Guide on deploying Software to myRIO with Eclipse

Disclaimer: This guide is written based on the assumption that you already knew how to import or set the Eclipse environment to do cross compile the code correctly . If not , please look at other guide/help to find out how to setup import a project or make a cross compile project for myRIO .

Another disclaimer is that , if you're already familiar with lab 2 and the whole idea how to execute the code on myRIO using Eclipse , you don't need this guidance.

Now let assume that you have a workspace with a perfect project which already compiled to either debug or release binary . For the sake of this document , let's assume that it is in Debug build --> the binary is in Debug folder.

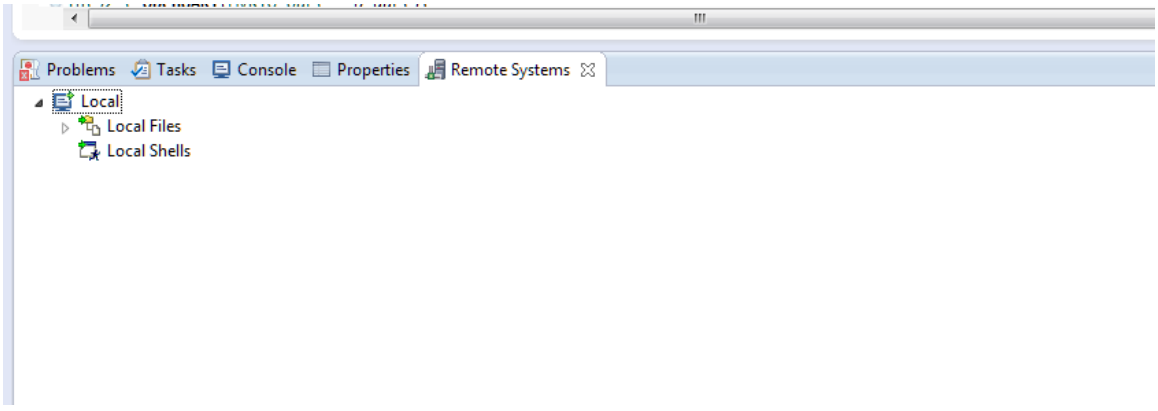
1/ Set up a remote Target :

Q: Why should we do that ?

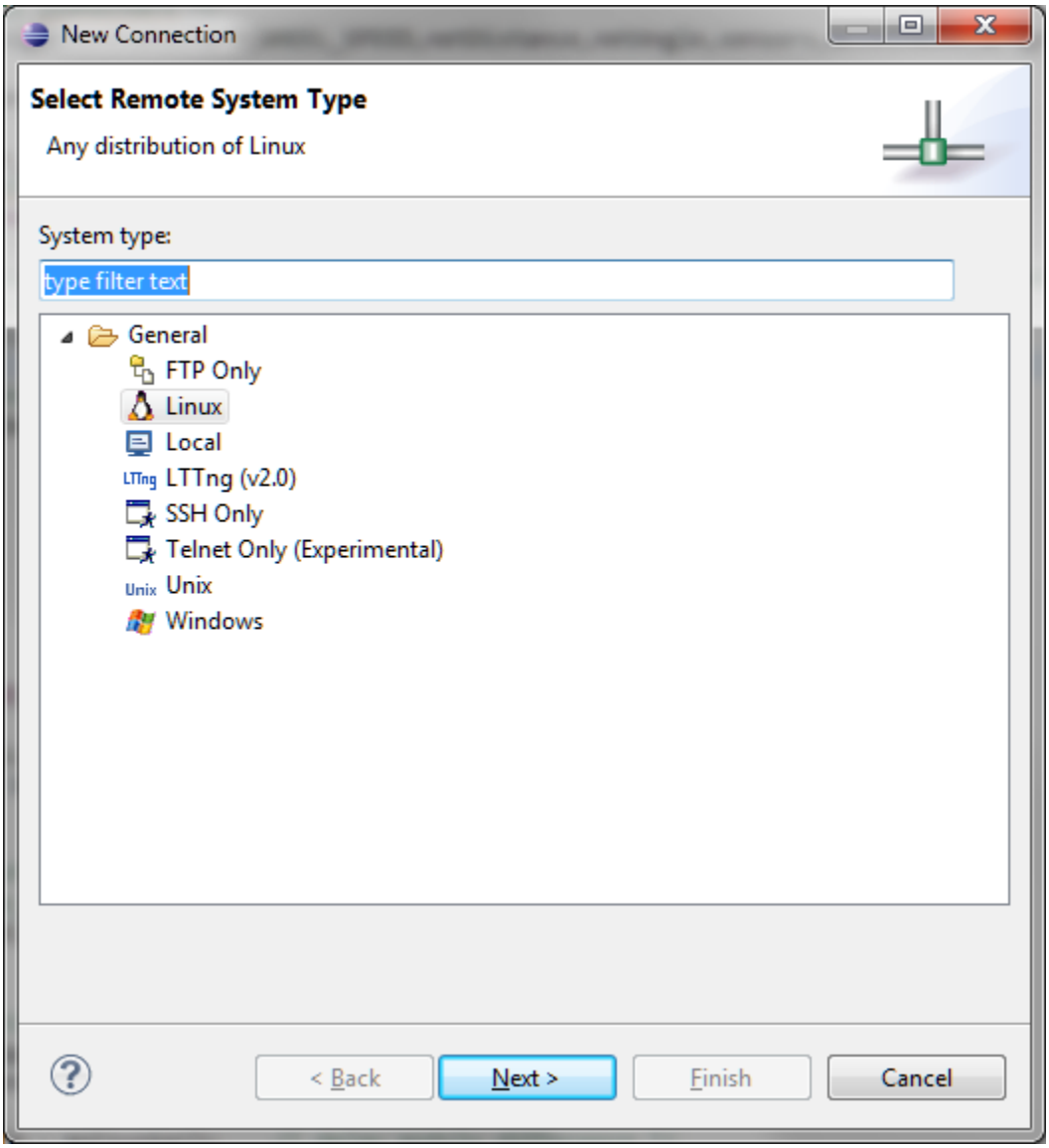
A: Since myRIO is not "local" it is a network target . Even though , there's a USB attach to your computer but it is a network USB adapter built in . So it is appear as a network target from your development computer .

