

Quick Start Guide (Qt)

Objective

This guide is intended to quickly guide the user through the initial out-of-box product experience to developing a simple sample application using Qt Open Source compiled on a nearby PC.

This procedure is a “short cut” to provide a high-level view of the application development process and PIQUE™ hardware capabilities. In-depth details, configuration and customization options, and hardware implementation details are covered in related documents.

Requirements

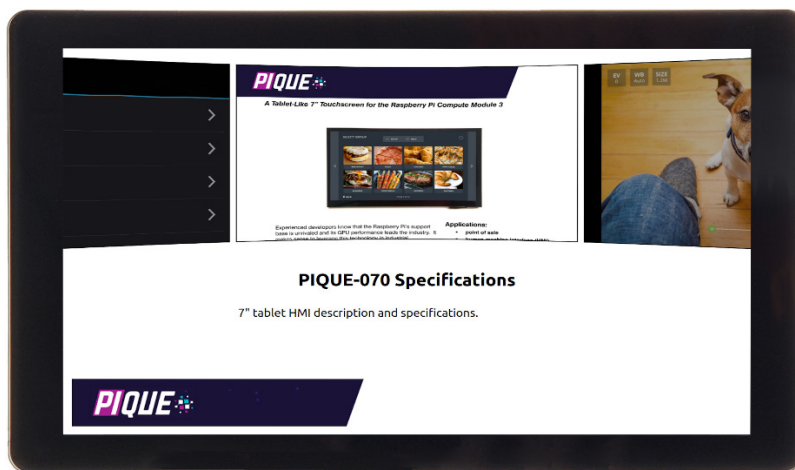
- PIQUE Starter Kit
- Computer capable of running Oracle™ VirtualBox software.

Initial Demonstration

Ensure the supplied microSD card is inserted into the PIQUE, then connect the PIQUE to the 12VDC power supply using the included AC power supply via the 3-pin connector. The connector is keyed to prevent a reverse-polarity connection.



Shortly after connecting power, the TFT touchscreen will display a startup screen, then transition to the demonstration program’s main screen.



Test the various demonstrations of touchscreen functions, on-screen keyboard input, and graphics response time as desired.

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Running the Development Virtual Machine

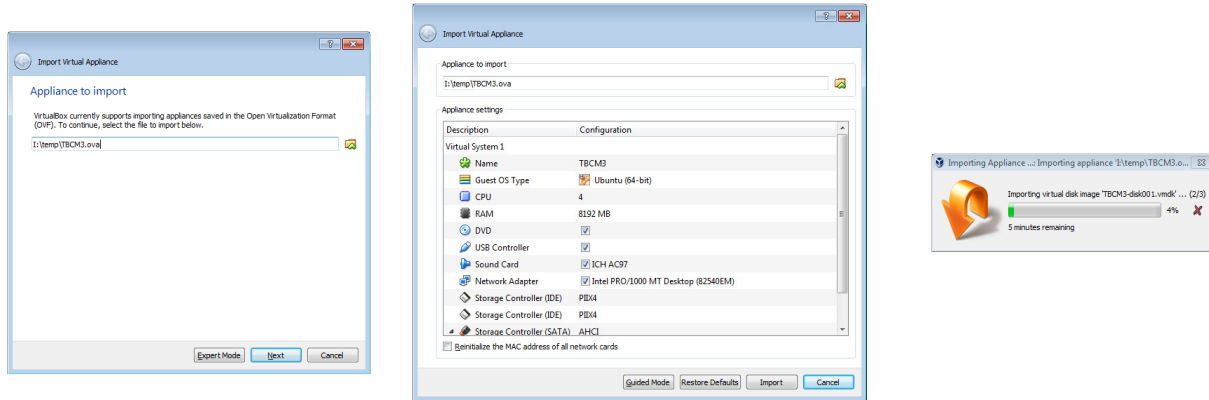
Install Oracle VirtualBox™ for Windows, OS X, or Linux. The latest version is available at:

