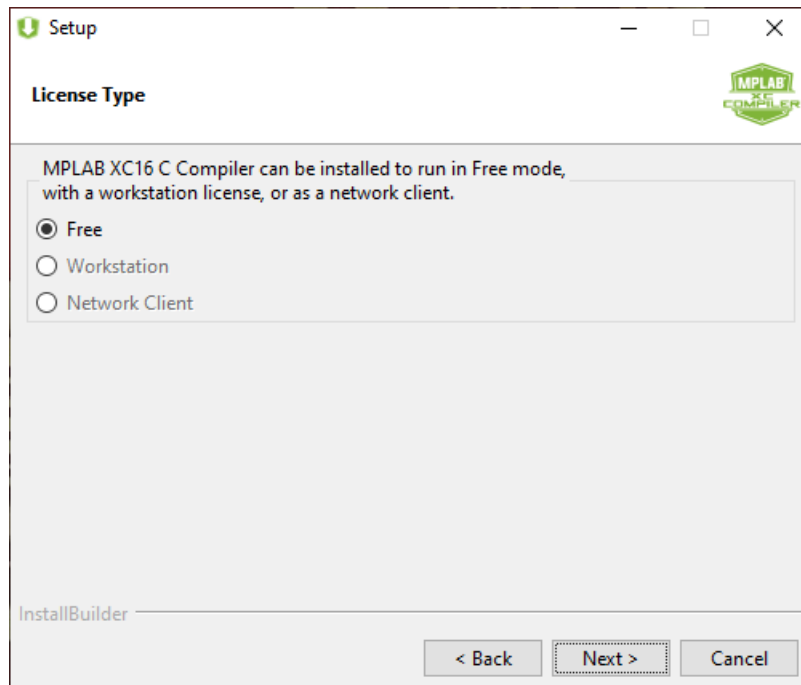


### 2.1.4 License Type

The License Type screen determines how your compiler is installed.

License types appear grayed out until you click the radio button next to that type.

**Figure 2-3.** License Type Screen

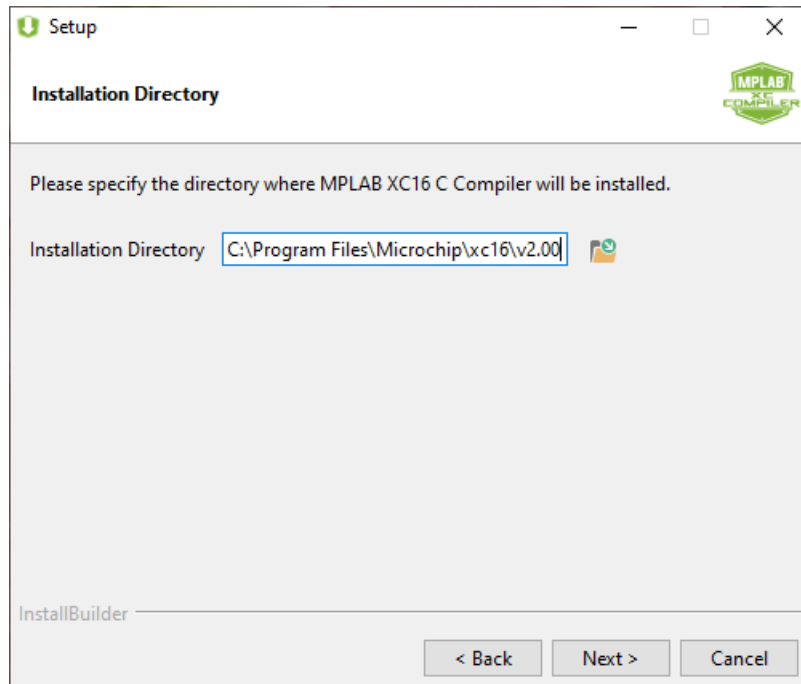


For each type of license:

- **Free** - No license required. Continue to the next section.
- **Workstation** - License required. See "Workstation Installation," then return to the next section in this flow when you have finished.
- **Network Client** - License required. See "Network Client Installation," then return to the next section in this flow when you have finished.

### 2.1.5 Installation Directory

Enter or browse to a location to install your compiler. It is recommended to use the default location displayed in the dialog. Click the **Next** button to continue.

**Figure 2-4.** Installation Directory Screen

### 2.1.6 Compiler Settings

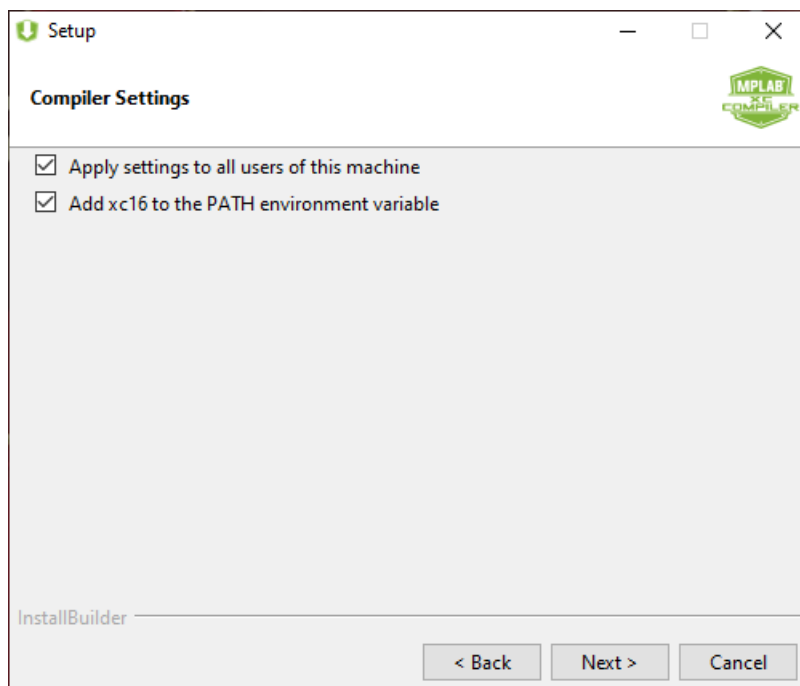
You now have the opportunity to select compiler settings. Select any options you need.

In general, if this is the first time you are installing this compiler on your machine, let the installer modify any PATH or environmental variables to ensure correct compiler operation.

The Linux installer, by default, does not update the PATH variable. However, if the "Add xc8 to the PATH environment variable" check box is selected, then PATH is updated to include paths to the new executables being installed. If the installer is run via "sudo," the default option will update the PATH of the user executing the sudo command. If the installer is run by root, it is not necessary to use the sudo command, but the default will update root's PATH and not the path of other users. When installing while logged in as root, a better choice is the option to update all user PATH variables, or to skip updating the PATH variable in the installer, and to update the PATH variables of users who will use the software manually.

Click the **Next** button to continue.