When you plugin the myRIO there's will be always an IP address : **172.22.11.2** .

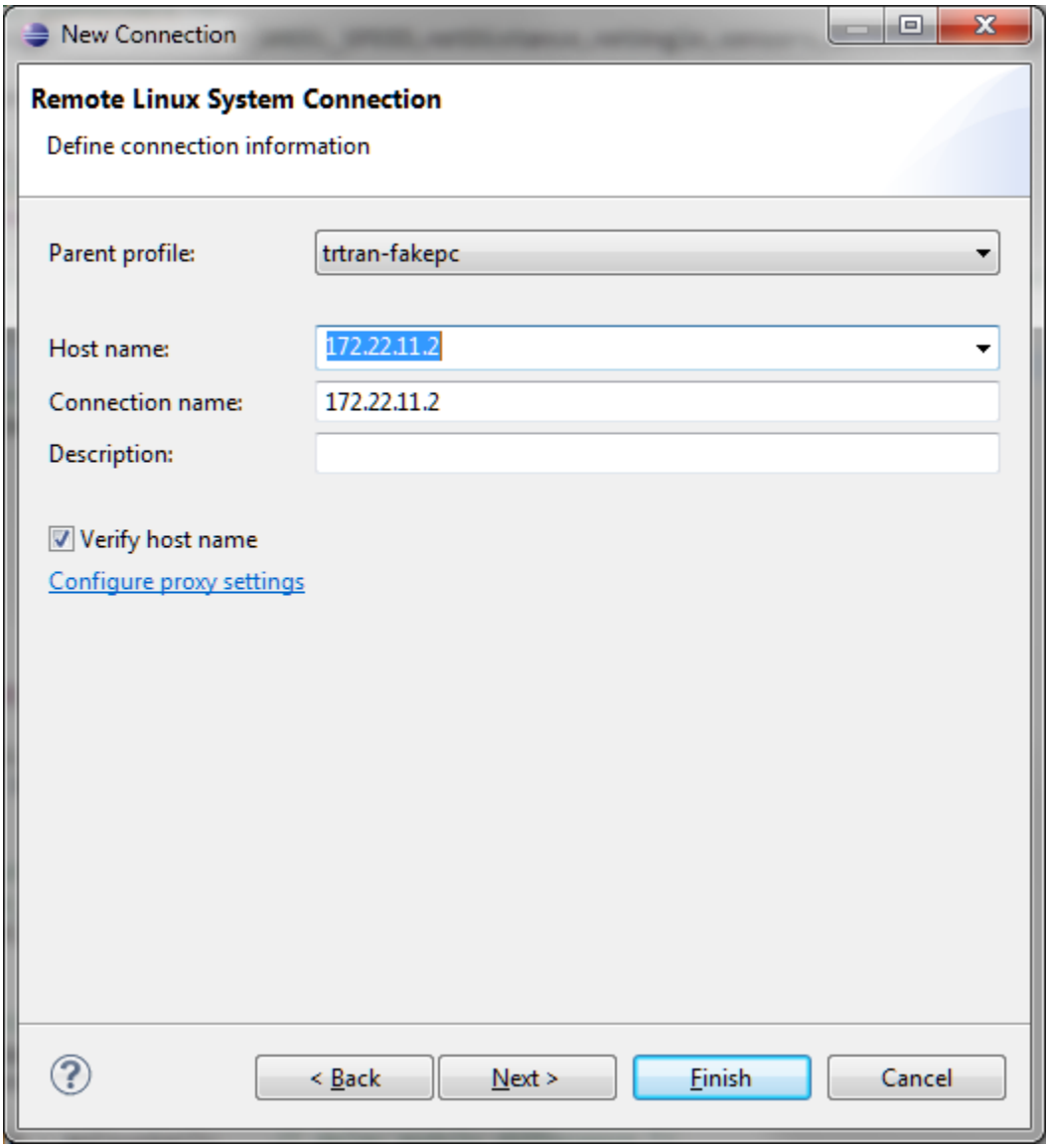
From Eclipse , select Window--> Show View ---> Others --> Remote Systems -->Remote Systems



