





# CS-541 Wireless Sensor Networks

**Contiki Crash Notes** 

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Prof Panagiotis Tsakalides, Dr Athanasia Panousopoulou, Dr Gregory Tsagkatakis





### WINDOW OS USERS: Contiki 3.0 available <u>here</u> (INSTANT for WINDOW OS)

#### 1. DO NOT START THE VM YET.

- 2. Download the FTDI Drivers available <u>here</u>.
- 3. Depending on the version of your Windows **READ** the instructions at the respective installation guide (available <u>here</u>) to install the FTDI drivers on your computer.







#### WINDOW OS USERS (cont')

4. After the successful install of the mote on your computer, verify that it has been assigned with a comport number at the device manager



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#### WINDOW OS USERS (cont')

- 4. Start the VM and log in
- 5. Locate on the VM menu the option for connecting to a USB device



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#### WINDOW OS USERS (cont')

4. Press Connect. You should see the USB device enabled on your VM menu, e.g.



5. Open the command line terminal and add user to the dialout group: sudo addgroup user dialout

LOG out and LOG back in for the command to take effect.





# LINUX USERS (only)

5. Plug a mote on a usb port. Add user (logged on Ubuntu) to the dialout group:

#### sudo addgroup <user> dialout

<user> = the user currently logged in Linux

LOG OUT and LOG BACK IN in order for the command to take effect.





 Copy contiki-3.0-hy541 folder into a working directory where you have read/write access, e.g. your linux home directory

🔞 InstantContiki2.6.1 - VMware Player (Non-commercial use only)									
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7. Check the executable access of: msp430-bls-linux and serialdumplinux located at:

#### \$CONTIKIHOSTFOLDER/contiki-3.0-hy541/tools/sky

- where \$CONTIKIHOSTFOLDER is the folder containing contiki-3.0-hy541
- Right click on the files -> Properties -> Permissions -> "Allow executing as program" option





8. Open a terminal and change to the directory \$CONTIKIHOSTFOLDER/contiki-3.0-hy541/examples/helloworld

9. Type the following command for compiling and uploading hello-world program to your mote:

#### make TARGET=sky hello-world.upload





10. Let the program compile and upload. Check that you see the following sequence of messages printed on your terminal.

```
user@instant-contiki: ~/contiki-3.0-hy541/examples/hello-world
File Edit View Search Terminal Help
+++++ Erasing /dev/ttyUSB0
MSP430 Bootstrap Loader Version: 1.39-telos-7
Use -h for help
Mass Erase...
Transmit default password ...
+++++ Programming /dev/ttyUSB0
MSP430 Bootstrap Loader Version: 1.39-telos-7
Invoking BSL...
Transmit default password ...
Current bootstrap loader version: 1.61 (Device ID: f16c)
Changing baudrate to 38400 ...
Program ...
42475 bytes programmed.
+++++ Resetting /dev/ttyUSB0
MSP430 Bootstrap Loader Version: 1.39-telos-7
Use -h for help
Reset device ...
Done
make[2]: Leaving directory `/home/user/contiki-3.0-hy541/examples/hello-world'
make[1]: Leaving directory `/home/user/contiki-3.0-hy541/examples/hello-world'
rm hello-world.co hello-world.ihex obj_sky/contiki-sky-main.o
user@instant-contiki:~/contiki-3.0-hy541/examples/hello-world$
             🍟 Ubuntu Software Center 🛛 🔄 user@instant-contiki: ...
```

#### Spr IF NOT CHECK TROUBLESHOOTING SECTION

- 11. Open a new command terminal window or tab (File/Open new tab).
- 12. Serialdump program: accessing the output of printf messages from your contiki application

make TARGET=sky MOTES=/dev/ttyUSB0 login





If you see the following output:

user@instant-contiki:~/contiki-3.0-hy541/examples/hello-world\$ make TARGET=sky M OTES=/dev/ttyUSB0 login fatal: Not a git conscitory: '\_\_\_\_\_ git'

Congratulations ©! You have successfully configured CONTIKI-3.0 and compiled your first program

IF NOT check the troubleshooting section





- 1. Getting a permission error when trying to upload code to the mote
- a. Make sure that after you added <user> at dialout group you have logout out and back in to your linux account.

OR

b. Change the ownership of the device (this will not have effect if you log out and then back in, i.e. only works for the only for the current working session)

sudo chown <user> /dev/ttyUSB\*





2. You can compile the program, but it does not upload to the mote, i.e. if during the execution of make TARGET=sky hello-world.upload you don't see:

Pile Edit View Search Terminat Help
+++++ Erasing /dev/ttyUSB0
MSP430 Bootstrap Loader Version: 1.39-telos-7
Use -h for help
Mass Erase...
Transmit default password ...
+++++ Programming /dev/ttyUSB0
MSP430 Bootstrap Loader Version: 1.39-telos-7
Invoking BSL...
Transmit default password ...
Current bootstrap loader version: 1.61 (Device ID: f16c)
Changing baudrate to 38400 ...
Program ...
42475 bytes programmed.

