

Raspberry Pi as a LabVIEW Target

Brian Eng
2022-05

Raspberry Pi as a LabVIEW Target

This memo presents the use of a Raspberry Pi single board computer (SBC) as a National Instruments (NI) LabVIEW target allowing it to run Virtual Instruments (Vis) developed on computer running the LabVIEW Development System. In past LabVIEW projects the code would either run locally on the computer itself or target specific NI branded hardware, e.g. cRIO for the Hall B Gas System or PXI for the Hall D Solenoid DAQ. With the availability of the LabVIEW Hobbyist Toolkit hobbyist level hardware such as Arduino, BeagleBone and Raspberry Pis can be set as the target for development. Hobbyist hardware is generally lower cost with the associated lower performance or modularity that the NI hardware offers so it will not be able to utilized in all situations, but rather in certain limited instances.

The issues faced when deploying this type of solution are the lack of documentation: mainly a handful of provided examples and an NI hosted forum. The first one was making sure all the software was compatible with each other, LabVIEW and the Raspberry Pi OS must be the 32-bit version (not 64-bit); LabVIEW due to the fact that the toolkit only supports 32-bit and the Raspberry Pi OS for the packages that need to be installed/running on the Pi in order for LabVIEW to see it as a target. The second issue encountered was fairly specific to the networking configuration of the Pi. Namely it was located on a subnet that only allows external access to websites that are on a proxy whitelist. Initially this presented itself as the Target Configuration software having an error of “No Internet Access” despite the fact that SBC did have access, it merely didn’t have access to the host required: labviewmakerhub.com (which is redirected to NI servers). Once the host had been added to the whitelist the Target Configuration software worked properly, Fig. 1. has an example screen showing the Pis Information after installation of the needed software on it.

- **Added NI Hobbyist Toolkit for LabVIEW 2021**
- **Raspberry Pis available as a target to run VIs**

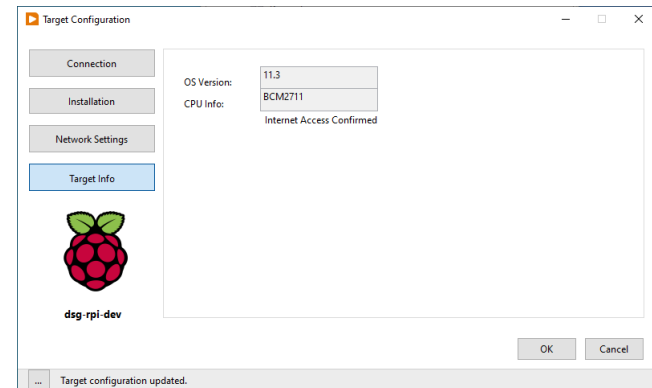


FIG. 1. Successful Target Configuration

Raspberry Pi as a LabVIEW Target

After successfully installing the base NI software on the Pi it becomes available as a target in a LabVIEW Project, see Fig. 2.

Further testing will be done to verify if there are any limitations to the specific Vis that can run on the Pi itself along with any performance issues.

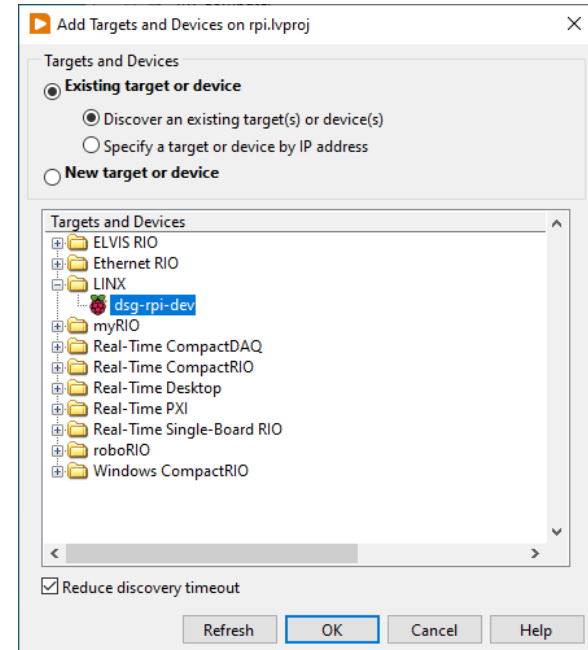


FIG. 2. Raspberry Pi available as target in Project