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Setting Up Raspberry-Pi Billboard Instructions for University Housing

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*** Pre-Requisites ***

Make sure you have a pre-existing OS on the card. If not, you can download one from http://www.raspberrypi.org. (NOOBS (New Out Of Box Software) is what

you are looking for, if this is the case.

i.) Turn On R-Pi.
ii.) Open up a terminal. type "ifconfig" and obtain the MAC address.
iii.) Go into Proteus and register the MAC address.
iv.) Go to billboard.ncsu.edu and register the IP address assigned via Proteus to your respective group/department(s).

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These instructions are for a Windows 7 Environment. The Raspberry Pi's we are using are Models "B" and "B+", first generation models.

I.) Screenly

a.) Navigate to https://www.screenlyapp.com/ in Firefox.

b.) Click on the "Open Source Edition" in the top right of the screen.

c.) Scroll down and download the custom image.

d.) Once downloaded, Navigate to https://sourceforge.net/projects/win32diskimager/

II.) Win32DiskImager

a.) Download Windows32DiskImager.

b.) Close your browser.

c.) Install Windows32DiskImager.

d.) Open Windows32DiskImager once it is installed.

e.) Extract the Screenly Custom Image you downloaded.

f.) In Windows32DiskImager, select the image file that was unzipped.

g.) Insert an SD card. Make sure that it is yout target device in Windows32DiskImager.

h.) Click the "Write" button in Windows32DiskImager.

i.) The progress bar will show. This could take between 5 and 15 minutes to write the image to the card.

III.) Configuring Raspberry Pi, Part I

a.) Download PuTTY for your computer, or any other type of ssh client for a windows machine.

b.) Once the image is on the card, "Safely Remove" it from your computer.

c.) Place the Card in the Raspberry Pi.

d.) Power on the Raspberry Pi.

e.) At your W7 machine, type the IP address into your URL bar, followed by : 8080. (Ex.12.34.56.78:8080)

f.) Turn all Assets to the "Off" postion.

g.) In the upper right hand corner, click on Settings. Turn the splash screen off. Set the default duration to 100000. Click Save Settings at the bottom of the screen. Once the information is saved, Click the Screenly logo in the upper left hand corner.

h.) On the main screen, click on the "Add Asset" button. In the name field, Type a description of what the Pi is used for.

i.) In the Asset URL field, type "http://billboard.ncsu.edu". Make sure you have the IP address activated in your screens field. Set your beginning and end date to reflect what duration of time you would like your device to display.

IV.) Configuring Raspberry Pi, Part II

a.) At your Windows machine, ssh into the R-Pi with PuTTY, using it's IP address. By default the user name is "pi", and the password is "raspberry".

b.) Type "sudo raspi-config" in the command line. Expand the Filesystem by selecting it and then pressing enter. Press the esc key. Type "sudo init 6" to reboot the R-Pi.

c.) SSH back into the RPi. Type "sudo apt-get update". This applies all of the current updates to the device.

d.) Type "sudo raspi-config". Go down to advanced options. Select memory split. Type 256 and press enter.

e.) *** ENSURE YOUR TIME ZONE IS CORRECT! *** VERY important.

f.) Go to the very bottom and update raspi-config.

g.) In raspi-config, go to advance options, and change your hostname so that it matches your name in Proteus. Tab to finish.

h.) If you are not prompted to reboot your device, type "sudo init 6". The R-Pi will reboot.

V.) Securing and Hardening your Raspberry Pi

a.) Create a new user by going into the terminal and type "sudo useradd <new username>" (For the <new user> syntax, type in the actual name of your new user.)

b.) Type "sudo passwd <new user> " Create a strong password for this user, as this is going to be the new super user account from here on out.

c.) Type "sudo visudo" Edit the file by commenting out the root account, and comment out "pi" as well. Comment out the line that says "%sudo ALL=(ALL:ALL) ALL" your new user, and ensure that the syntax for root is verbatim for the new user. Save the file.

d.) Reboot the R-Pi. Log in with your new user. This is the new super user, as "pi" and "root" cannot make changes any longer to the system.

e.) Type "sudo nano /etc/ssh/sshd_config". Change your port number. (If you go to https://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers, you can see what ports are commonly used - You DO NOT want to use a port that is already registered. You may or may not be able to ssh into your R-Pi if there is a port conflict, and you will be locked out of your device.)

*** Please note, from this point forward you will need to ssh into your device SPECIFYING your newly modified ssh port. ***

f.) Type "sudo nano /etc/hosts.allow"

Create the configuration file. It should look something like this:

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sshd : 166.22.12.55  : allow

sshd : 139.54.96.5 : allow

sshd : 103.24.103.27 : allow

sshd : 107.184.108.202 : allow

sshd : 205.65.188.203 : allow

sshd : 105.33.129.201 : allow

sshd : 103.184.122.231 : allow


sshd : ALL : deny


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(Please note these IP addresses are just being used to show an example of how the syntax should look. You will have to decide which IP addresses you would like to access your device. This is strongly recommended.)

Once all of this has been completed, you can clone your SD card with the Win32imagewriter to create an .img file with all of your tweeks!