Right click on empty space in the Remote Systems and select "New Connection ..."

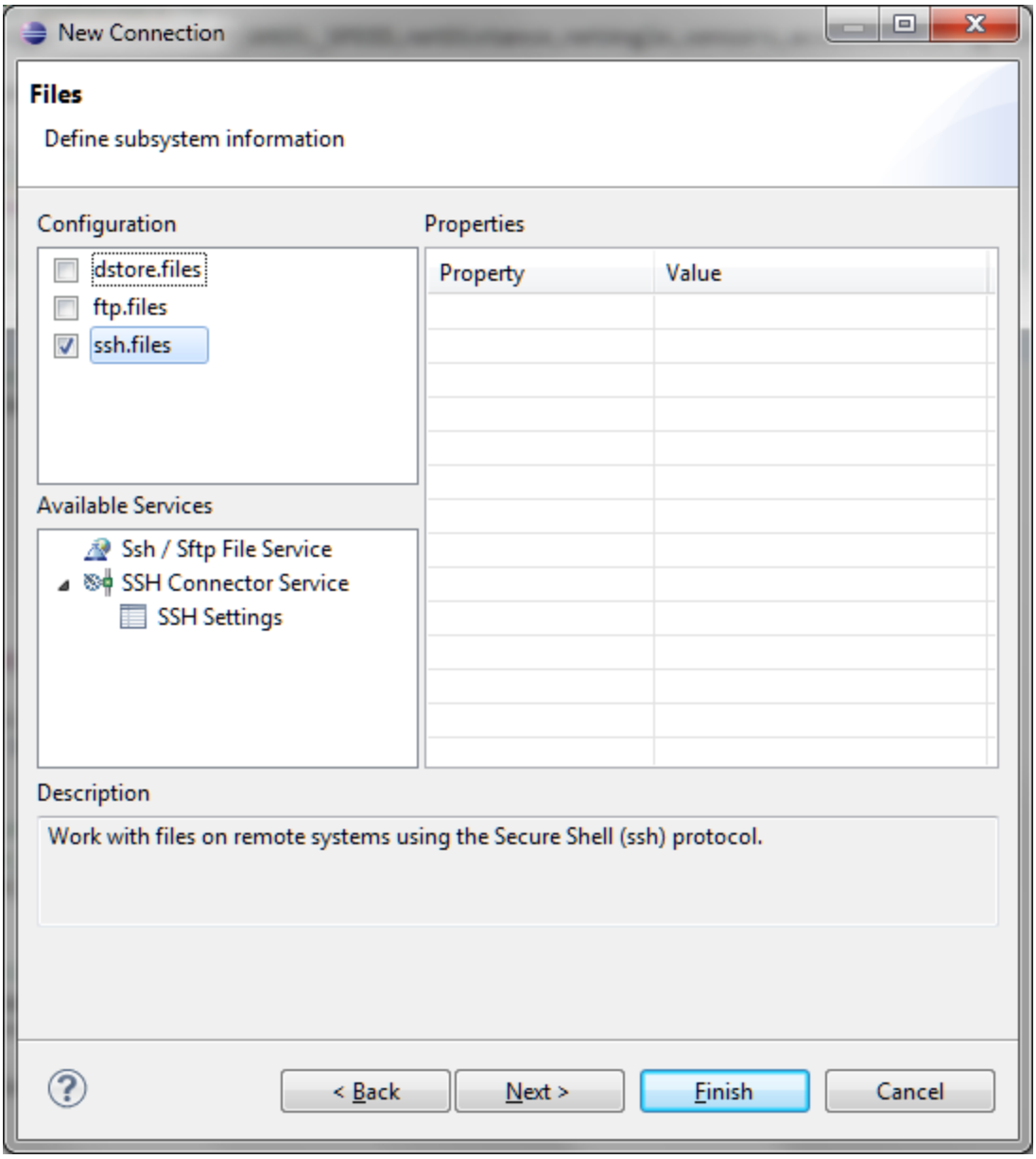


