

Ubuntu14.04 系统下安装 ros_barrett_package 教程

备注：

安装记录：环境通用 pc 平台，i3，i5 及 amd 的处理器计算机上都试过。操作系统 ubuntu14.04+ros indigo。

1 ros 安装完成后，sudo rosdep init 做环境的初始化。

```
rosdep update
```

```
echo "source /opt/ros/indigo/setup.bash">> ~/.bashrc
```

```
source ~/.bashrc
```

2 从网站下载及解压各种包

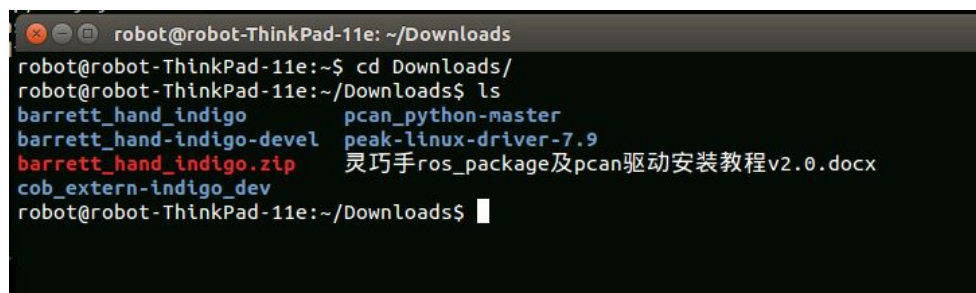
http://wiki.ros.org/barrett_hand

<http://wiki.ros.org/libpcan>

https://github.com/ipa320/cob_extern

https://github.com/RobotnikAutomation/pcan_python

<http://www.peak-system.com/fileadmin/media/linux/index.htm>



```
robot@robot-ThinkPad-11e: ~/Downloads
robot@robot-ThinkPad-11e:~$ cd Downloads/
robot@robot-ThinkPad-11e:~/Downloads$ ls
barrett_hand_indigo          pcan_python-master
barrett_hand-indigo-devel    peak-linux-driver-7.9
barrett_hand_indigo.zip      灵巧手ros_package及pcan驱动安装教程v2.0.docx
cob_extern-indigo_dev
robot@robot-ThinkPad-11e:~/Downloads$
```

驱动如未安装成功也可以先安装 BHand package。从 GitHub 下载相应的 package（注：教程用的 indigo 64 版本，所以下载了相应的 "barrett_hand-indigo-devel" 安装包）

2.1 按照常规方法来安装 ros package，需要先创建一个工作空间，然后用 ros 提供的 catkin_make 命令来安装 package，以下为安装步骤：

创建 catkin 工作空间：用户名 robot，具体的路径和用户名相关。

```
$ mkdir -p /home/robot/catkin_bhand/src 并进入 src 目录
```

```
$ catkin_init_workspace
```

```
$ cd catkin_bhand/
```

```
$ catkin_make
```

```
$ source catkin_bhand/devel/setup.bash
```

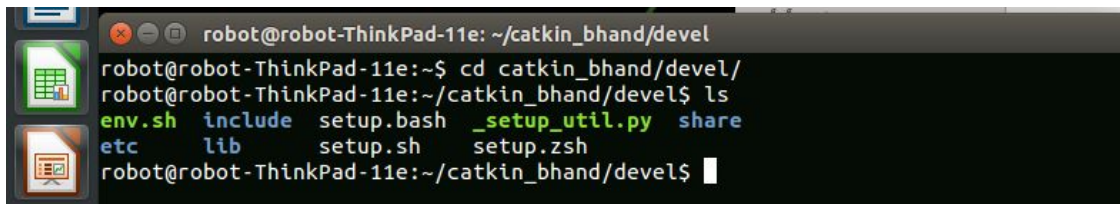
PS:

这句话最好加在.bashrc 中，否则可能会出现

error:can't load . . . have you "make" in []

```
$ cp -r /home/robot/Downloads/barrett_hand-indigo-devel  
/home/robot/catkin_bhand/src/  
$ catkin_make
```