Check the permissions of contiki-3.0.-hy541 and make sure that:

a) The current user is the owner.

AND

b) The current user (owner) has execution rights.







- 2. You can compile the program, but it does not upload to the mote (cont')
- a) How to check that you (<user>) are the owner:

From your command terminal go to \$CONTIKIHOSTFOLDER/contiki-3.0hy541/tools/sky and then type:

#### ls –l

If <user> appears in the owner & group columns then you are the owner of the folder's contents

IF NOT, then type:

sudo chown -R <user> \*

(in this example <user>=user

ant	c-contiki:~/	CONTIK	L-3.0	)- U)	/541/e>	kampies/nello-world\$ cd//		
ant	t-contiki:~/	/contiki	i-3.0	)-hy	/541/to	ools/sky\$ ls -l		
2								
	user user	3061	Aug	24	2015	check-size		
	user user	4096	Aug	24	2015	lib		
-	user user	389	Aug	24	2015	Makefile		
-	user user	7588	Aug	24	2015	motelist-linux		
-	user user	1543	Aug	24	2015	motelist-macos		
<	user user	446514	Aug	24	2015	motelist-windows.exe		
<	user user	68624	Aug	24	2015	msp430-bsl-linux		
<	user user	81920	Aug	24	2015	msp430-bsl-windows.exe		
-	user user	1180	Aug	24	2015	plot-size		
-	user user	974909	Aug	24	2015	python23.dll		
-	user user	4096	Mar	25	13:24	serial		
-	user user	9923	Aug	24	2015	serialdump.c		
-	user user	14922	Nov	б	2013	serialdump-linux		
<	user user	24342	Aug	24	2015	serialdump-windows.exe		
rsit	user user	4096	Aug	24	2015	uip6-bridge		
an	an contilien, contiki-3.0-hy541/tools/sky\$							

- 2. You can compile the program, but it does not upload to the mote (cont')
- b) Change the execution rights of the owner
- At the \$CONTIKIHOSTFOLDER/contiki-3.0-hy541/tools/sky type

sudo chmod –R u+x \*

And then **Is –I** to check the executable permissions of the folder

		nt-contikt:~/	CONTIN	L-3.0	9-nj	y541/e>	kampies/nello-worldş cd/
	user@inst	nt-contiki:~,	/contiki	i-3.0	∂-hy	y541/to	ools/sky\$ ls -l
	total 163						
	-rwxrr-	1 user user	3061	Aug	24	2015	check-size
	drwxr-x	2 user user	4096	Aug	24	2015	lib
	-rwxrr-	1 user user	389	Aug	24	2015	Makefile
	-rwxrr-	1 user user	7588	Aug	24	2015	motelist-linux
	-rwxrr-	1 user user	1543	Aug	24	2015	motelist-macos
	-rwxr-xr-	1 user user	446514	Aug	24	2015	motelist-windows.exe
	-rwxr-xr-	1 user user	68624	Aug	24	2015	msp430-bsl-linux
	-rwxr-xr-	1 user user	81920	Aug	24	2015	msp430-bsl-windows.exe
	-rwxrr-	1 user user	1180	Aug	24	2015	plot-size
	-rwxrr-	1 user user	974909	Aug	24	2015	python23.dll
	drwxr-x	2 user user	4096	Mar	25	13:24	serial
	-rwxrr-	1 user user	9923	Aug	24	2015	serialdump.c
	-rwxrr-	1 user user	14922	Nov	6	2013	serialdump-linux
24	-rwxr-xr-	1 user user	24342	Aug	24	2015	serialdump-windows.exe
)T	drwxr-x	3 user user	4096	Aug	24	2015	uip6-bridge
	user@inst	nt-contiki:~,	/contiki	L-3.0	)-h	v541/to	ools/sky\$

- 3. You get a permissions error when executing the login command
- i.e., make TARGET=sky MOTES=/dev/ttyUSB0 login
- (a) Make sure that you have execution access on the serialdump-linux (see steps above)

OR

(b) Try with sudo:

sudo make TARGET=sky MOTES=/dev/ttyUSB0 login

4. You get an device not found error when executing the login command

i.e., make TARGET=sky MOTES=/dev/ttyUSB0 login

Type:

Is –I /dev/ttyUSB\* to see which is the serial device id of your mote and use that address for the MOTES macro. E.g. if the Is –I /dev/ttyUSB\* command return as device id /dev/ttyUSB1, then

#### make TARGET=sky MOTES=/dev/ttyUSB1 login



