

Installing the OpenLCB Checker Software Basic Version

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1 Introduction

This document describes how to obtain and run a set of basic checks for OpenLCB nodes.

The checks are based on the Python ‘openlch’ module. More information on that can be obtained from its GitHub project site.

For more information on the checks, see the package documentation or the directory of checking plans.

2 Obtaining the Software

The software is distributed as a set of inter-connected Python source files.

2.1 Obtaining and Using via Git

If you’re using Git,

```
cd (where you want to put this)
git clone https://github.com/bobjacobsen/OlcbChecker.git
```

will create a OlcbChecker directory containing the most recent version of the software. This also contains git tags for the released versions.

2.2 Obtaining by Downloading a .zip File

You can get a download of the most recent released version by going to the project’s Github releases web page tag section ¹ and clicking the .zip or .tgz icon on the most recent

¹Linked above or see <https://github.com/bobjacobsen/OlcbChecker/tags>

release.

To get the very most recent version,² go to the project's Github main web page tag section, click the green Code button, and select "Download Zip".

Expand the downloaded file in a suitable place.

2.3 Prerequisites

You need to have Python 3.10 installed to run the program. Consult your computer's documentation for how to install that. Many computers already have it installed.

You have to manually install the 'openlcb' module by checking out the PythonOlcbNode repository from GitHub.³ To do this:

```
cd (where you want to put it)
git clone https://github.com/bobjacobsen/PythonOlcbNode.git
```

will create a PythonOlcbNode directory containing the most recent version of the software.

To run the CDI checks, the 'xmlschema' Python module must be installed. To do that, enter⁴

```
python3 -m pip install xmlschema
```

3 Configuring for Running

You need to have PYTHONPATH defined to include the PythonOlcbNode directory.⁵ In the Linux and macOS terminals, you can do this with

```
cd (your PythonOlcbNode directory)
export PYTHONPATH=$PWD
```

or you can place the equivalent line in your shell configuration file.

If you don't add this to your shell configuration file, you'll have to do that each time you start a terminal session.

Next

```
cd (your OlcbChecker directory)
```

²But if you want to stay current with development of the tools, you should probably be using Git.

³This will eventually be available via PIP, but not yet.

⁴This is the command for Linux nad MacOS; the Windows command may be different.

⁵Eventually, this will no longer be necessary, but not quite yet.

to get to the right directory for running the code.

To start the program:

```
python3.10 control_master.py
```

Depending on your Python installation, this simpler form may also work:

```
./control_master.py
```

4 Configuring the Checker Program

When you first start the program, you'll be shown a basic menu:

```
OpenLCB checking program
s Setup

0 Frame Transport checking
1 Message Network checking
2 SNIP checking
3 Event Transport checking
4 Datagram Transport checking
5 Memory Configuration checking
6 CDI checking

q Quit
>>
```

Type s and hit return to get the setup menu:

```
The current settings are:
hostname = None
portnumber = 12021
devicename = None
targetnodeid = None
ownnodeid = 03.00.00.00.00.01
checkpip = True
trace = 10

c change setting
h help
r return
>>
```

At a minimum, you should define how to connect to your OpenLCB network, and the Node ID of the device you want to check.

To change the Node ID, select the “change setting” option and work through the prompts:

```
>> c
enter variable name
>> targetnodeid
enter new value
>> 02.01.57.00.04.9A
The current settings are:
  hostname = None
  portnumber = 12021
  devicename = None
  targetnodeid = 02.01.57.00.04.9A
  ownnodeid = 03.00.00.00.00.01
  checkpip = True
  trace = 10

c change setting
h help
r return
```

```
>>
```

Get the proper value from either a label on the device, or from its documentation. ⁶

There are currently two ways to connect the program to your OpenLCB network:

1. Via a USB-CAN adapter, or
2. Via a GridConnect-format TCP/IP connection.

For a USB-CAN connector, define the devicename to be the address of the device in your computer, e.g. `/dev/cu.usbmodemCC570001B1` or `COM7`.

For a TCP/IP link, define the hostname to be the IP address or host name to be used for connecting.

You must specify one or the other of hostname and device name, but not both. When you enter one, the other will be set to None.

When done with setup, select `r` for return.

⁶Some checks, but not all, can determine the node ID themselves if you leave the value as None. This is only reliable if there’s just one node on your OpenLCB network. Note that some OpenLCB hubs add a node of their own to the node being checked.

You'll be asked if you want to save changes. Select y to save and n to skip saving.

```
>> r
```

Do you want to save the new settings? (y/n)

```
>> y
```

Stored

Quit and restart the program to put them into effect

OpenLCB checking program

```
s Setup
```

```
0 Frame Transport checking
```

```
1 Message Network checking
```

```
2 SNIP checking
```

```
3 Event Transport checking
```

```
4 Datagram Transport checking
```

```
5 Memory Configuration checking
```

```
6 CDI checking
```

```
q Quit
```

```
>>
```

Quit and restart the program to put your changes into effect.

5 Running Checks

5.1 Required Equipment

It's generally best to have the device being checked (DBC) as the only device on the OpenLCB network.

If a direct CAN connection will be used, a supported USB-CAN adapter is required ⁷. Connect the adapter to your computer as indicated in its instructions. Connect the adapter to the DBC using a single UTP cable and attach two CAN terminators.

If a TCP/IP GridConnect connection will be used, configure the DBC to connect to the TCP/IP hub when restarted. Note that if the DBC is providing the hub for the connection and restarting the DBC breaks connections to that hub, several of the checks will indicate problems due to the connection breaking.

⁷The checker has been checked with the RR-CirKits LCC buffer-USB, but others with similar operational characteristics will probably work.

Provide power to the DBC using its recommended equipment and connections.

5.2 The Checking Sequence

The checks are categorized by the Standard they primarily check:

OpenLCB checking program

s Setup

- 0 Frame Transport checking
- 1 Message Network checking
- 2 SNIP checking
- 3 Event Transport checking
- 4 Datagram Transport checking
- 5 Memory Configuration checking
- 6 CDI checking

It's generally best to run them in order, as issues flagged by earlier checks may prevent later ones from running properly.

Once you select a section, you'll be presented with a sub-menu of the actual checks. These match the sections in the relevant plan document. For example:

Frame Transport Standard checking

- 0 Run all in sequence
- 1 Initialization checking
- 2 AME checking
- 3 Collision checking
- 4 reserved bit checking

"Run all in sequence" is usually a good starting point.

The checker may prompt you to reset/restart the node or to compare something to the node documentation. For example, the Initialization checking requests that you restart the node so that its start-up sequence can be checked for validity. It waits for about 30 seconds, and if it still hasn't seen anything, the check fails.

6 Technical Information

Your selected defaults are stored in the `localoverrides.py` file. The original values are stored in the `defaults.py` file.

Should something corrupt the `localoverrides.py` file, you can delete it, restart the program, and re-enter your configuration.