RFID Server Configuration

Introduction:

The RFID Server installs on a local class C Ethernet (that is, all addresses start with 192.168.1.xxx) and in conjunction with our Dual Head Readers on Uno/Ethernet stacks provides a switch list and an OS (train position reporting) function. This document explains how to install and configure your RFID server. If you need to change the address (not recommended for an evaluation system) contact Seth Neumann at seth@modelrailroadcontrolsystems.com

Physical Installation:

The RFID server physically consists of a suitable Raspberry Pi in a case "Pi Tin" with a 1A USB charger type power supply. The system will run well on the original Raspberry Pi but we may user a newer model depending on price and availability.

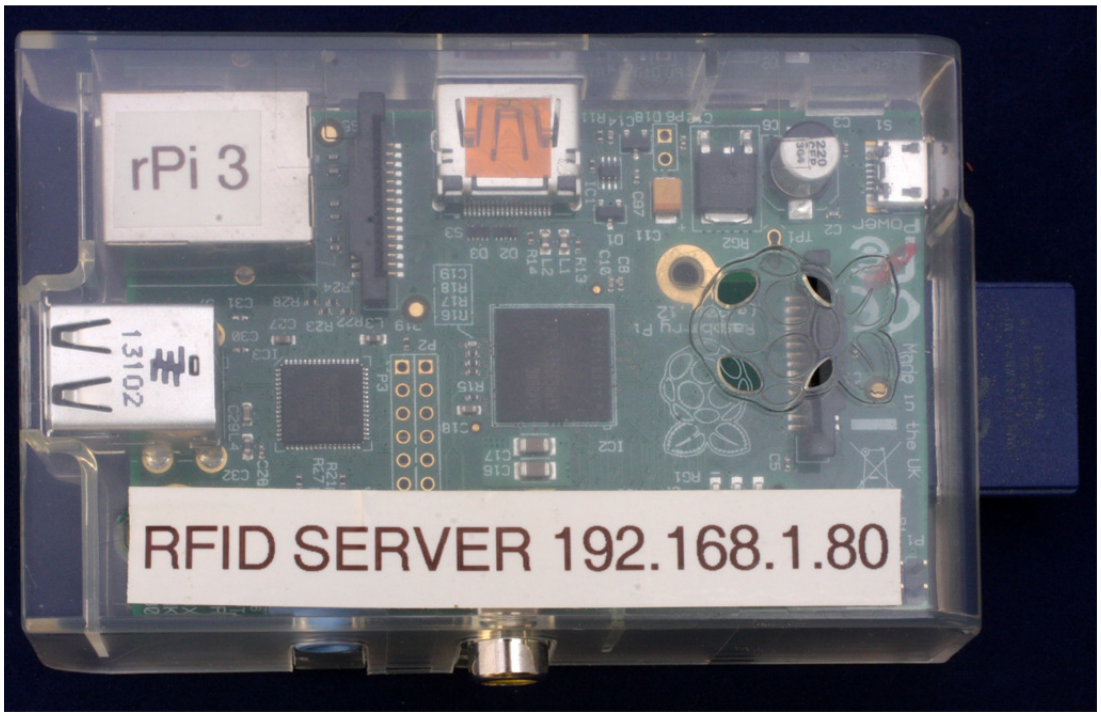

Figure 1 - RFID Server on an original "Pi"

First connect the server to your Ethernet switch (maybe integrated with a router) with a CAT 5 or better data cable. Then apply power via a micro USB (Flat cell phone charger cable) and the USB power adapter. Allow a minute or two for the system to boot. Note, we've had problems with some charger supplies, we've tested the one we sent you your Pi, but if it gets swapped around, try swapping it back.

I'm assuming at least one reader stack has been configured and attached to the network, although the server will talk to you without a reader present.

Software Configuration:

Open your browser (on any computer or tablet connected to the same Class C Ethernet) and type in the address http://192.168.1.80 This will get you to the home screen of the server:

RFID Server Home Screen:

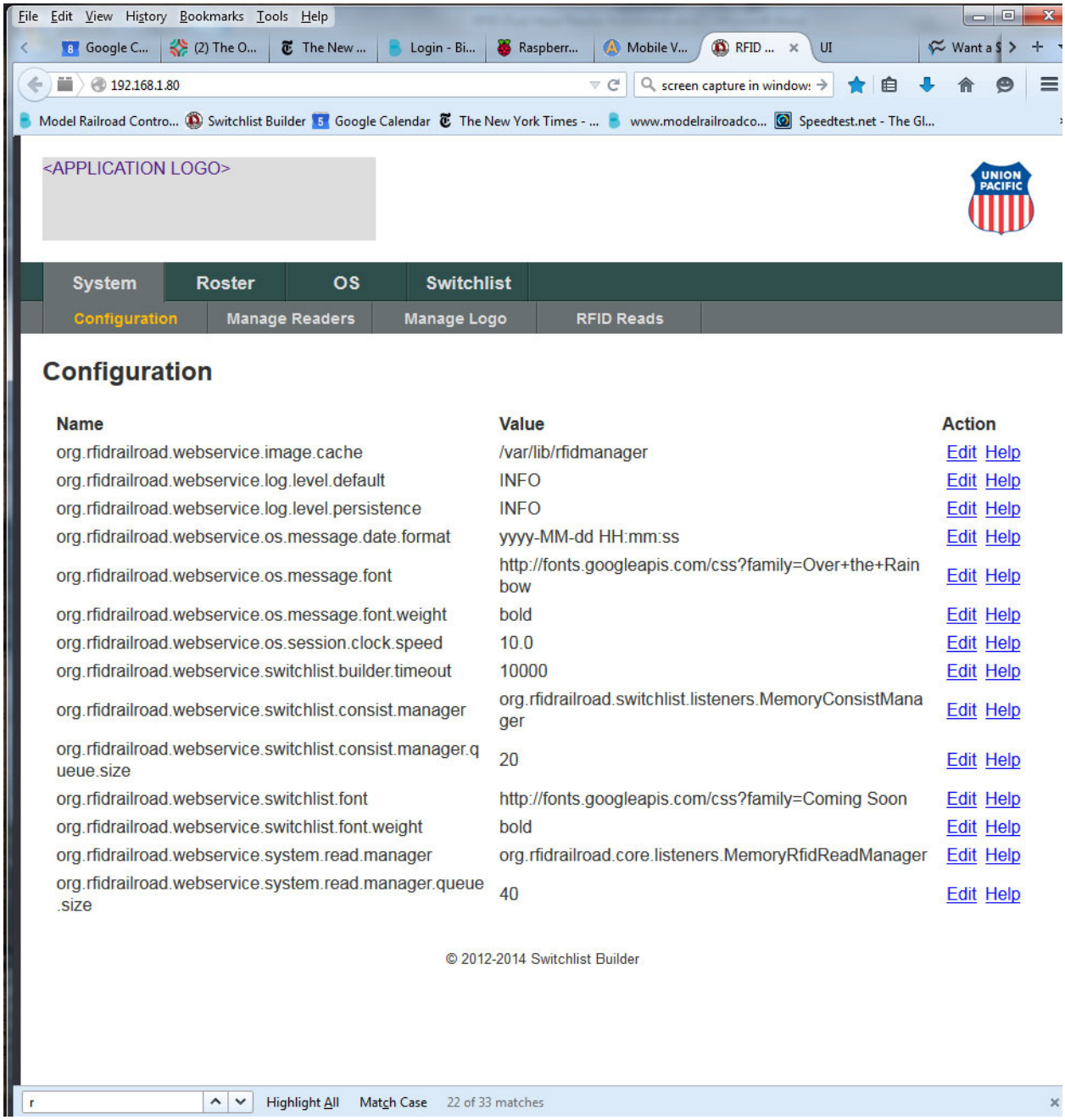

Figure 2 - RFID System Home Page

Note there are several configurable parameters, but you don't need change any of them unless you want to. One parameter you may want to change is "switchlist font" and you can use any font from Google Fonts (just search for "Google Fonts"). Modify the name of font after "family=" with any font Google supports in place of "Over+the+Rainbow". I like "Coming+Soon".

Set up Readers

[At least one reader must be configured and connected to the network for this step]

Click on MANAGE READERS.

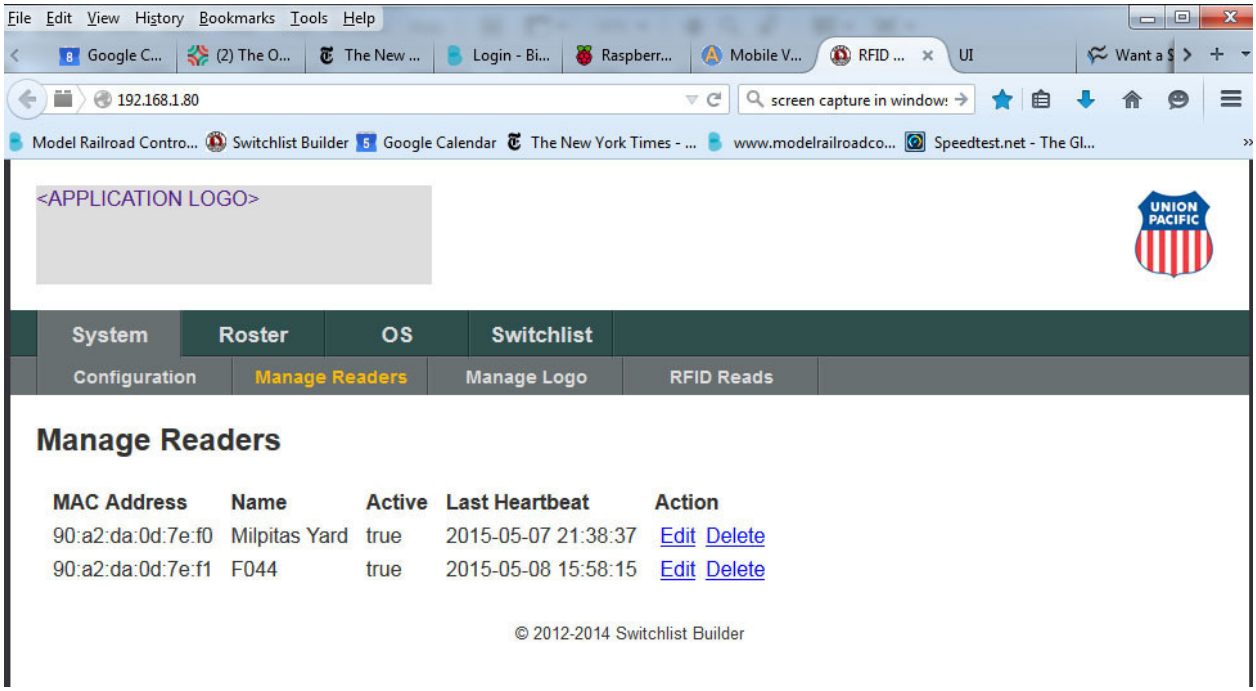

Figure 3 - Manage Readers Screen

All readers known by the system will be listed, if none are showing, click ADD. Any new readers will offer a field to "add." Note the MAC address of the reader is listed along with time of the last heartbeat. This allows you see if the reader is connected and active. Click ADD.