Figure 2-5. Compiler Settings Screen

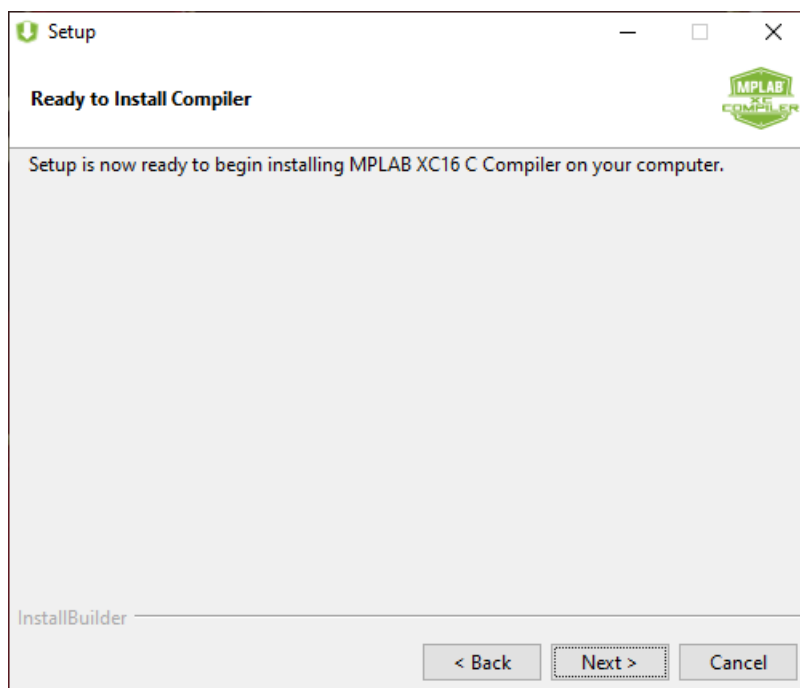


### 2.1.7 Ready to Install and Installing

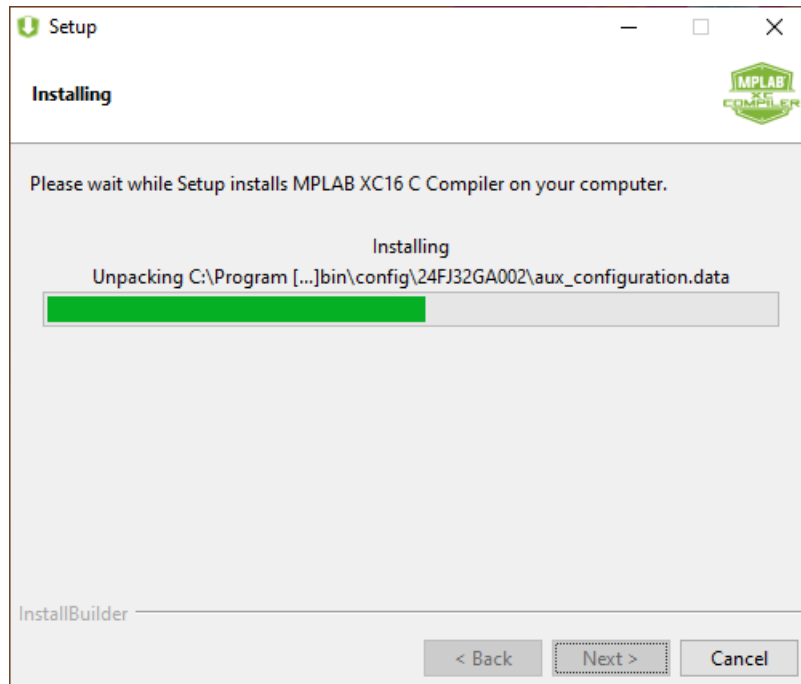
You are now set up to install the compiler. If you need to make changes to the compiler settings, use the **Back** button. Once you are ready to install, click the **Next** button to continue.

The next dialog box shows the progress of the installation. When it is complete, click the **Next** button to continue.

Figure 2-6. Ready to Install Screen





**Figure 2-7.** Installing Screen

### 2.1.8 Licensing Information

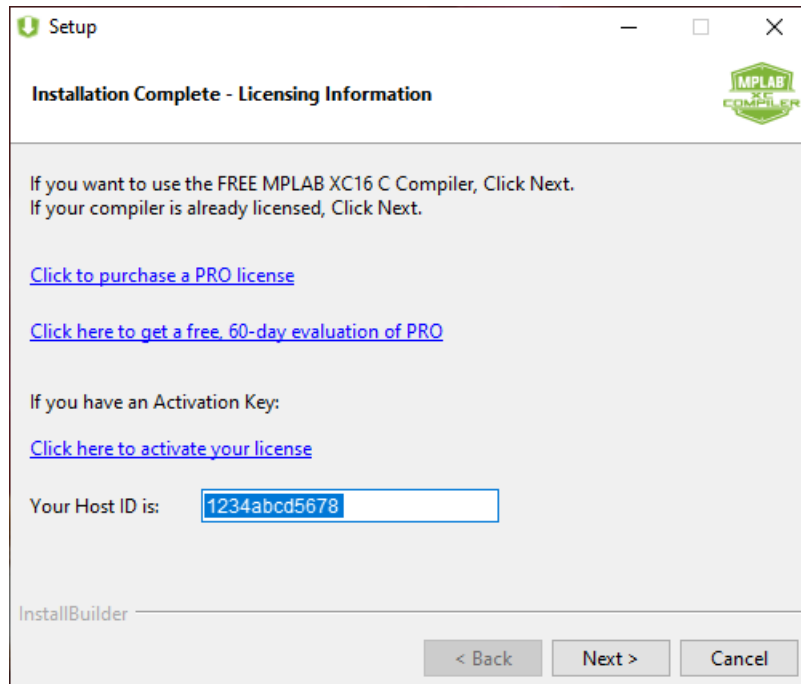
The compiler has now been installed. If you want more code optimizations, you need to license your compiler. Click one of the links on this screen to complete the following tasks:

- Purchase a PRO License
- Acquire a Free 60-day Evaluation of PRO
- Activate Your License

Click the **Next** button to continue.