<https://www.virtualbox.org/wiki/Downloads>

Download the PIQUE Preinstalled Environment file using the link provided at:

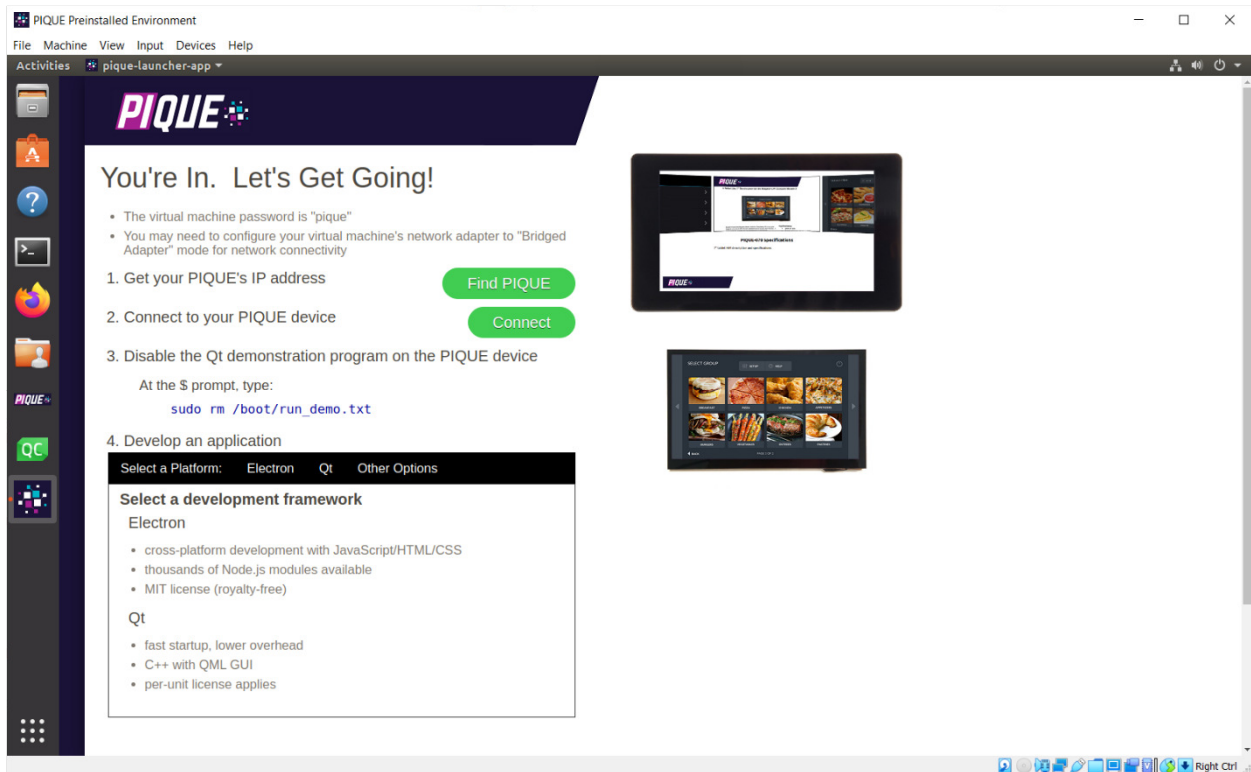
<http://thecircuitfoundry.com/products/PIQUE/support/index.html>.

Run VirtualBox. From the File menu, select “Import Appliance...”, navigate to the location of the downloaded file, and click Next.



When Virtual System 1’s settings are shown, click Import to create the Ubuntu 18.04 virtual machine.

Launch the PIQUE Preinstalled Environment from VirtualBox. If necessary, log in with the password “**pique**”. After booting and logging in, the PIQUE Launcher application will be shown.



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Connecting via SSH

Connect the PIQUE to your local network via onboard or USB Ethernet, then remove and reconnect the P2 power connection. After startup, the demonstration program will display the PIQUE's local IP address.



