Greenbriar Pool Club Dashboard Overview

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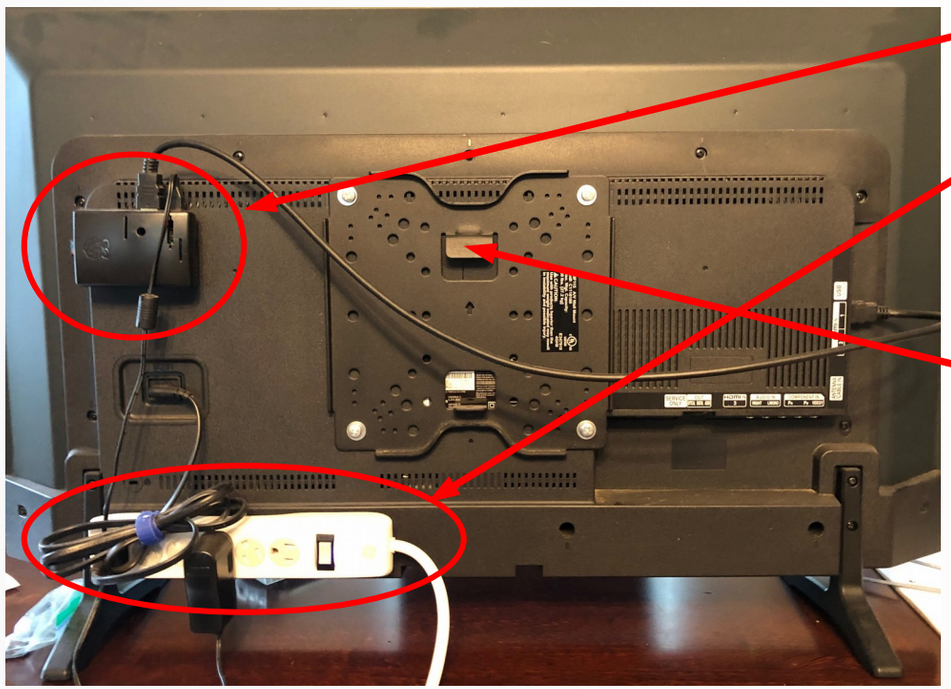
Front Desk Hardware



- Raspberry Pi 3 Model B mini-computer Velcor'd to the back of the TV
- A power strip is also Velcor'd to the back of the TV
- The power cords for both the Raspberry Pi and the TV are plugged into the power strip.
- There is a mounting bracket for attaching the TV to the wall mount across from the front desk
- The Raspberry Pi is connected to the TV using an HDMI cable
- The power strip is plugged into the outlet located on the wall near the TV wall mount
- A battery (2xAA) powered wireless keyboard with a track pad is "connected" to the Raspberry Pi with a USB dongle. This is how the guards interact with the Dashboard.
- TV remote control is used the power on/off the TV. The remote control uses 2xAAA batteries.

Software Components

The main application is a Python program (< 2000 lines) that runs “locally” on the Raspberry Pi. The program communicates to the following web based services.

- Dweet.io (send)
  - Every 2 seconds the main Dashboard application sends pool status information to this free web service. This data is then used for a web-based mini-dashboard so members can check the current pool status on the web.
- Twitter (send)
  - Pre-formatted Tweets can be sent using the Pool’s Twitter account when the operating status of the pool changes, for example when the pool closes due to thunder/lightning.
- Gmail (send)
  - A set of scripts on the Raspberry Pi generate a “Facility Load” plot and emails the plot and two log files to a small list of email address at the end of every day. A special *gbpool.raspberrypi@gmail.com* account was setup for this purpose. Scripts run automatically (cron job) at 23:30.
- Darksky.com (receive)
  - Receive weather data (current air temperature)

Web Mini-Dashboard

The web mini-dashboard is a custom website (http://enet.hopto.org/gbpool.html) that is currently hosted on a computer at my house.

- This situation is less than ideal for a number of reasons, so I welcome suggestions for a better solution.
  - I think ideally this web page should be hosted along with the rest of the Pool Club's website on SquareSpace.com, but, as far as I know, they will not host a web page with custom code, only pages you develop using their templates. I've never actually reached out to their help center to ask, so it might be worthwhile for someone to ask.
  - The next best thing is probably to find another service to host just this web page, which more than likely will be an additional monthly cost. Perhaps the best option is to go back to freeboard.io which will cost $12 per month. Going with freeboard.io has the benefit of not needing to maintain any of the code for the web page because they have a web GUI for building the dashboards.
  - I'm willing to help transition the web page and walk through the related code (javascript, html, json,css) with whomever takes on this task.

Identified Risks

- Moving and maintaining the web mini-dashboard – Once the site has been moved it shouldn't require much maintenance
- Dweet.io – If dweet.io disappears the web dashboard stops working
- Maintaining access to the Pool's twitter account – It's not out of the realm of possibility that they will stop allowing applications to send tweets.
- Maintain ability for the system to automatically send emails - gmail account security needs to be looked into more closely.
- Maintain access to Darksky.net – Apple purchased Darksky.net and is phasing it out. If this service goes away the only thing we lose is the weather data in the logs. We should be able to find another free web service to get the weather data.
- Understanding the handful of scripts that tie some of the functionality together on the Raspberry Pi.
- If the Raspberry Pi stops working it could be challenging to configuring a replacement. Guard user account would need to be created and I've made some configuration changes, like disabling the screen and power saver that would need to be replicated. I could work with someone to setup a backup Raspberry Pi.

Proposed Transition Plan

- Migrate the code repository from Bitbucket (private) to GitHub (public).
- As a learning exercise and to create a ready backup, the Greenbriar Pool Club purchases a new Raspberry Pi and someone works with me during the off-season to install the software and configure the system. Prices indicated below are from Micro Center’s website, tax not included.
  - Raspberry Pi 4 Model B - 2GB DDR4 ($34.99)
  - Raspberry Pi 4 Official 15W Power Supply ($7.99)
  - 16GB microSDHC Card ($3.99)
  - Micro HDMI to HDMI Cable ($5.99)
- Work to find a new home for the web mini-dashboard.