（注：重新创建工作空间后需要用 source 命令临时设置环境变量，不然会提示找不到相应的命令。Setup.bash 的路径/命令如下）

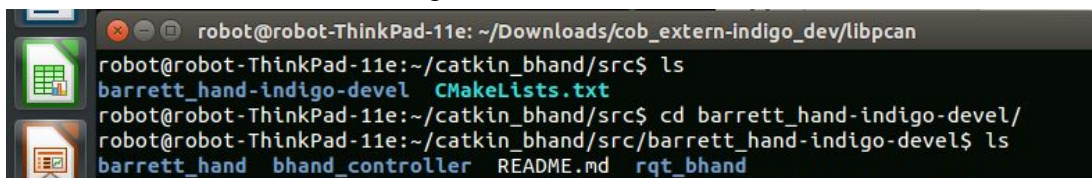


```
robot@robot-ThinkPad-11e: ~/catkin_bhand/devel  
robot@robot-ThinkPad-11e:~$ cd catkin_bhand/devel/  
robot@robot-ThinkPad-11e:~/catkin_bhand/devel$ ls  
env.sh  include  setup.bash  _setup_util.py  share  
etc     lib       setup.sh   setup.zsh  
robot@robot-ThinkPad-11e:~/catkin_bhand/devel$
```

```
$ source /home/robot/catkin_ws/devel/setup.bash
```

2.2 安装 BHand_package 下各功能包的方法:

在安装好解压 barrett_hand-indigo-devel 之后，工作空间中会有以下文件夹:



```
robot@robot-ThinkPad-11e: ~/Downloads/cob_extern-indigo_dev/libpcan  
robot@robot-ThinkPad-11e:~/catkin_bhand/src$ ls  
barrett_hand-indigo-devel  CMakeLists.txt  
robot@robot-ThinkPad-11e:~/catkin_bhand/src$ cd barrett_hand-indigo-devel/  
robot@robot-ThinkPad-11e:~/catkin_bhand/src/barrett_hand-indigo-devel$ ls  
barrett_hand  bhand_controller  README.md  rqt_bhand
```

进入到每个包目录下，分别对其进行编译，安装:

```
$ cd catkin_bhand/src/barrett_hand-indigo-devel/  
$ cd barrett_hand/  
$ cmake CMakeLists.txt  
$ make  
$ sudo make install
```

```
$ cd bhand_controller/  
$ sudo python setup.py install  
$ cmake CMakeLists.txt  
$ make  
$ sudo make install
```

PS:

ImportError: No module named genmsg

忽略错误，继续下一步

```
$ cd rqt_bhand/  
$ sudo python setup.py install  
$ cmake CMakeLists.txt  
$ make
```

```
$ sudo make install
```

3 Pcan 驱动安装方法

解压 cob_extern-indigo_dev 文件，并运行：

```
$ cd home/exbot/Downloads/cob_extern-indigo_dev/libpcan/
```

```
$ cmake CMakeLists.txt
```

```
$ make
```

ps:需要联网，下载了某些东西，要出现 fatal error: popt.h: No such file or directory

```
$ sudo make install
```

PS:

```
$sudo make install
```

```
make[3]: rospack: Command not found
```

```
Makefile.tarball:10: /download_unpack_build.mk: No such file or directory
```

```
make[3]: *** No rule to make target `/download_unpack_build.mk'. Stop.
```

```
make[2]: *** [CMakeFiles/build_libpcan] Error 2
```

```
make[1]: *** [CMakeFiles/build_libpcan.dir/all] Error 2
```

```
make: *** [all] Error 2
```

忽略错误，继续下一步

之后会生成一些文件夹，其中包括了‘build’文件夹。

回到之前下载及解压文件的目录下，Peak-linux-driver-7.15.2 为 CAN 转 USB 设备的驱动，不能直接安装，需要将其更名并移动到下面的路径：

```
$ cp -r peak-linux-driver-7.15.2 /home/exbot/Download/cob_extern-hydro_dev/libpcan/build/ peak-linux-driver-7.9
```