**Note:** If you install your compiler as FREE, you can license it later. See [3. Licensing Your Compiler](#).

Figure 2-8. Licensing Information Screen

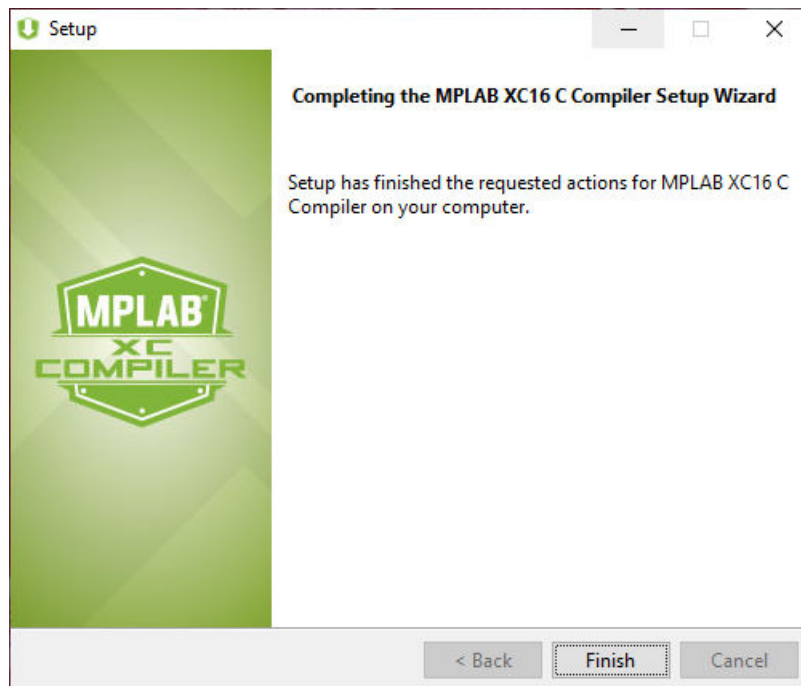


**Note:** Standard licenses are no longer sold. However, they are still supported.

### 2.1.9 Completing Setup

The compiler has now been installed. Click the **Finish** button to complete the installation. To make changes, you can run the installer again and update your installation.

Figure 2-9. Completing Setup Screen



Different compilers and compiler versions can be installed on the same computer, as they are installed in a versioned directory structure. For example:

```
C:\Program Files\Microchip\xc8\v2.41
```

```
C:\Program Files\Microchip\xc16\v2.10
```

```
C:\Program Files\Microchip\xc-dsc\v3.00
```

```
C:\Program Files\Microchip\xc32\v4.30
```

## 2.2 Workstation Installation

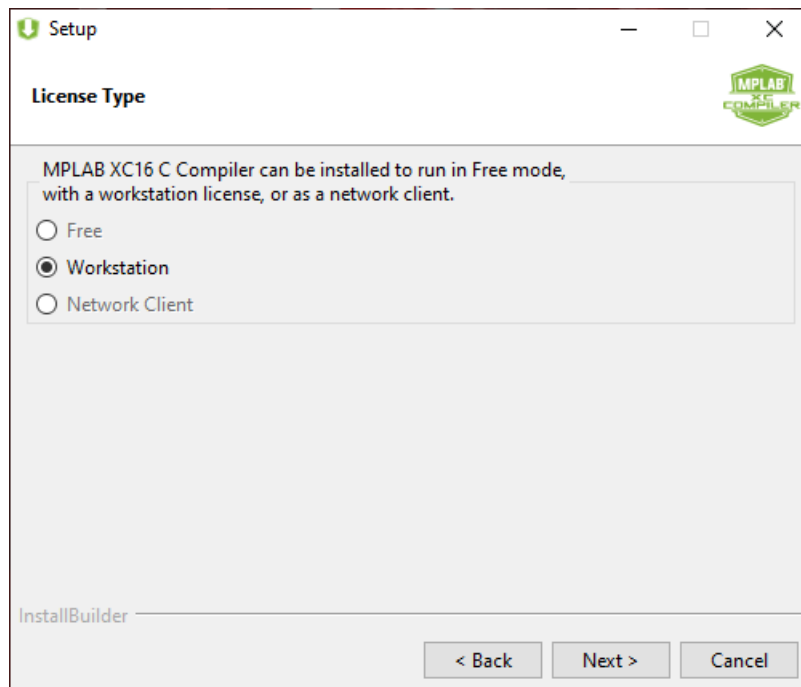
Install an MPLAB XC C compiler on a local PC. Once the compiler is installed, you can acquire a license. The license can be used for compiler installations on up to three workstations.

There are several kinds of workstation licenses:

- PRO - Advanced optimizations plus other support features with yearly renewal. The license activation key allows you to create three license files for three computers.
- Subscription - PRO with month-to-month renewal. The license activation key allows you to create one license file for one computer.
- Dongle - PRO that is portable. The license activation key allows you to create one license file, but you can plug the dongle into any supported computer. See [2.6. Dongle Compiler License](#).

To install, follow the instructions in [2.1. Basic Compiler Installation](#) until you encounter the [2.1.4. License Type](#) screen. Select the radio button next to **Workstation** as shown below. Click the **Next** button to continue. Return to [2.1.5. Installation Directory](#) to complete the installation.

**Figure 2-10.** License Type Screen



## 2.3 Network Client Installation

The installation of a network client is covered in this section. For details on installing a network server, refer to the “MPLAB® XC License Server Manual” (DS50002334) on the Documentation tab of the [MPLAB XC C Compiler webpage](#).

### 2.3.1 Network Server/Client Overview

You may use a computer network to set up a license server and client(s). To do this, use one computer to host the license server and license files. Other network computers can contain compilers and license managers that are configured to acquire licenses from the license server.

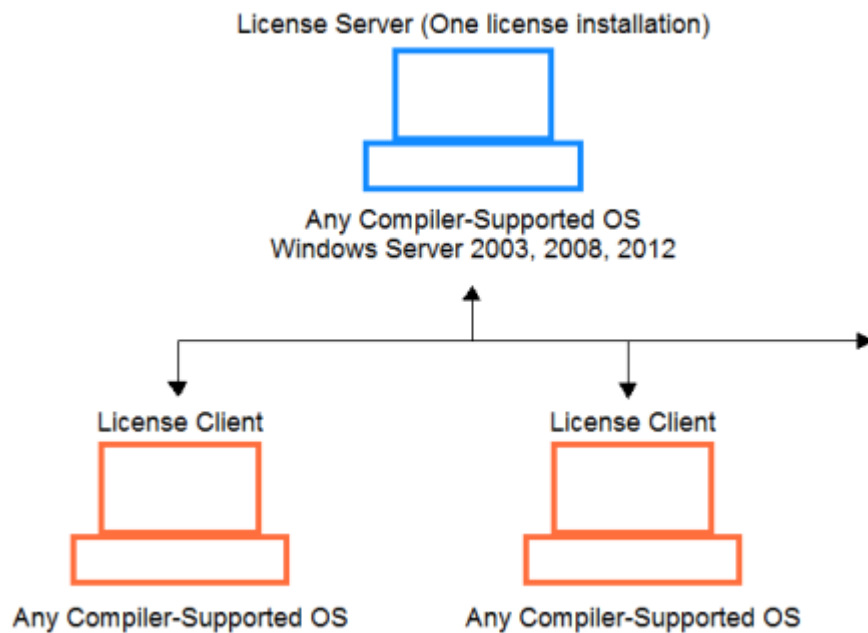
**Note:** For support of the Functional Safety Network Server License, you must use at least these minimum compiler versions: MPLAB XC8 v2.39, MPLAB XC16 v2.09, MPLAB XC32 v4.09.