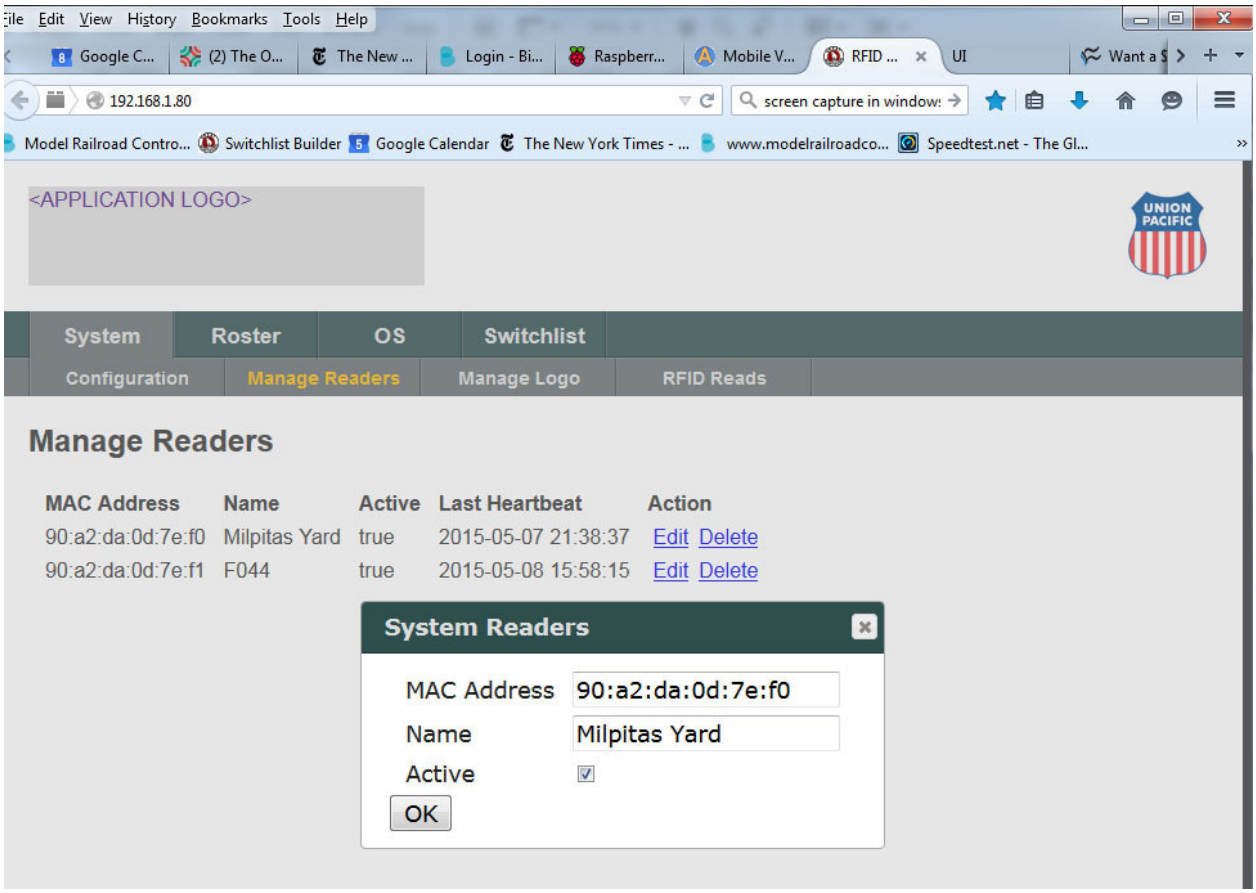

Figure 4 - ADD/EDIT READER POP-UP

You can name the reader, use something consistent and mnemonic like “SP Bakersfield West 1” and then click OK. Do this for each active reader.

Now go to the SWITCHLIST tab and click on the “Manage Sensors” Tab:

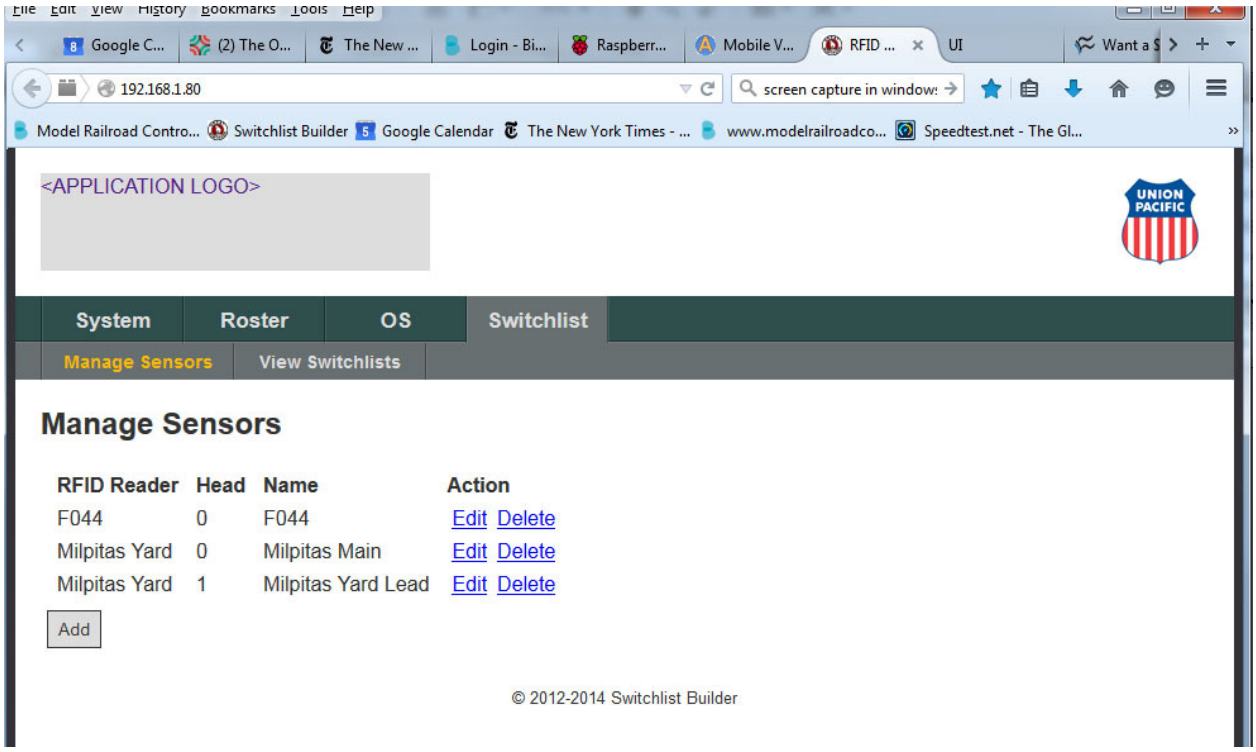

Figure 5 - Manage Sensors in Switchlists

This screen allows you to select which sensors will be used by Switchlist application (you can use either the switchlist or the OS application or Both). Click ADD include a sensor. You’ll get a list of available sensors:

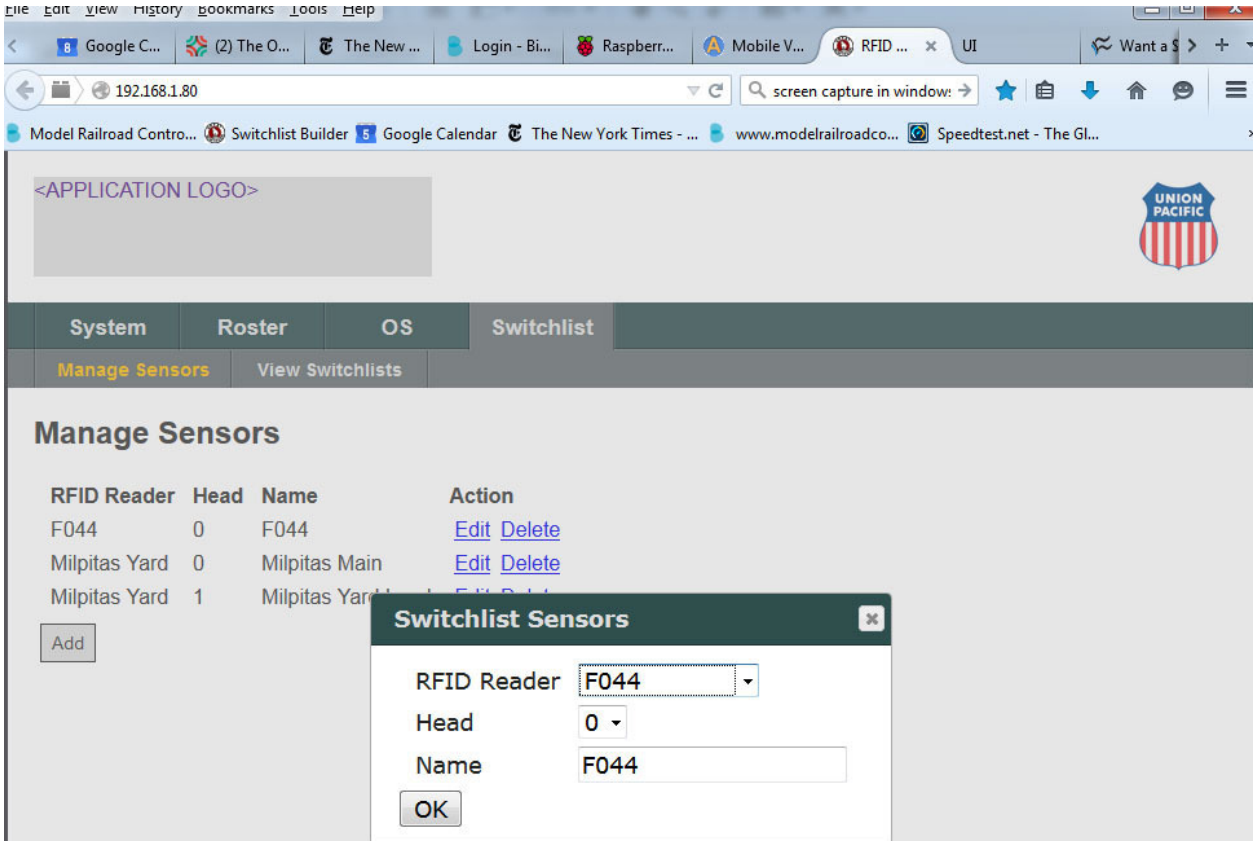

Figure 6 - Add/Edit Sensor

You can give the sensor a name (not necessarily the same as for the OS application, which is likely a station name). Click OK. Do this for each sensor you want to include in the switchlist application.

Building Your Roster:

Click on the ROSTER tab:

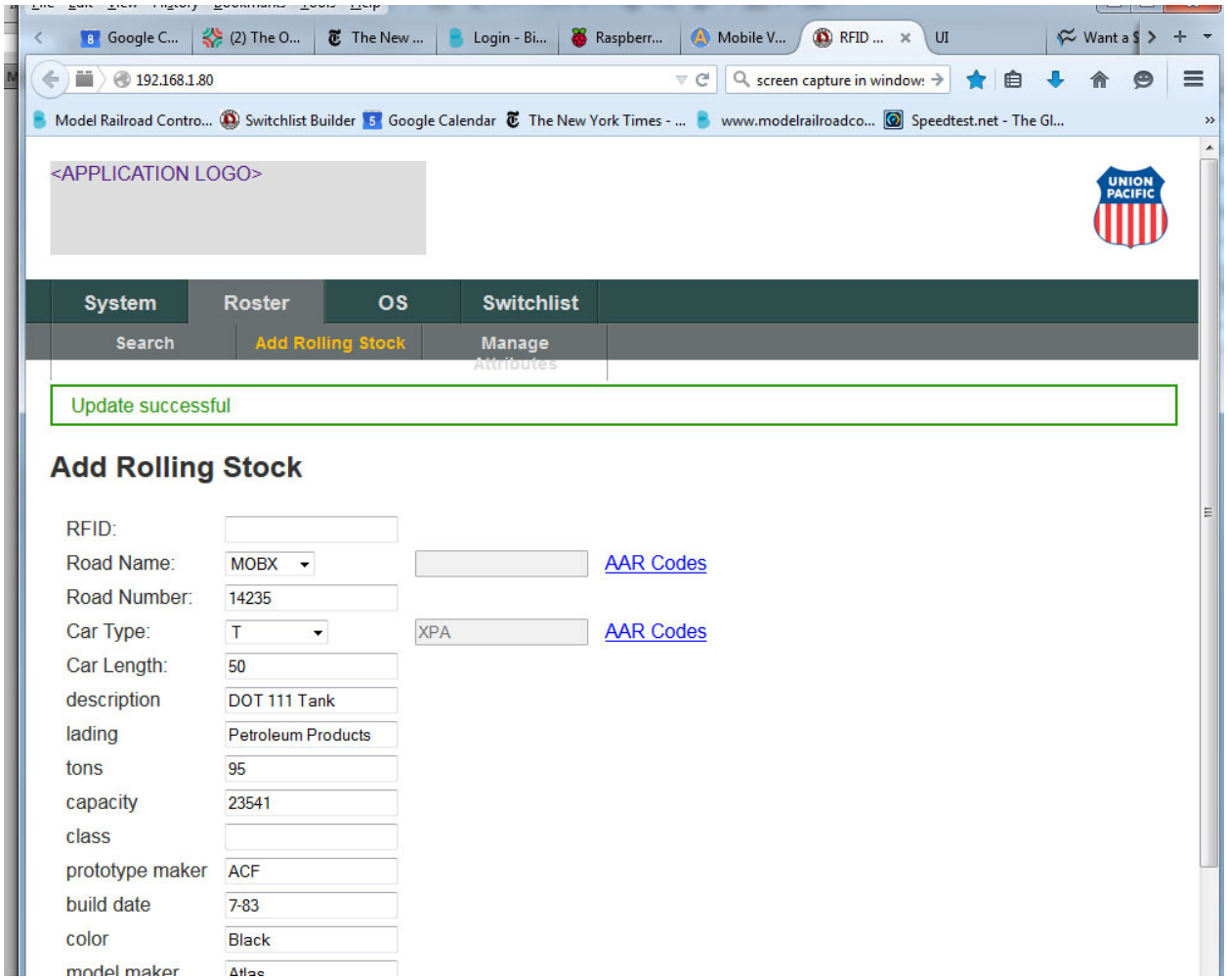

Figure 7 - Roster Tab

Note the Roster Tab opens to “Add Rolling Stock” (you can also search for and edit rolling stock, and manage attributes -- which allows you to add or change fields).

- Leave the RFID tag field blank, we’ll assign those later
- Add the road name – a list of standard AAR railroad initials is provided but you can add anything you like.
- Add the road number
- Add the Car Type, again standard AAR designations are provided but you can add more

- These are the required fields. The example shows the fields I use and you can use them or not or delete them altogether. You can search on anything in the list. You might create a “club Member ID” and then search on that.
- Click ADD at the bottom of the screen when you are done.
- There is no import function right now, but we can help you out if you get us a clean comma separated values file.
- Do this for enough cars to get a test sample. You can come back and enter the rest of your roster later.
- Install tags on the cars you’ve entered. See the preso or MR article for our method, but others work.