（cob_extern-indigo_dev 的 MakeFile 文件中默认的 Peak-linux-driver 版本为 7.9）

然后运行.sh 脚本进行,.安装驱动：

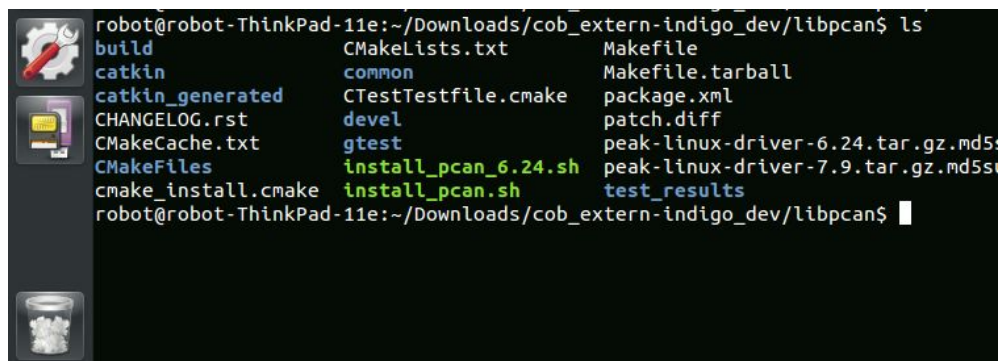
PS:如果出现其他问题，请直接将 **peak-linux-driver-7.15.2** 下面文件复制到 **7.9** 文件目录下进行替换，是可用的！

```
$sudo ./install_pcan.sh
```

PS:

```
insmod: ERROR: could not insert module pcan.ko: Unknown symbol in module
```

忽略错误，继续下一步

A terminal window screenshot showing the contents of the directory ~/Downloads/cob_extern-indigo_dev/libpcan. The prompt is robot@robot-ThinkPad-11e:~/Downloads/cob_extern-indigo_dev/libpcan\$. The output of the 'ls' command is as follows:

build	CMakeLists.txt	Makefile
catkin	common	Makefile.tarball
catkin_generated	CTestTestfile.cmake	package.xml
CHANGELOG.rst	devel	patch.diff
CMakeCache.txt	gtest	peak-linux-driver-6.24.tar.gz.md5
CMakeFiles	install_pcan_6.24.sh	peak-linux-driver-7.9.tar.gz.md5
cmake_install.cmake	install_pcan.sh	test_results

The prompt returns to robot@robot-ThinkPad-11e:~/Downloads/cob_extern-indigo_dev/libpcan\$.

接着手动加载驱动:

```
$ modprobe pcan
```

查询

```
ls -l /dev/pcan*
```

若此时插入 pcan 则可检测到 pcanusb0

4 编译 _pcan_module.so 模块, 进入到 pcan_python-master 文件夹下, 然后:

```
$ apt-get install swig
```

```
$ cd home/exbot/Downloads/pcan_python-master
```

```
$ make
```

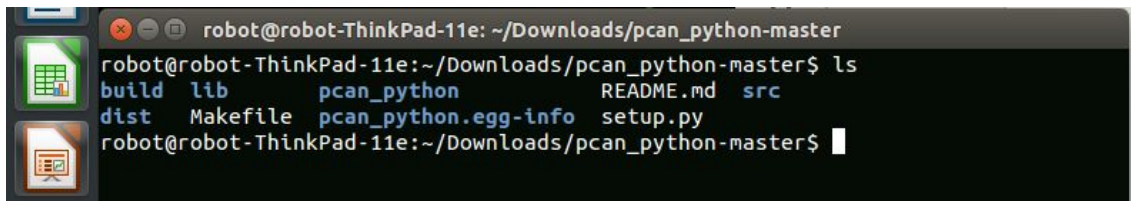
PS:

fatal error: libpcan.h :No such file directory

solution: 第 3 步没有完全编译通过, 重新复制解压出来后改名的 **peak-linux-driver-7.9** 到 **build** 文件夹下, 重新执行 3 中步骤。

PS: 可能提示需要安装 swig, 命令是 **sudo apt-get install swig**

```
$ sudo make install
```

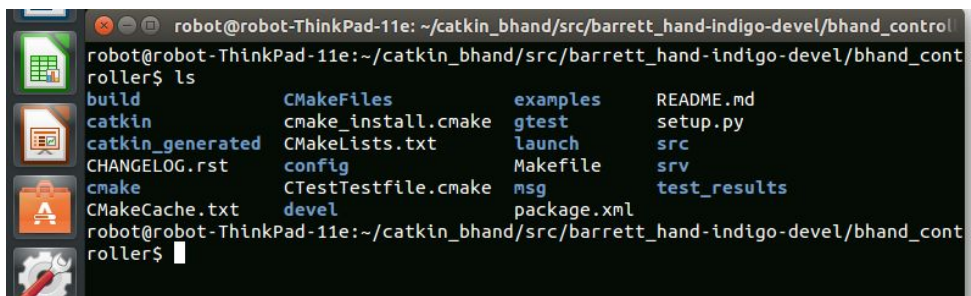


```
robot@robot-ThinkPad-11e: ~/Downloads/pcan_python-master
robot@robot-ThinkPad-11e:~/Downloads/pcan_python-master$ ls
build  lib      pcan_python  README.md  src
dist   Makefile  pcan_python.egg-info  setup.py
```