To install the license server, install the network license and start the server. For details, refer to the *"MPLAB® XC License Server Manual."*

To install a license client, follow the steps in the next section. This installation process asks for details about the network license server. The operating system for the client does not have to be the same one used for the server, but it must be supported.

Once configured, compiler executions on the network license client will connect to the network license server to check out a license. This license will be available for immediate use. If you have a shared license, when the compiler is exited, there is a 60-minute delay before the server license can be used by other clients. If you have a site license, there is no delay.

**Figure 2-11.** Network License Client/Server Model



### 2.3.2 Install a Compiler and Connect Network Client to Network Server

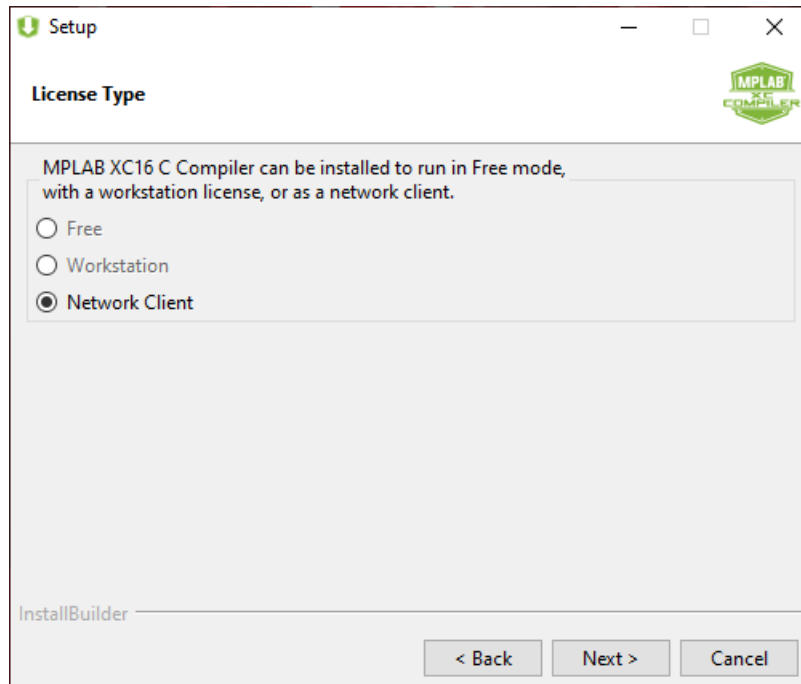
When the compiler runs on the network license client, the license manager will check out licenses from the network license server. There are two kinds of network client licenses:

- site
- shared

For more information, refer to the **License Details** section on the [MPLAB XC Compilers web page](#).

#### License Type

To install the compiler, follow the instructions in [2.1. Basic Compiler Installation](#). Once you encounter [2.1.4. License Type](#), select the Network Client radio button as shown below. Click the **Next** button to continue.

**Figure 2-12.** License Type Screen

### Network License Server Information

Enter basic information about the network license server here.

- “Server Name” refers to the IP address or host name of the network license server from which licenses are hosted.
- “Port Number” is the port that the network server will use to distribute licenses. The default port number is 5053. The network license server will always run on this port, unless otherwise specified.

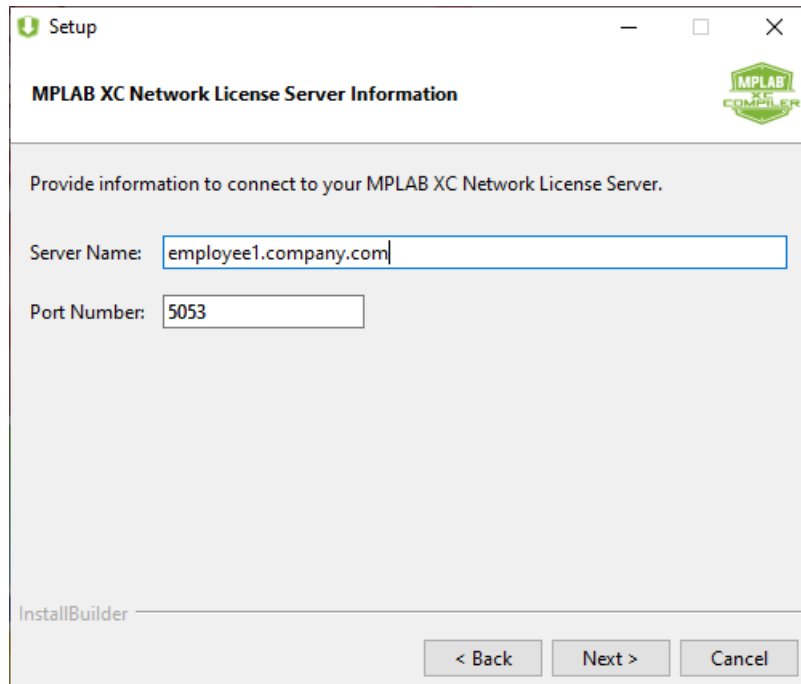
This information can be provided by your local network administrator.

For more information about the License Server, see the “*MPLAB® XC License Server Manual*.”

Click the **Next** button to continue. Network configuration will commence. A dialog box displays when complete. Click the **OK** button.

Return to [2.1.5. Installation Directory](#) to complete the installation.

Figure 2-13. Network License Server Screen



## 2.4 Upgrading the Compiler

To upgrade your compiler, simply install the new compiler (as you installed the previous one), but skip the “Installation Complete - Licensing Information” screen by clicking the Next button. The new compiler will get installed in a versioned directory, e.g.,

```
C:\Program Files\Microchip\xc8\v2.35
```

Because you already have a license, there is no need to activate or obtain a new license, provided the HPA on the Activation key for your license is still active. You can check the status of the HPA in your [MySoftware](#) account. To access this account, see [3. Licensing Your Compiler](#).

If the HPA is expired, you will need to renew the HPA in your MySoftware account where the Activation key is registered and Apply the new HPA to that key. Then download a new copy of the license file to get support for new versions of the compiler and to keep PRO optimizations unlocked for all versions of compilers. See “*MPLAB® XC HPA Renewal Instructions*” (DS50002208) on the **Documentation** tab of the [MPLAB XC C Compiler webpage](#).

## 2.5 Uninstalling the Compiler

To uninstall the compiler, complete the following instructions.

### Launch Uninstaller

Go to the compiler installation directory and click “Uninstall MPLAB XC C Compiler.” When prompted to uninstall, click the **Yes** button.

### Uninstalling

The uninstaller removes all the compiler-related files from your system.

### Uninstall Complete

When the uninstall is done, an “Uninstallation Complete” message is displayed. Click **OK** to finish.

**Note:** The uninstaller does not remove directory structure or path references.

## 2.6 Dongle Compiler License

The MPLAB® XC Dongle License is a plug-and-play PRO compiler license that can be used interchangeably among workstations and users.

