Keysight Hacking Platform Getting Started

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1 Overview

This document gives an brief overview of the hardware in the Keysight Hacking Platform (KHP), how to connect the the KHP over SSH, and where to find the example programs.

The KHP consists of:

- Raspberry Pi 3 with 2.8" capacitive touch screen shield
- Raspbian Linux image with some example programs pre-loaded.
- Some additional hardware to hack with (ADC, resistors, LEDs, sensor modules)

The general workflow for using the KHP consists of connecting to it over Secure Shell (SSH) and transferring files using Session Control Protocol (SCP).

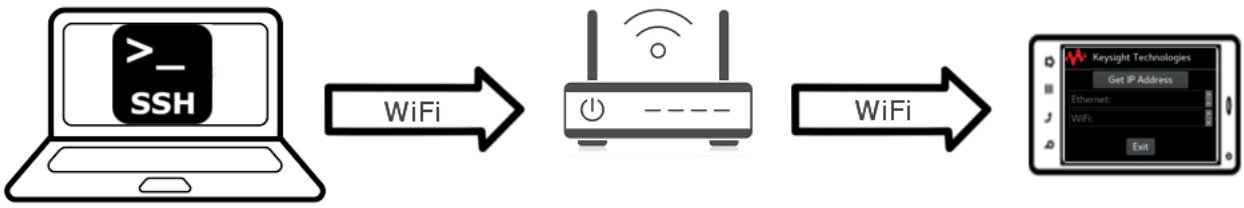

Figure 1: KHP Deployment Workflow

2 Connecting to the Raspberry Pi Over SSH

The Raspberry Pi will take approximately a minute to boot up after plugging it in. After fulling booting up the Raspberry Pi will automatically start the Keysight IP Finder application. Click the **Get IP Address** button to show the configured IP addresses for the Ethernet and WiFi interfaces. Depending on how quickly the interface receives an IP address you may have to click the button a few times.

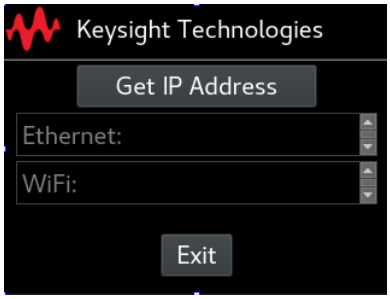

Figure 2: Keysight Show IP App

Write down the IP address of the interface you would like to use. We are now going to use this IP address to connect to the Raspberry Pi over SSH. Follow the instructions for the operating system running on your computer:

SSH Login Credentials

Username:	**pi**
Password:	**keysight**

2.1 Windows

1.) Download and install the PuTTY program if you do not have it already. Link: PuTTY

2.) Launch the PuTTY program.

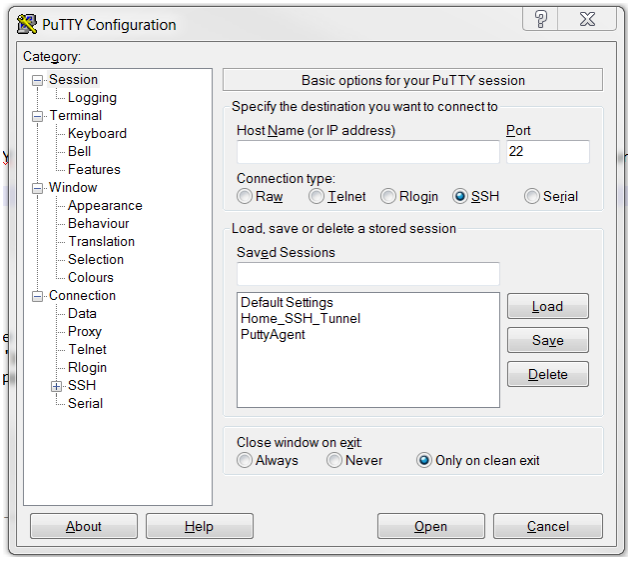

Figure 3: PuTTY Application

3.) Type in the IP address you wrote down in the previous section in the **Host Name** box and make sure the **SSH** option is selection under "Connection Type:" and then click the **Open** button.