详见: https://github.com/RobotnikAutomation/pcan_python

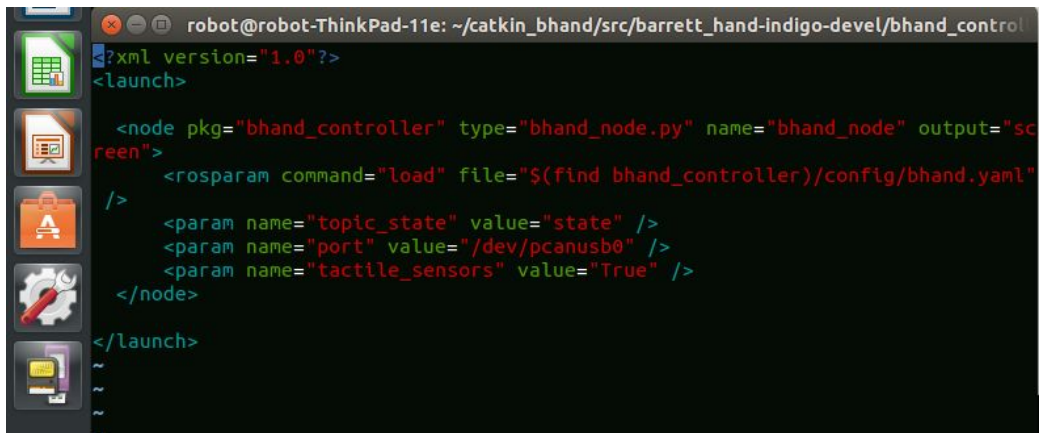
5 通过 launch 文件登陆各节点

例, Bhand_controller 节点



```
robot@robot-ThinkPad-11e: ~/catkin_bhand/src/barrett_hand-indigo-devel/bhand_controller
robot@robot-ThinkPad-11e:~/catkin_bhand/src/barrett_hand-indigo-devel/bhand_controller$ ls
build          CMakeFiles          examples            README.md
catkin         cmake_install.cmake gtest              setup.py
catkin_generated CMakeLists.txt      launch             src
CHANGELOG.rst  config              Makefile           srv
cmake          CTestTestfile.cmake msg                test_results
CMakeCache.txt devel                package.xml
```

节点中包含的 can 口设备信息:



6 启动服务/运行方式:

```
$ cd /home/exbot/catkin_bhand/src/barrett_hand-hydro-devel/bhand_controller/devel
```

```
$ source setup.bash
```

```
$ export PYTHONPATH=/home/robot/Downloads/pcan_python-master/lib/:$PYTHONPATH
```

ps:最好将该语句加入到.bashrc 中, 否则会提示找不到 pcan_python module

```
$ roslaunch bhand_controller bhand_controller.launch
```

PS:

ERROR: cannot launch node of type [bhand_controller/bhand_node.py]: can't locate node [bhand_node.py] in package [bhand_controller]

solution: 重新删除工作空间, 重新建立。

新开一个命令行:

```
$ rosservice call /bhand_node/actions "action: 1"
```

此时 node 便会连接机器人完成初始化, 然后将灵巧手指移动到初始位置。调用后回复 True 才代表初始化成功, 否则多尝试两次, 不返还 true 则证明配置不正确。

PS:

若出现 **error:can't load[] Have you "make" in []**

将 **source home/robot/catkin_bhand/devel/setup.bash** 添加到.bashrc 重新开终端运行

Note: 其它一些可能会用到的命令:

```
$ sudo apt-get -f install  
$ sudo apt-get install swig
```

1. install pyyaml: (<http://pyyaml.org/wiki/PyYAMLDocumentation>)
- 1.1 wget <http://pyyaml.org/download/pyyaml/PyYAML-3.01.tar.gz>
- 1.2 tar zxvf PyYAML-3.01.tar.gz
- 1.3 cd PyYAML-3.01 && python setup.py install