- License file is installed on a dongle (USB flash drive).
- Intended for multiple users and mobile use – plug into the workstation's USB and go\*.
- Includes unlimited updates to new compiler versions without the need for HPA (perpetual license).
- One dongle license is needed for each compiler type – MPLAB XC8, MPLAB XC16 and MPLAB XC32/XC32++.

\* If you have a license file for a previous version of a compiler, you will need to remove this file from the license directory; otherwise, MPLAB X IDE will not recognize the Dongle:

- Windows® 10 - %SystemDrive%\ProgramData\Microchip\xclm\license
- Linux® - /opt/microchip/xclm/license
- macOS® - /Library/Application\ Support/microchip/xclm/license

More information can be found on the MPLAB XC Dongle License pages:

- [MPLAB XC8 PRO License Dongle](#)
- [MPLAB XC16 PRO License Dongle](#)
- [MPLAB XC32/XC32++ PRO License Dongle](#)

**Figure 2-14.** MPLAB XC PRO License Dongle



## 3. Licensing Your Compiler

After installing the compiler, the installer will present you with the options on the [2.1.8. Licensing Information](#) screen. In addition to the installer options, you may purchase and activate a license via a distributor, purchase an add-on license to add functionality, renew or apply your HPA or move licenses between accounts.

### 3.1 Purchase a PRO License

To license your installed compiler, go to the installer [2.1.8. Licensing Information](#) screen and click on the “Click to purchase a PRO license” link. The link will direct you to the [Microchip Purchasing and Client Services webpage](#).

There you can select a compiler license to purchase.

**Note:** Standard licenses are no longer sold. However, they are still supported.

There are several types of licenses available. For details on available types and configurations, refer to the **License Details** section on the [MPLAB XC Compilers web page](#).

### 3.2 Acquire a Free 60-day Evaluation of PRO

To acquire a 60-day evaluation of the PRO license (maximum optimizations and support), go to the installer [2.1.8. Licensing Information](#) screen and click on the “Click here to get a free 60-day evaluation of PRO” link. The link directs you to a web page where you can acquire a 60-day PRO license.

For more information on the evaluation license, refer to the **License Details** tab on the [MPLAB XC Compilers web page](#).

### 3.3 Activate Your License

After you purchase or acquire a compiler license, you need to activate it. Do this from your [MySoftware](#) account. If you do not have a MySoftware account, you can register in the same area as the login.

Click on the “Click here to activate your license” link, on the installer [2.1.8. Licensing Information](#) screen, to access the MySoftware page. Otherwise, you can access your MySoftware account from MPLAB X IDE, the [Microchip Purchasing and Client Services webpage](#), or direct link.

#### 3.3.1 Access MySoftware from MPLAB X IDE

On the MPLAB® X IDE desktop, go to Start Page, My MPLAB X IDE tab, “Microchip Login.” When logged in, click on “View My Development Tools.”



Figure 3-1. MPLAB X IDE Login or Register Section

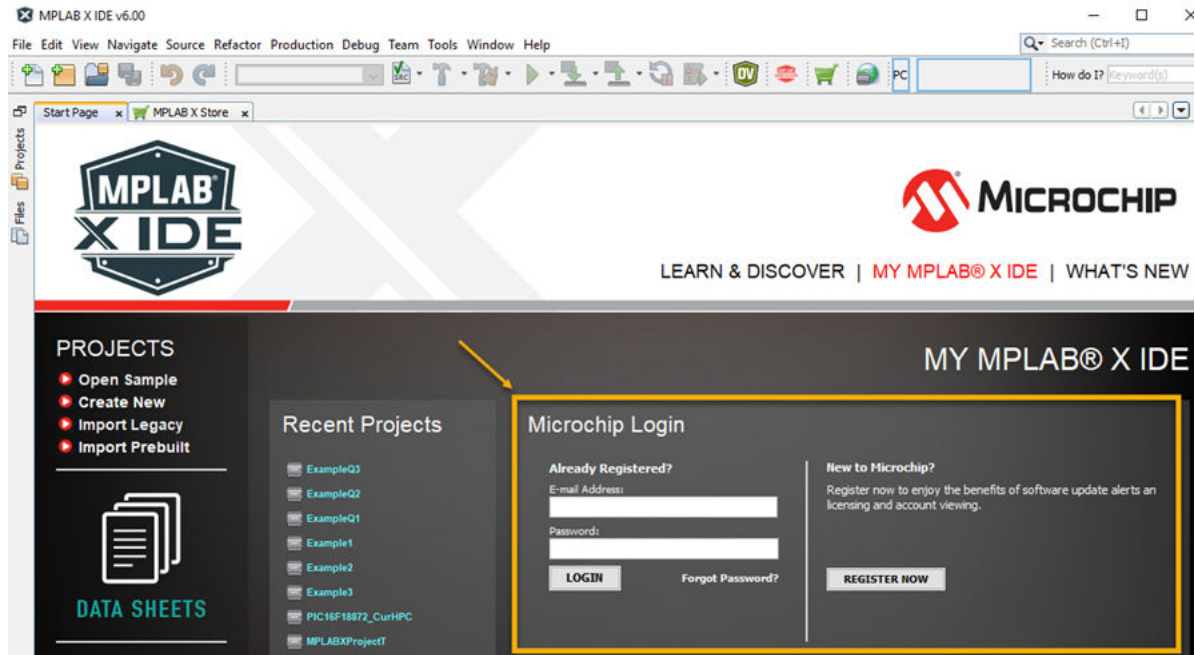
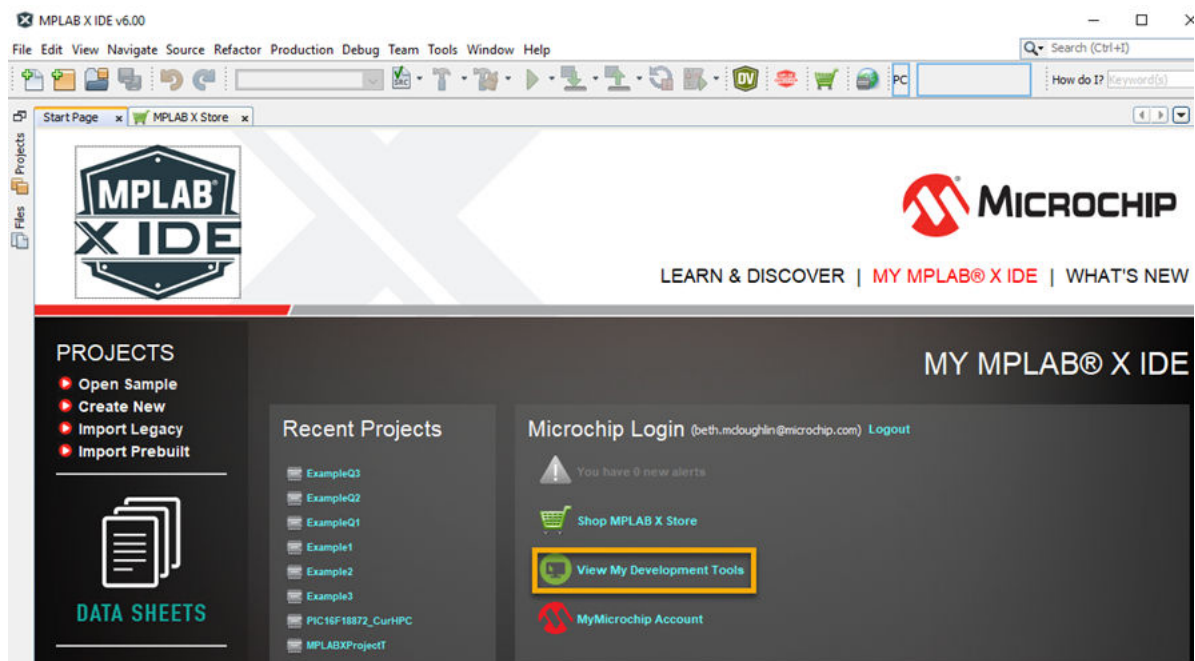