4.) Type in **pi** as the user name and then press enter.

5.) Type in **keysight** as the password and then press enter.

6.) At this point you will be dropped into a Bash command prompt on the Raspberry Pi.

2.2 Mac OS X and Linux

1.) Open up a terminal

2.) Using the IP address you wrote down in the previous step, type in: `ssh pi@{IP Address}`

3.) Type in the password for the 'pi' user and press enter: **keysight**

4.) At this point you will be dropped into a Bash command prompt on the Raspberry Pi.

3 Finding and Running the Example Programs

All of the example programs are located in folders under this location:

Example Program Location:	`/home/pi/Documents/Hackathon/`

All of the example programs are Python programs. To run any of the example programs, change into the directory with the example program you wish to run (`cd`) and then run: `python {Example Program Name}`. To stop running the example program press `Ctrl+C` on your keyboard to end the program.

4 Transferring files with SCP

Files can be transferred to and from the Raspberry Pi using the SCP protocol. Follow the directions below for the operating system that you are using.

4.1 Windows

To be able to transfer files to and from the Raspberry Pi using Windows, we first need to download and install the WinSCP program.

1.) Download and install the WinSCP program.

2.) After installing the WinSCP program, launch the program. You will be presented with the login screen which will look similar to Figure 4.

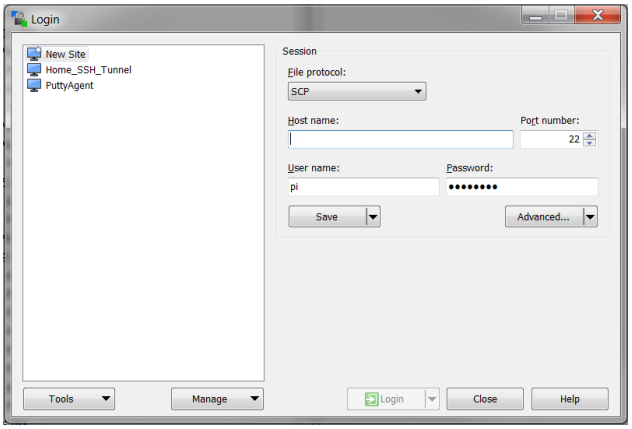

Figure 4: WinSCP Login Screen

3.) In the File Protocol drop-down box, select **SCP**.

4.) In the "Host Name" box, enter the IP address of your Raspberry Pi.

5.) In the "User name" box, enter **pi**.

6.) In the "Password" box, enter **keysight**

7.) Click the **login** button. At this point you should be connected to the Raspberry Pi and be able to browse the Raspberry Pi's file system and transfer files.

4.2 Mac OS X

With Mac OS X there are a few different ways that you can go about using SCP with the Raspberry Pi. You can either use the SCP utility from the command line for transferring files or you can download and install MacFusion to allow you to browse the Raspberry Pi's file system through Finder.

The general usage for the SCP command is: `scp {source file} {destination file}`

4.2.1 Transferring a Single File to the Raspberry Pi

1.) Open a terminal.

2.) Run this command: `scp {file to transfer} pi@{IP Address of Pi}:{Location to transfer file to}`

4.2.2 Transferring a Single File from the Raspberry Pi

1.) Open a terminal.

2.) Run this command: `scp pi@{IP Address of Pi}:{Location of file to transfer} {location to save file}`

4.3 Linux

With Linux there are a few different ways that you can go about using SCP with the Raspberry Pi. You can either use the SCP utility from the command line for transferring files or several file browsers in Linux natively support mounting a SSH file system with SCP. For most common file browsers the option to mount the remote file system is usually under the `File -> Connect to Server...` menu option.

The general usage for the SCP command is: `scp {source file} {destination file}`

4.3.1 Transferring a Single File to the Raspberry Pi

1.) Open a terminal.

2.) Run this command: `scp {file to transfer} pi@{IP Address of Pi}:{Location to transfer file to}`

4.3.2 Transferring a Single File from the Raspberry Pi

1.) Open a terminal.

2.) Run this command: `scp pi@{IP Address of Pi}:{Location of file to transfer} {location to save file}`