Associating Tags with the Roster

Run a tagged car over a reader. Be sure you observe a flash on the "READ" LED. Click on the SYSTEM Tab and open the RFID READS sub-tab.

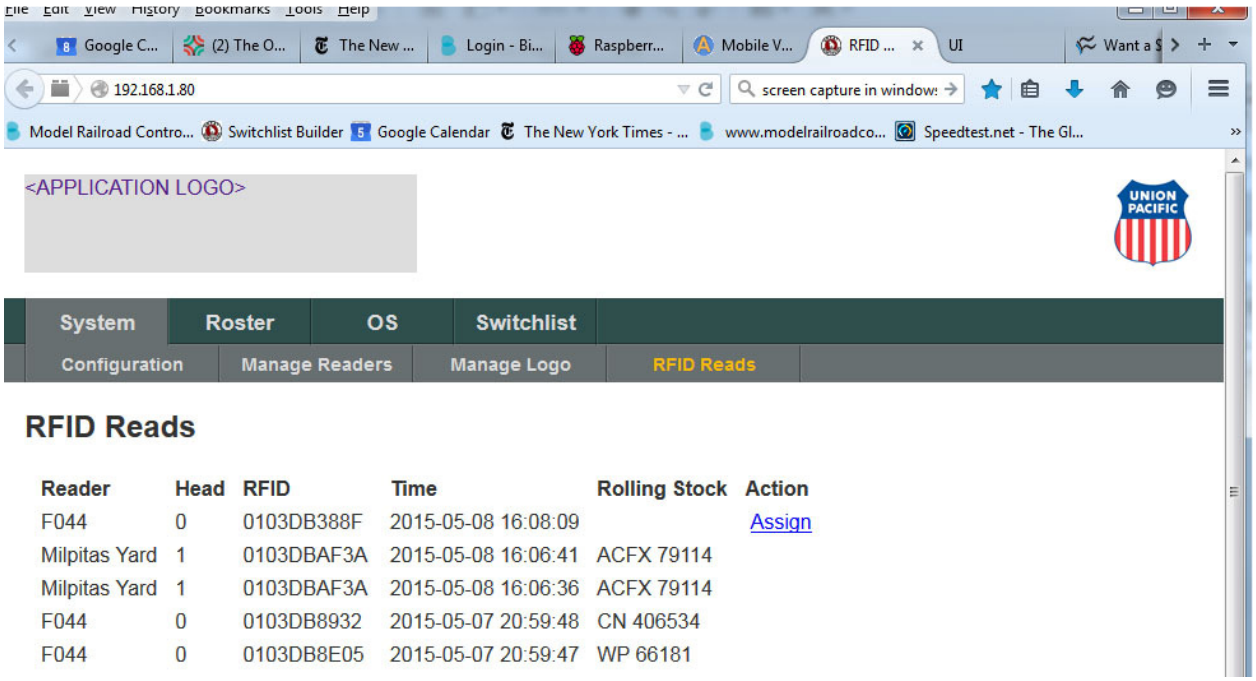

Figure 8 - RFID READS DISPLAY with new car

This is a diagnostic display that shows every read the system makes including reader, reader head, RFID value, time (We'll get to setting the time in a little bit) and the car's road name and number if the tag is assigned. (By the way this information is transient – that is it goes away after a system restart). Our car's tag is not known to the system, so there is an "Assign" link where the car ID should go. Click on "Assign."

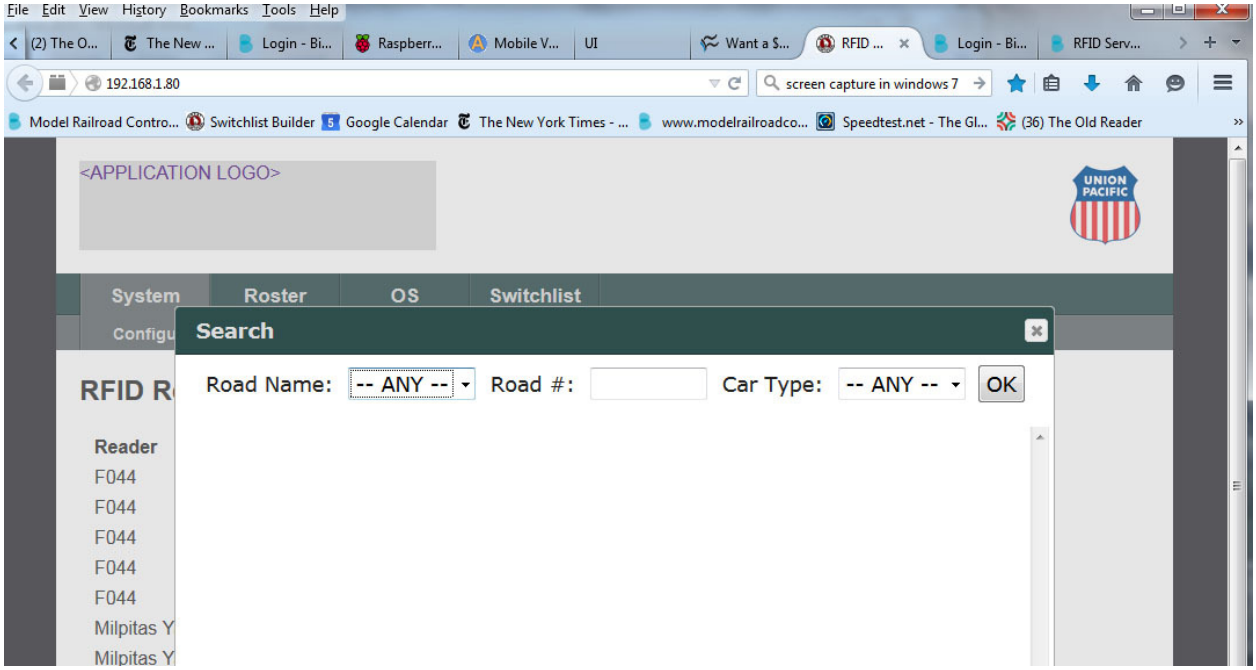

Figure 9 - Search for a car to assign

You can search on any parameter listed to find your car, but Road # is most likely to be unique. You'll get a display of every car that meets your criteria: I searched on ACFX:

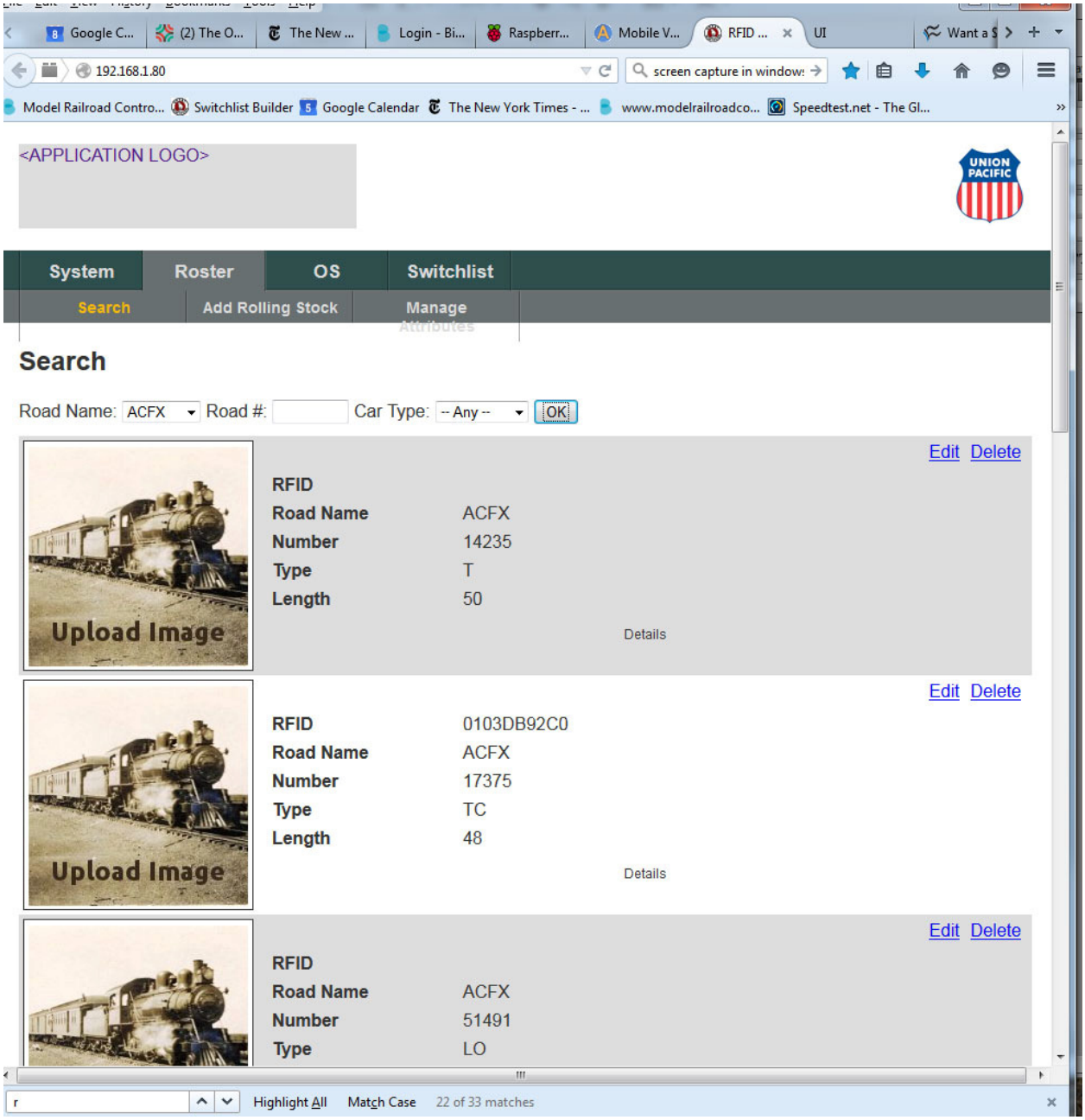

Figure 10 - Search Results

Click in the area of the car you want, for example ACFX 14235. (By the way you can enter images for these cars, too but they are just memos in the roster). Now you can go back to the SYSTEM RFID Screen and check that you got the tag assigned:

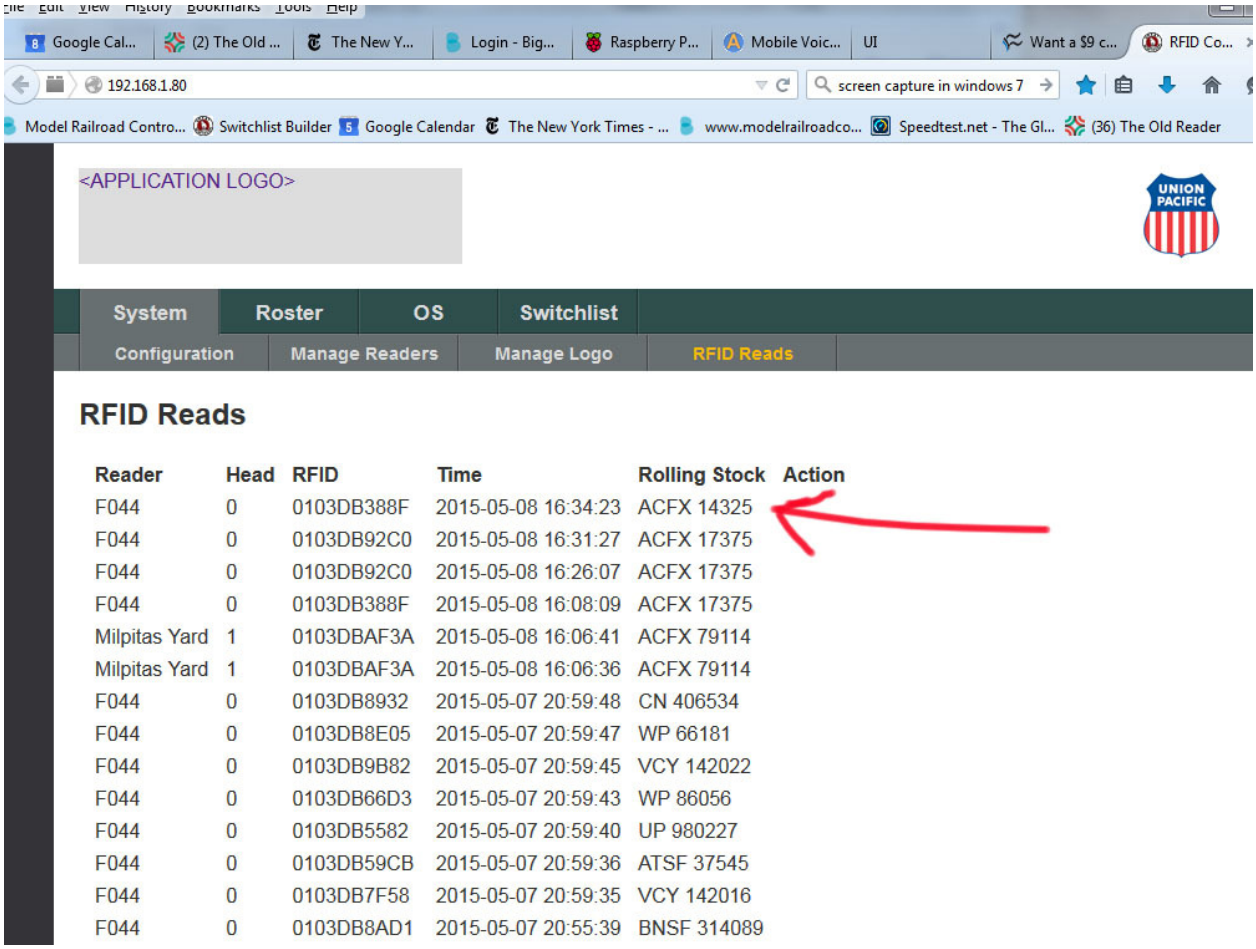

Figure 11 - Our Tag is Assigned

Let's Print a Switchlist:

Click on the SWITCHLIST tab, sub tab View Switchlists and select a reader (in this case F044):

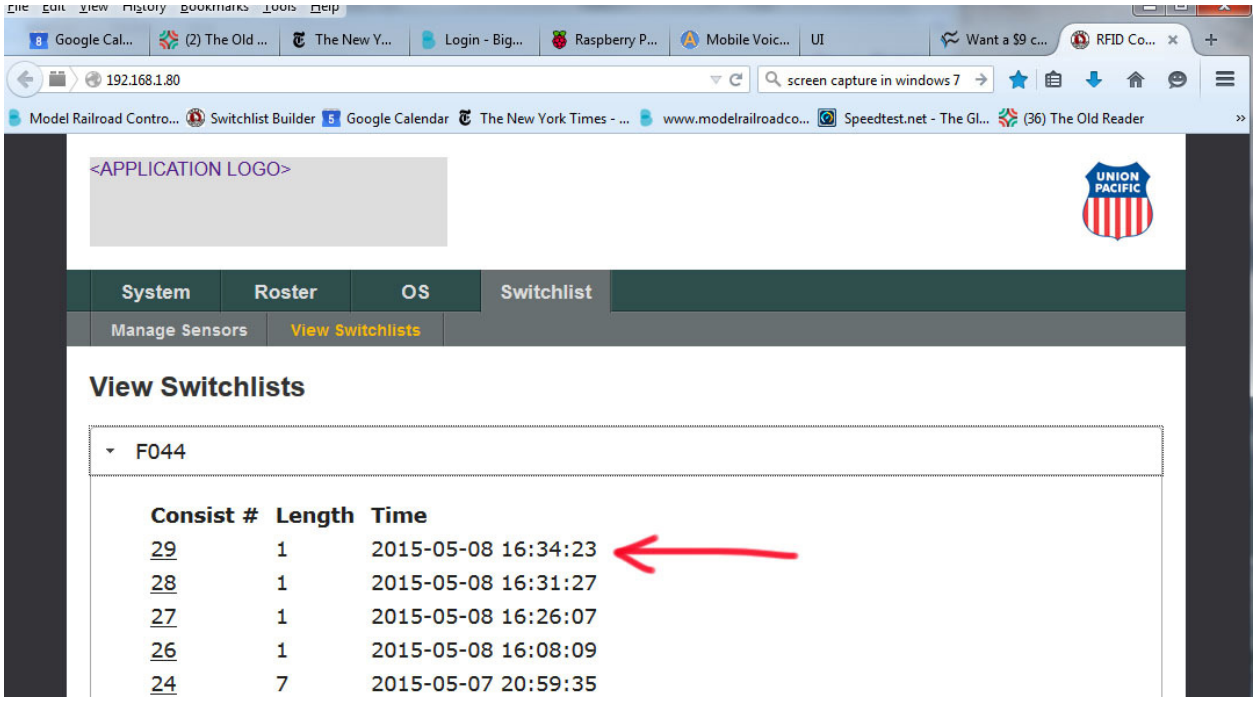

Figure 12 - View Switchlists

We get a list of consists (reads within a few seconds of each other), the number of cars in the consist and time. Let's click on consist 29.

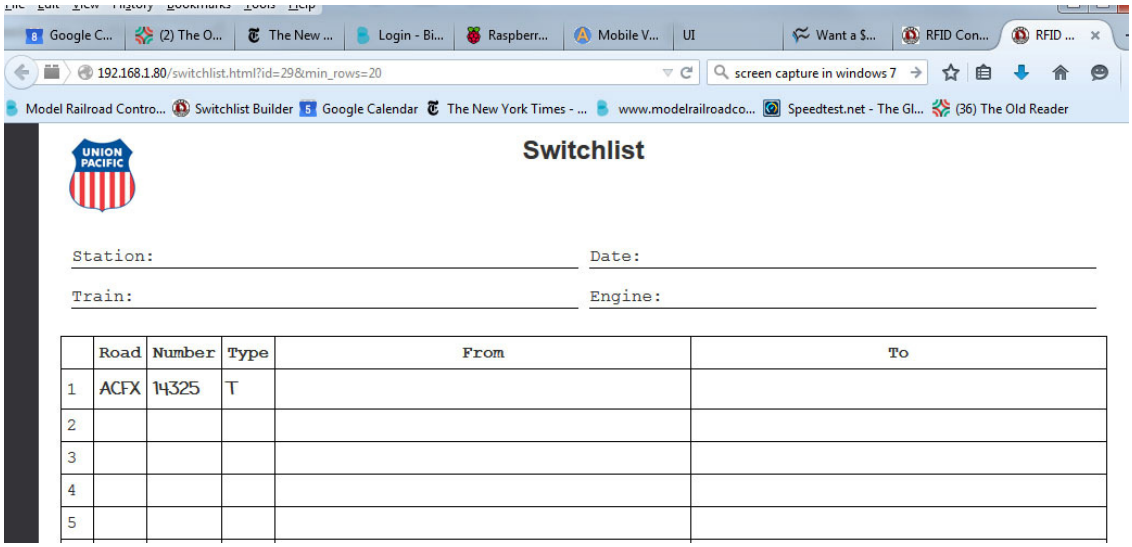

Figure 13 - Switchlist

Congratulations! You're on the air! You can print from the browser as you would print any webpage. You should connect a printer to the network or to a computer on the network.

A Couple more useful items:

Customizing the logo/Herald

You've noticed that the screens all show the Union Pacific Herald (I model the UP) and the favicon shows the GN herald (Chris is a Goat guy). You can add your own by going to the MANAGE LOGO tab. Make a copy of your art work at 77 x 77 pixels. The artwork is on the computer you're browsing from.

Setting the Time

To set the time you'll need to do a little Linux system administration and one tool. Use your browser and your favorite search engine to search for a piece of software called PuTTY , at *www.**putty**.org* . Putty allows you set up a telnet session into the RFID server. PuTTY can be run from your desktop (on the same network).