Figure 3-2. MPLAB X IDE - Click to MySoftware



### 3.3.2 Access MySoftware Directly

Go to the MySoftware URL:

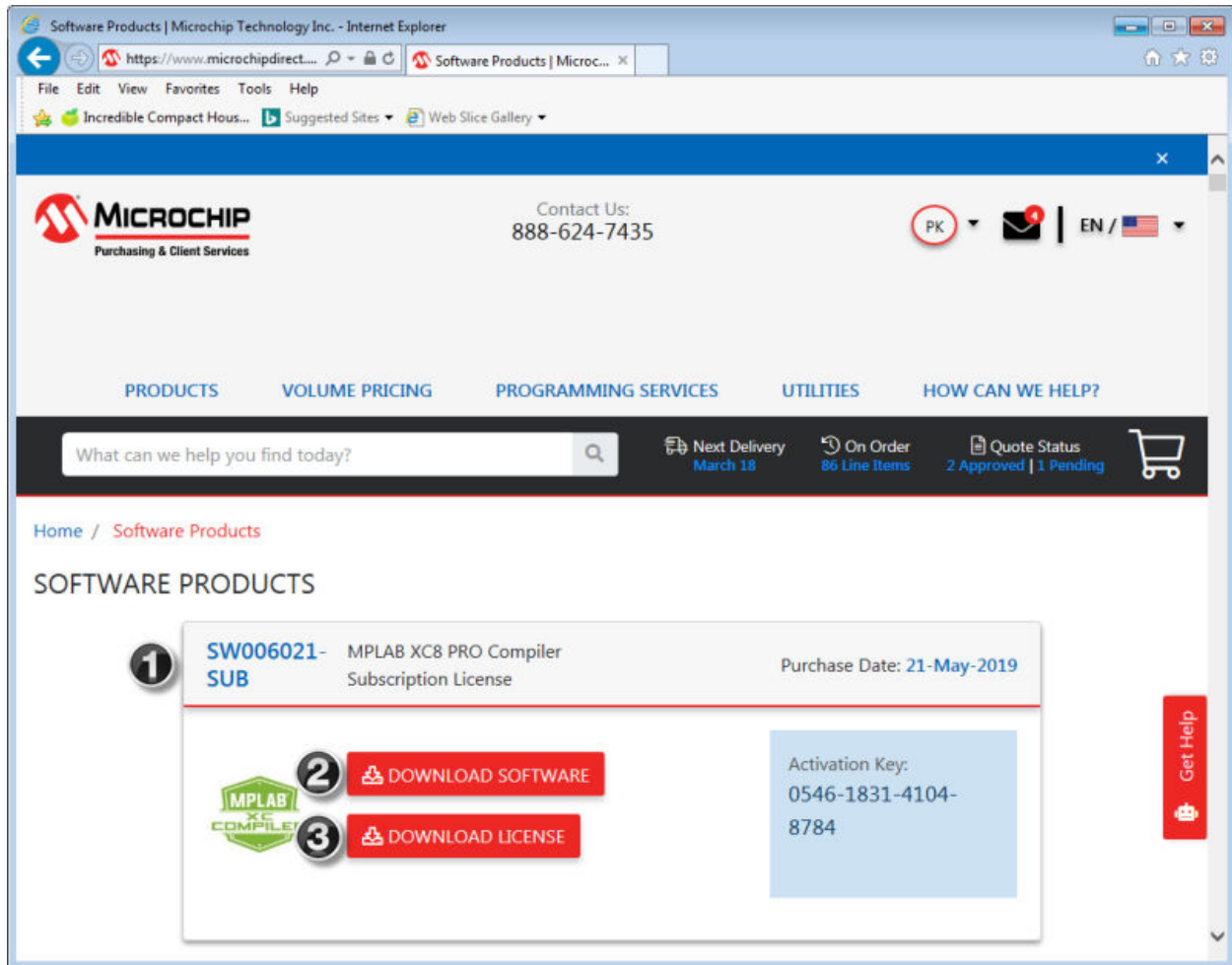
[www.microchip.com/mysoftware](http://www.microchip.com/mysoftware)

### 3.3.3 Download Compiler and Begin License Download

From the MySoftware page:

1. Find the MPLAB XC C Compiler that you have recently purchased.
2. Click on the “Download Software” link if you have not already downloaded the compiler.
3. Click on the “Download License” button.

**Figure 3-3.** MySoftware Web Page



### 3.3.4 Activate License and Download License File

From the MPLAB Software Activation page:

1. You will need your host ID. See the instruction on the activation screen for details\*. Enter this information where specified.  
\* Alternatively, you can get the host ID by opening a command prompt on your machine, redirecting to the `bin` folder of compiler installation directory (where `xclm` resides) and running the following command to display the host ID: `xclm -hostinfo`. Copy and paste the host ID to activate the license.
2. Click the **Get XC License** button. A pop-up window will open. Choose one of the following options:
  - Open and run the file if it is already on the machine with the associated compiler and host ID.
  - Save the file to install it on the machine with the associated compiler and host ID.
3. When you have downloaded or received the license file:

- a. Unzip the file. After the file is unzipped, there will be three install scripts: `windows.bat`, `linux.sh`, and `mac.sh`. Run the script that is appropriate for your operating system in a Command window (for a Windows® operating system) or a Terminal window (for a macOS® or Linux® operating system) to install the license.
- b. The one-year HPA starts on the date it is applied to the compiler. See [3.6. Renew or Apply Your HPA](#).