In the virtual machine, you can also press the

Find PIQUE

button to search for your PIQUE device.

Next, click the

Connect

button, edit the connection address/name as needed, and then press

Enter. Log in with the password “**raspberrypi**”.

```
pi@raspberrypi:~$ ssh -C -o StrictHostKeyChecking=no raspberrypi.local
File Edit View Search Terminal Help
Enter IP address or name to connect to: raspberrypi.local
Opening SSH connection to raspberrypi.local with username "pi"
(Likely password: "raspberrypi")
The authenticity of host 'raspberrypi.local (10.1.10.126)' can't be established.
ECDSA key fingerprint is SHA256:bcVL6490C/3vqSwckH0BUtThYNNmMsBug+N7Qx0A0Nw.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'raspberrypi.local' (ECDSA) to the list of known hosts.
pi@raspberrypi.local's password:
Linux raspberrypi 4.9.59-v7+ #1847 SMP Sun Oct 29 12:19:23 GMT 2017 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Tue Feb  9 22:01:04 2021 from 10.1.10.125

SSH is enabled and the default password for the 'pi' user has not been changed.
This is a security risk - please login as the 'pi' user and type 'passwd' to set a new password.

pi@raspberrypi:~$
```

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Disabling the Demonstration Application

Issue the following command to prevent the demonstration program from automatically starting on bootup and restart the PIQUE.

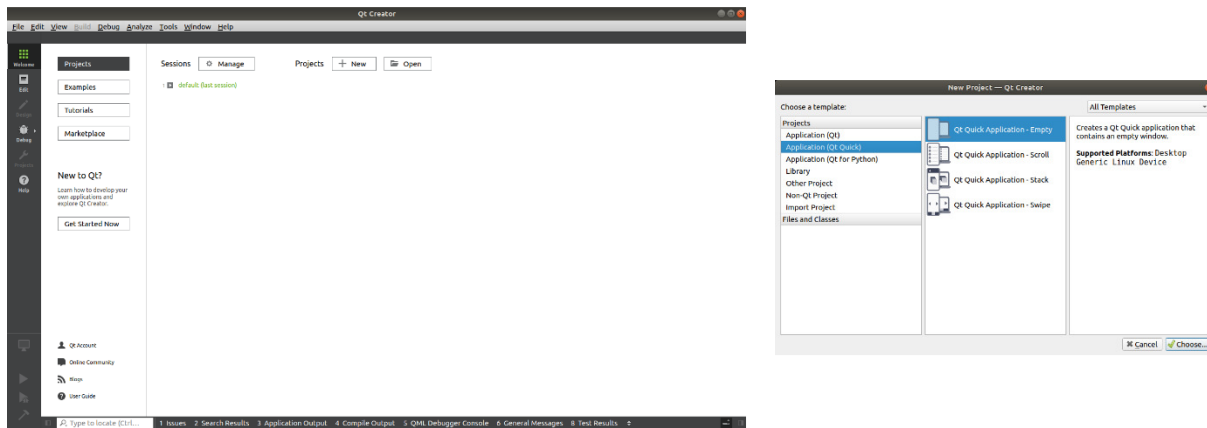
```
set-demo  
sudo reboot now
```

The PIQUE will reboot and present a typical linux login prompt, allowing for local login via a USB-connected keyboard if desired.

