RaspberryPi Based Unattended SQM Station

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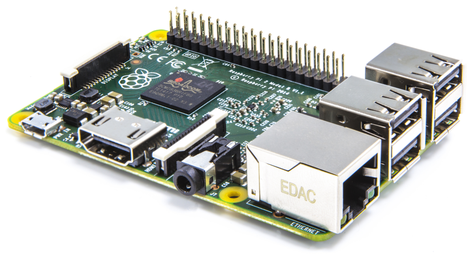
Summary



The present work aims at implementing a RaspberryPi based fully unattended dark sky measurement station, set up to provide measurements to the REECL SQM network. The idea is to have a computer with an SQM attached permanently measuring and serving data to an Internet accessible site.

Characteristics

- Low power consumption.
- Runs without human interaction.
- Reasonably robust: automated recovery from fails or notify them if it is not possible.
- Serve data to a remote cloud storage broker (`Storage Made Easy`), which syncronize it with the data–aggregator of the organization (`DropBox`).
- Notify administrative information by mail (recoveries, detected issues, ...)
- *SSH* and port redirection for remote access, maintenance and configuration.

Issues and Comments

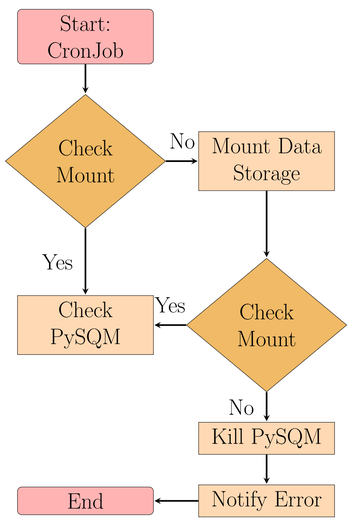
- *PySQM* is a very useful software, although it was not designed with performance in mind. It presents a very poor input/output performance that demands a very high bandwidth consumption when cloud storage is used. Some system tuning is neccesary to avoid this issue.
- Usual cloud concerns: data privacy, security and service disponibility.
- Internet link and access to local router is required.

Main Components

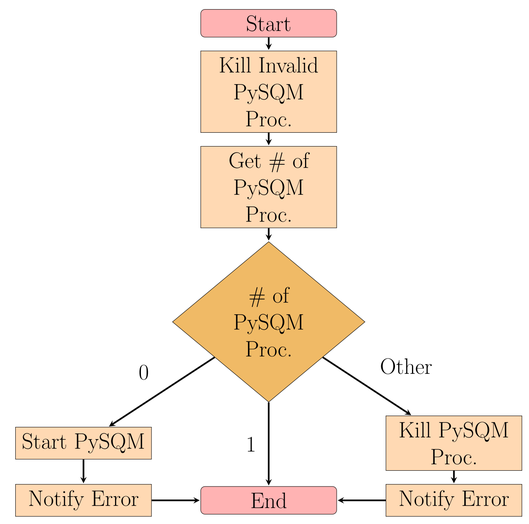
Notifications

Cloud Storage

Check Storage



Check PySQM



PySQM

The main process to run is *PySQM* software:
The *UCM* open source software to read, plot and store data from *SQM* photometers.
Nievas Rosillo, Miguel and Zamorano Calvo, Jaime (2014).
`http://eprints.ucm.es/25900/`

Deployment

- "Asociación astronómica de Vigo (ASTROVIGO)" chose this project for implementation in the "Observatorio astronómico de Forcarei" in May 2015.
- Hardware (Raspberry Pi, SQM and external holder) was funded by "ASTROVIGO".
- The "Observatorio astronómico de Forcarei" is currently a member of the "*REECL SQM network*".
- Since deployment, some tuning and improvements were made. Currently, the system is running smoothly without human interactions.
- Data access: `http://rdlazaro.info/sqm/`

Quick Start

- You can download a quasi-ready to run system disk image template.
- Full information and procedure at: `http://rdlazaro.info/compu-Raspberry_Pi-unattended_SQM.html`.

References

- **PySQM**: `https://guaix.fis.ucm.es/PySQM`
- **REECL SQM network**: `https://guaix.fis.ucm.es/splpr/SQM-REECL`
- **Observatorio astronómico de Forcarei (OAF)**: `http://fc3.es/observatorio/`
- **Raspberry Pi**: `https://www.raspberrypi.org/`
- **Sky Quality Meter - LU**: `http://www.unihedron.com/projects/sqm-lu/`
- **Cloud Storage Broker** (`Storage Made Easy`): `https://eu.storagemadeeasy.com/`
- **ASTROVIGO**: `http://www.astrovigo.es/`

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