Start PuTTY:

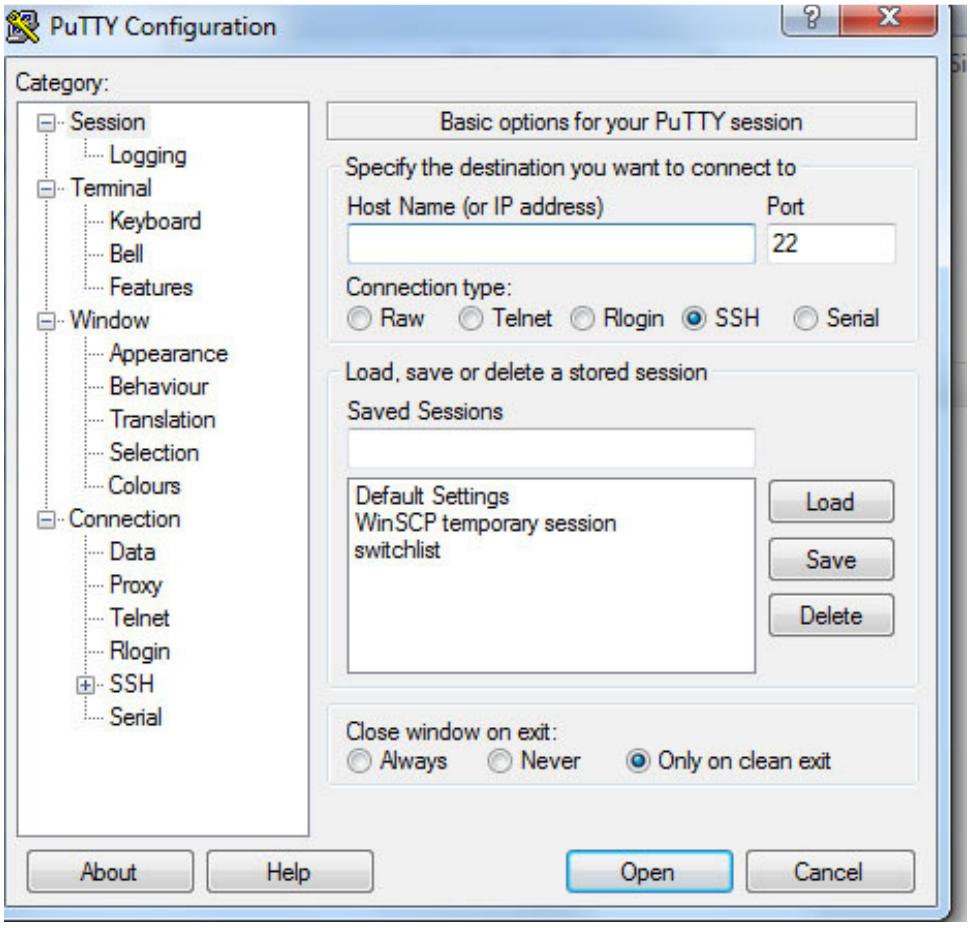

Figure 14 - Putty Home Screen

Enter the IP address of the RFID server in the Host Name box, 192.168.1.80 and click OPEN. A text window will open and ask for your user name. Enter “pi.”

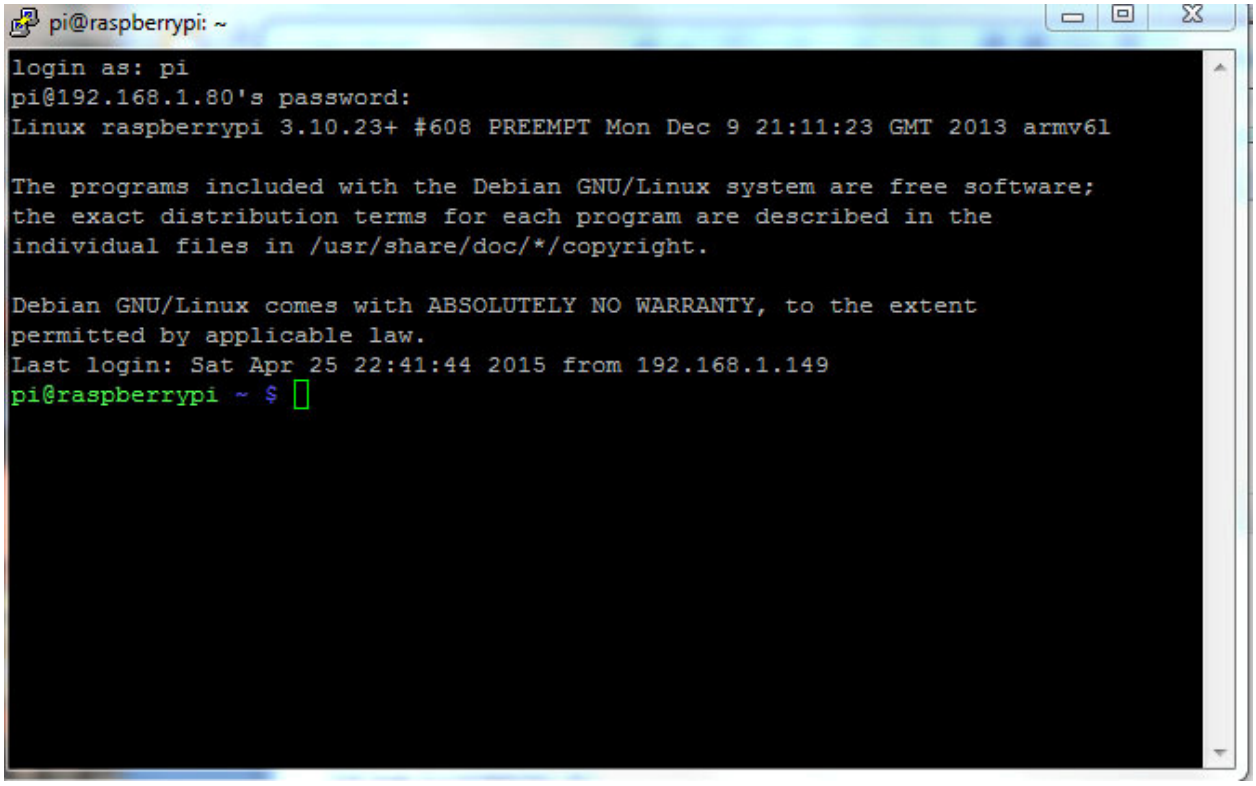

Figure 15 - Raspberry Pi login

Then the system will challenge you for your password, which is “raspberry”. Now here comes the Linux magic:

Type: sudo date –set=”2015-05-08 18:43:00” [return]. Obviously you will substitute the correct values for time and date.