

# Test a robot with wired connection

## From Tech United Eindhoven

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This document describes how to make a wired connection to a TURTLE to perform several tests. For example, do a ballhandling demo without using a wireless connection. This is useful during a tournament for example when a wireless connection is not allowed!

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## Connect wired

For the connection a switch (preferably a Gigabit switch) is required. The gray 3COM switches are suitable for this purpose. First switch of the power to the TURTLE. Next connect three cables to the switch:

- One from the TURTLE's pc to the switch
- One from the Beckhoff stack to the switch
- One to your Devpc.

Power on the TURTLE again and make sure three lights on the switch light up and the lights on the ethernet ports of the TURTLE's pc, beckhoff stack and Devpc light up as well. Wait for the famous "click" sound when motion starts, this should still work.

## Edit scripts

Two scripts need a little edit for the test.

- First edit the wirednet script by executing in a terminal:

```
robocup@devpcX:~$ sudo gedit /etc/Robocup/wirednet
```

In this file replace the last line with:

```
ifconfig eth0 up 10.0.0.X netmask 255.255.0.0 broadcast 10.0.0.255
```

Where the X is a number depending on your devpc. This number equals 110 + your Devpc number. For example Devpc 18 will have 128 here. Save and close the file.

- Next edit the macs file by executing:

```
robocup@devpcX:~$ sudo gedit /etc/Robocup/macs
```

In this file you need to replace the wireless ip-adres of the TURTLE with it's wired ip-adres which is listed further down in the file. For example if we are testing on TURTLE6 we need to edit this line:

```
turtle6 Wireless Mac: netmask 255.255.255.0 00:0e:35:66:74:9e 172.16.63.106
```

And change it to:

```
turtle6 Wireless Mac: netmask 255.255.255.0 00:0e:35:66:74:9e 10.0.0.106
```

Save and close the file

## Start testing

Now everything is setup and we are ready to test. Run robocup\_network again by executing:

```
robocup@devpcX:~$ sudo /etc/Robocup/robocup_network
```

In a terminal ssh to the turtle. It will ask you for confirmation since the RSA host key differs. Type "yes" and press enter. When on the TURTLE, make sure you are a super user and execute in this order:

```
root@turtle6:~# killall comm_watch  
root@turtle6:~# killall comm  
root@turtle6:~# comm eth1
```

The communication is now running via the wired connection. You are now able to open a new terminal, ssh to the TURTLE and do all kinds of tests. You can even launch the trc by executing:

```
robocup@devpcX:~$ sudo su  
root@devpcX:# trc -wired
```

Remember though, that it will still ask for confirmation in the terminal everytime you start or stop the software of the TURTLE, so type "yes" when doing so.

## When finished

When finished, simply power off the TURTLE. Remove the network switch and connect the cables as before, so only one ethernet cable from the TURTLE's pc to the stack. Power on the TURTLE again and

everything on the TURTLE is now back to normal again. If you would do this during a match, the TURTLE will now automatically come back on the Refbox pc's trc again and can resume the match! On your devpc execute the following commands in this order:

```
robocup@devpcX:~$ sudo su
root@devpcX:# cd /home/robocup/svn/trunk/src/Turtle2/Tools/scripts
root@devpcX:# ./copy_scripts
root@devpcX:# /etc/Robocup/robocup_network
```

And your Devpc is back to normal again too!

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