**Figure 3-4.** Activation and Registration

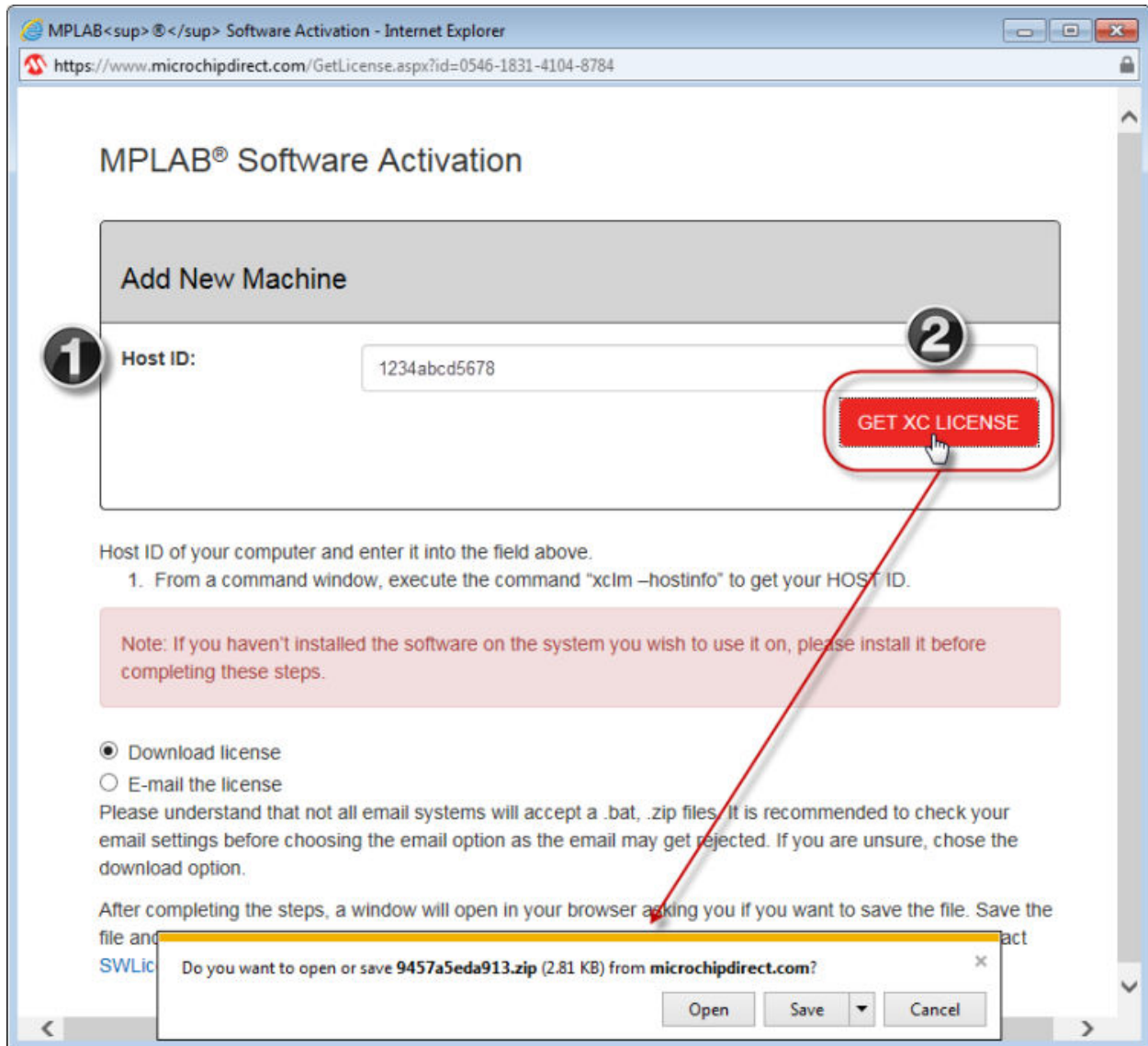





Figure 3-5. Zip File Contents

9457a5eda913.zip			
<input type="checkbox"/>		linux.sh Type: Shell Script	6/24/2019 1.77 KB
<input type="checkbox"/>		mac.sh Type: Shell Script	6/24/2019 1.77 KB
<input type="checkbox"/>		windows.bat Type: Windows Batch File	6/24/2019 1.85 KB

### 3.4 Purchase and Activate Your License via Distribution

Instead of purchasing your compiler license from Microchip, you can purchase a license through a distributor. You will then receive either:

- An email with your activation key.
- A hard copy of the compiler and an insert with an activation key on it.

To activate the compiler:

1. Access your MySoftware account. Click on "Activate and Register MPLAB Software."
2. Follow the information provided in the [3.3.4. Activate License and Download License File](#) section.

### 3.5 Purchase an Add-On License

You may wish to purchase an add-on license for your compiler. Just as with a compiler license, you purchase, download, install and activate the add-on license.

Currently available add-on license:

- [MPLAB Analysis Tool Suite](#)

### 3.6 Renew or Apply Your HPA

The HPA may be renewed and applied from either a [MySoftware](#) account or a paper copy.

**Note:** HPA isn't available for Subscription or Dongle Licenses.

For more on HPA, see "MPLAB® XC HPA Renewal Instructions" (DS50002208) on the **Documentation** tab of the [MPLAB XC C Compiler webpage](#).

#### HPA Renewal on MySoftware

To purchase/renew your HPA:

1. On the MySoftware page, find your compiler.
2. Click the **Renew** button to purchase HPA for another year.

To apply your HPA to a compiler:

1. On the MySoftware page, click the **Apply HPA** button.
2. Click the **Download License** button for a new copy of the license file.