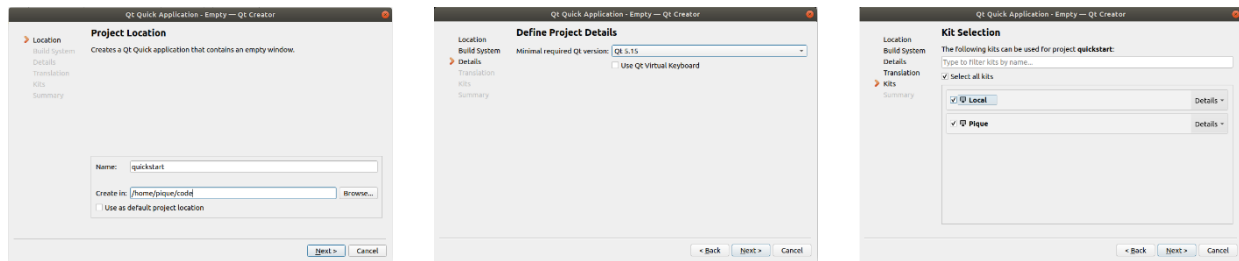
Creating a Qt Application

In the PIQUE Preinstalled Environment, click the green “Qt” icon in the left-hand taskbar.

Create a New Project by clicking the “+ New Project” button, then choose the “Qt Quick Application - Empty” template and click the “Choose...” button.



Enter a project name and folder as shown below and click the “Next” button.



Select “qmake” as the build system, then select Qt 5.15 as the minimal required version and click the “Next” button. Click “Next” to skip the “Translation File” step. The virtual machine’s Qt Creator setup includes “kits” for both running on the local machine (Local) and for running on the PIQUE target (Pique). Enable both kits for this project and click the “Next” button.

When prompted for version control, leave “<None>” selected and click the “Finish” button.

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Deployment

Before a project can be compiled and deployed to PIQUE, the correct IP address or name of the PIQUE must be configured in Qt Creator. From the “Tools” dropdown menu at the top of the screen, select “Options” then the “Devices” tab. Make sure the PIQUE is the selected device.

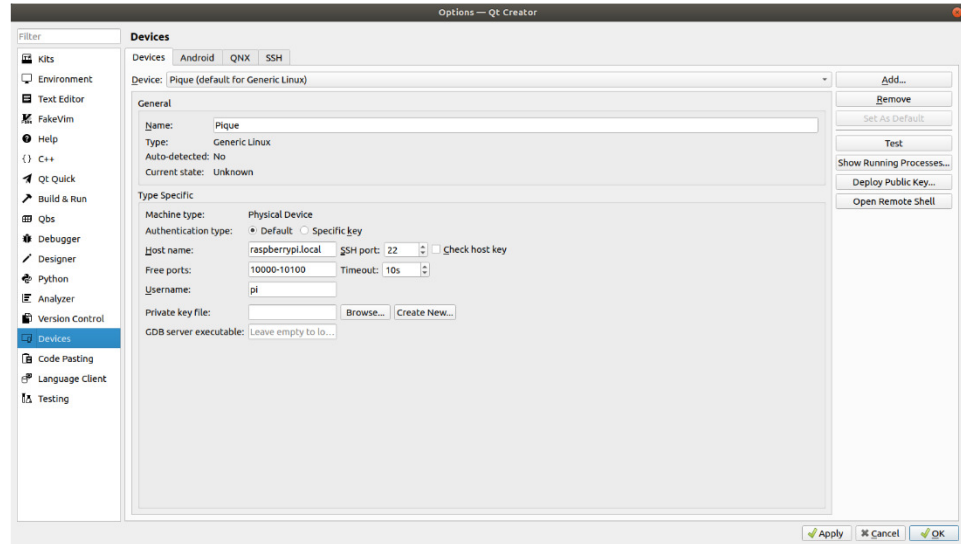
Edit the Host name, Username, Password, and SSH port fields with these values:

Host name: <IP address of the PIQUE, or raspberrypi.local>

Username: pi

Password: raspberry

SSH port: 22



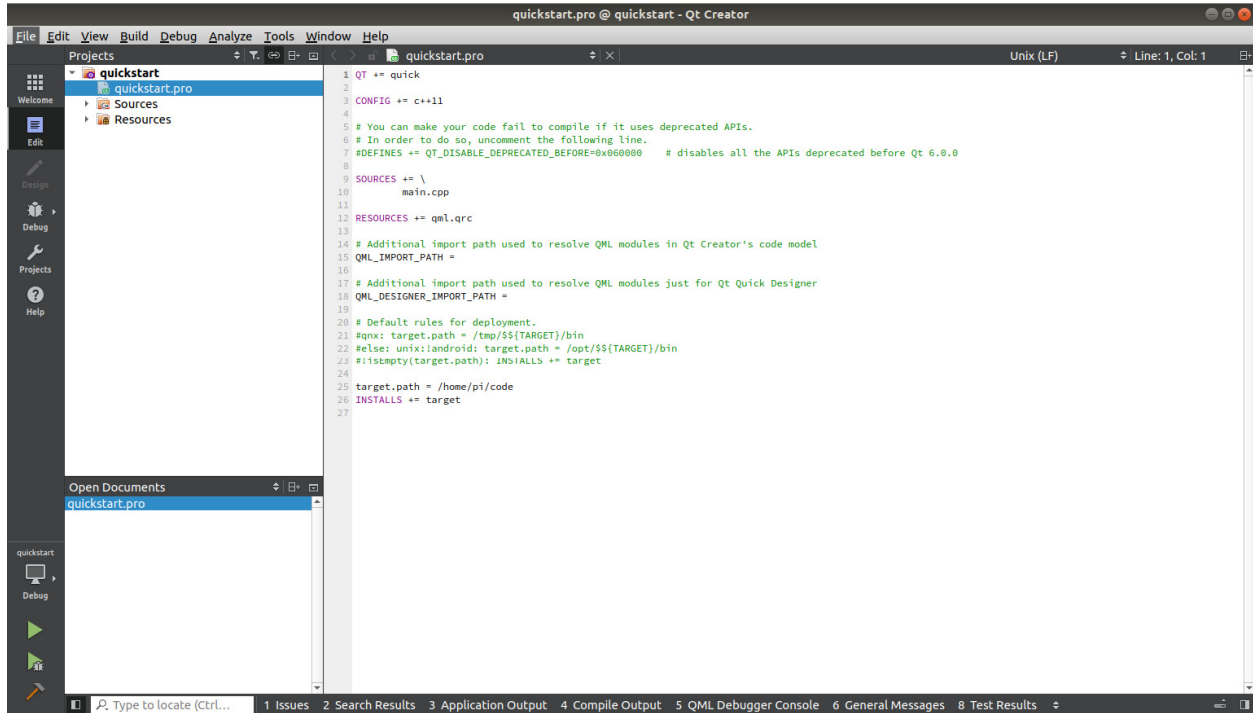
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Target Install Location

Double-click the projects “quickstart.pro” file to edit it with Qt Creator. Disable the “Default rules for deployment” section using # symbols, then add the following 2 lines in their place:

```
target.path = /home/pi/code  
INSTALLS += target
```

This will cause the project to be deployed in the /home/pi/code directory, preventing file/directory permission issues on Pique.

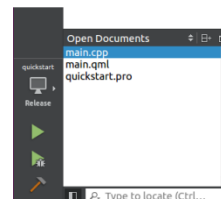


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Building the Qt Application to Run Locally

Configure a build by clicking the computer screen icon in the lower-left corner of Qt Creator, then select “Local” in the “Kits” list and Debug in the “Build” list.

Build the project by clicking the hammer icon in the lower-left corner, then run the application by clicking the green triangular arrow button.



Building the Qt Application to Run on the PIQUE

Reconfigure the build by clicking the computer screen icon, then select “Pique” in the “Kits” list and Debug in the “Build” list.

Build the project using the hammer icon and deploy it using the green triangular arrow button. When prompted, enter the password, “raspberrry”.

Conclusion and Next Steps

This guide is helpful for initial operation and gaining a high-level view of the development procedure. Consult the other guides in the documentation center to better understand various aspects of the PIQUE Preinstalled Environment and the PIQUE System Image.

For commercial applications, contact The Qt Company for details about licensing Qt for your specific application.

For further support, contact The Circuit Foundry:

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