#### HPA Renewal via Paper Copy

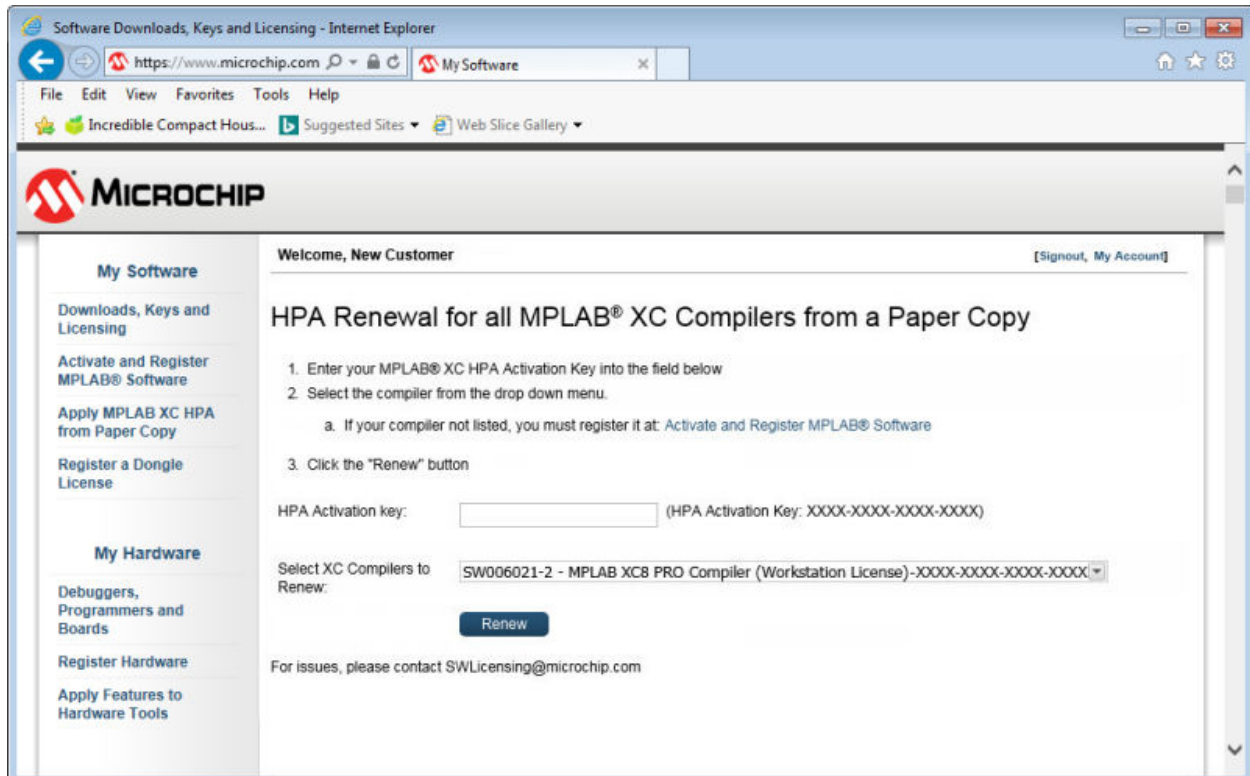
To purchase/renew your HPA:

1. Purchase HPA through distribution or "Microchip Purchasing and Client Services."
2. Receive an activation key.

To apply your HPA to a compiler:

1. On the MySoftware page, find your compiler.
2. Click "Apply MPLAB XC HPA from a Paper Copy." Enter your HPA Activation Key and select the "XC compiler to Renew" from the drop down list of registered compiler licenses.
3. Click the **Renew** button.
4. Download a new copy of the license file.

**Figure 3-6.** Activation by Paper



### 3.7 Move a License Between Accounts

To move your license from one [MySoftware](#) account to another, the "Activate and Register MPLAB Software" link can be used.

1. Access MySoftware Account. Click on "Activate and Register MPLAB Software."
2. Complete the steps on the form using the 12-digit activation key for the compiler license to be moved.
3. Click on "Get License."
4. Click on "Downloads, Keys and Licensing" to view the moved compiler license information.

## 4. Revision History

The following is a list of changes by version to this document.

**Note:** Some revision letters are not used, such as I and O, as they can be confused for numbers in some fonts, and so were skipped.

### Revision P (October 2023)

- **2.1.9 Completing Setup:** Added MPLAB XC-DSC C Compiler (xc-dsc v3.00) to the list of compilers.

### Revision N (December 2022)

- **1. About the Installer and License Manager:** In the “XC Installer” section, added “Thread Safety Check” to “MPLAB Analysis Tool Suite” license and removed “MPLAB Code Coverage” license as it has been obsoleted Sept 1, 2022.
- **2.1.4 License Type:** The following sentence has been removed: “A Functional Safety license or MPLAB Code Coverage may be installed on a workstation only, so that is the only type available for these licenses. Therefore this screen does not appear.” MPLAB XC PRO Functional Safety Network Server Licenses are now available and the “MPLAB Code Coverage” license has been obsoleted Sept 1, 2022.

### Revision M (May 2022)

- Minor changes made throughout for updates to web links and operating systems.
- **1. About the Installer and License Manager:** Added MPLAB Analysis Tool Suite license under “XC Installer.”
- **2.3.1 Network Server/Client Overview:** Added information on Functional Safety compiler versions.

### Revision L (September 2020)

This is the first inclusion of this section in the document. The list below highlights document updates from rev K.

- **1. About the Installer and License Manager:** In the “XC Installer” section, added bullet about functional safety.
- **2.1 Basic Compiler Installation:** 2.1.1 “Installation Considerations” moved under this section, changing section numbering. 2.2.1 “Windows OS Warning” removed as no longer needed.
- **2.1.1 Installation Considerations:** Deleted 2.1.3. “64-Bit Linux Customers” as content no longer needed with 64-bit MPLAB XC C compilers.
- **2.1.9 Completing Setup:** MPLAB XC Compiler paths updated for 64-bit compilers.
- **2.3.1 Network Server/Client Overview:** Update to specify that 60-minute delay only applies to shared licenses.
- **2.4 Upgrading the Compiler:** MPLAB XC8 Compiler path updated for 64-bit compiler. Also added that HPA renewal keeps PRO optimizations active.
- **2.5 Uninstalling the Compiler:** Simplified “Launch Uninstaller” instructions.
- **3.3.2 Access MySoftware from MPCs:** Section removed.
- **3.3.4 Activate License and Download License File:** Fix numbering.
- **3.6 Renew or Apply Your HPA:** Under “HPA Renewal via Paper Copy,” update under “To apply your HPA to a compiler.”
- Section links in first Chapter topic removed. Other minor text updates.



## Microchip Information

### The Microchip Website

Microchip provides online support via our website at [www.microchip.com/](http://www.microchip.com/). This website is used to make files and information easily available to customers. Some of the content available includes:

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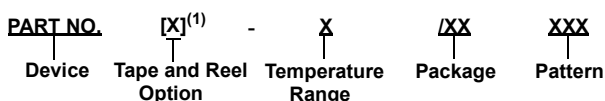
- Distributor or Representative
- Local Sales Office
- Embedded Solutions Engineer (ESE)
- Technical Support

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## Product Identification System

To order or obtain information, e.g., on pricing or delivery, refer to the factory or the listed sales office.



Device:	PIC16F18313, PIC16LF18313, PIC16F18323, PIC16LF18323	
Tape and Reel Option:	Blank	= Standard packaging (tube or tray)
	T	= Tape and Reel <sup>(1)</sup>
Temperature Range:	I	= -40°C to +85°C (Industrial)
	E	= -40°C to +125°C (Extended)
Package: <sup>(2)</sup>	JQ	= UQFN
	P	= PDIP
	ST	= TSSOP
	SL	= SOIC-14
	SN	= SOIC-8
	RF	= UDFN
Pattern:	QTP, SQTP, Code or Special Requirements (blank otherwise)	

Examples:

- PIC16LF18313- I/P Industrial temperature, PDIP package
- PIC16F18313- E/SS Extended temperature, SSOP package

### Notes:

1. Tape and Reel identifier only appears in the catalog part number description. This identifier is used for ordering purposes and is not printed on the device package. Check with your Microchip Sales Office for package availability with the Tape and Reel option.
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