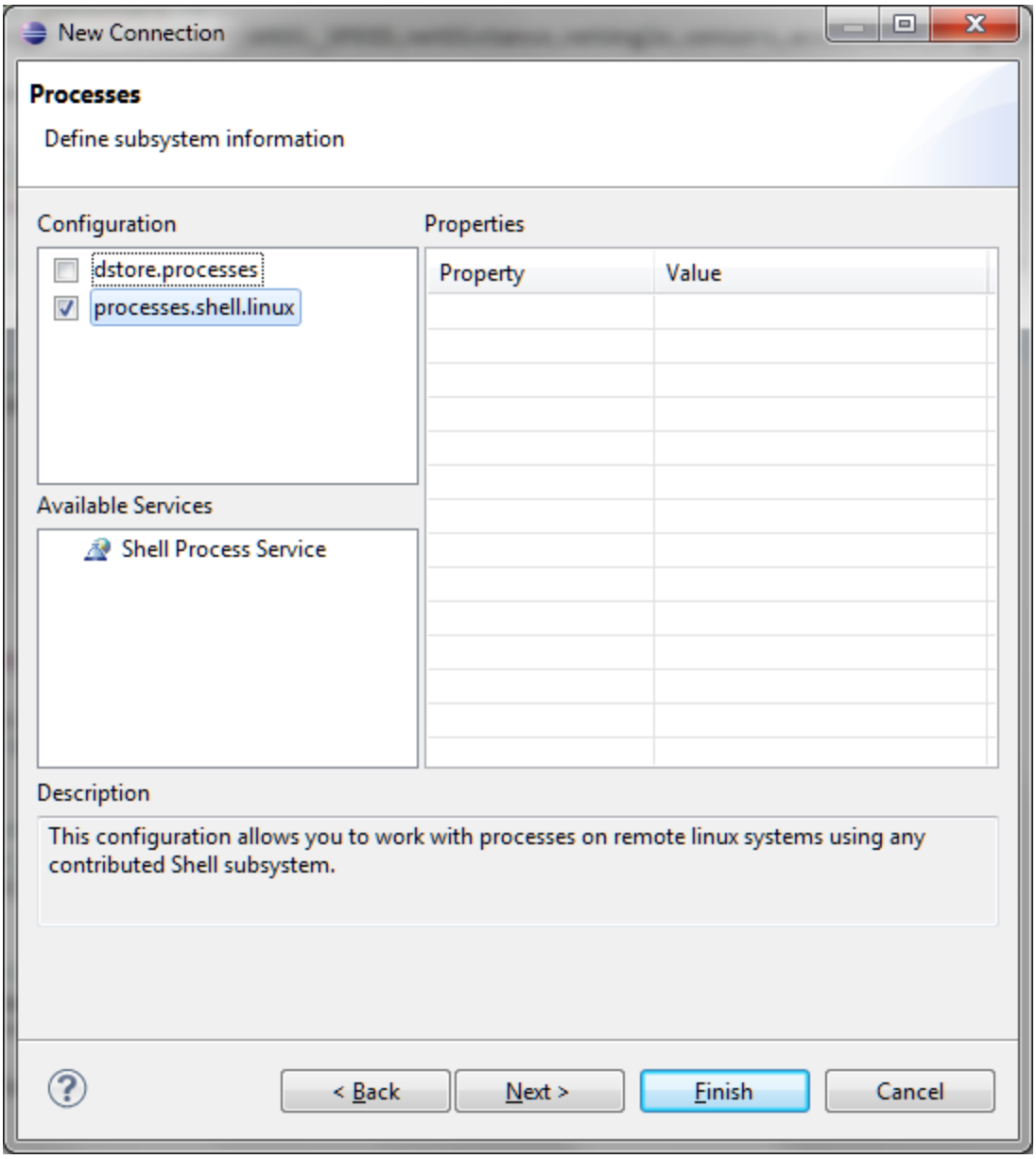
Select "Linux" in "New Connection" Wizard .

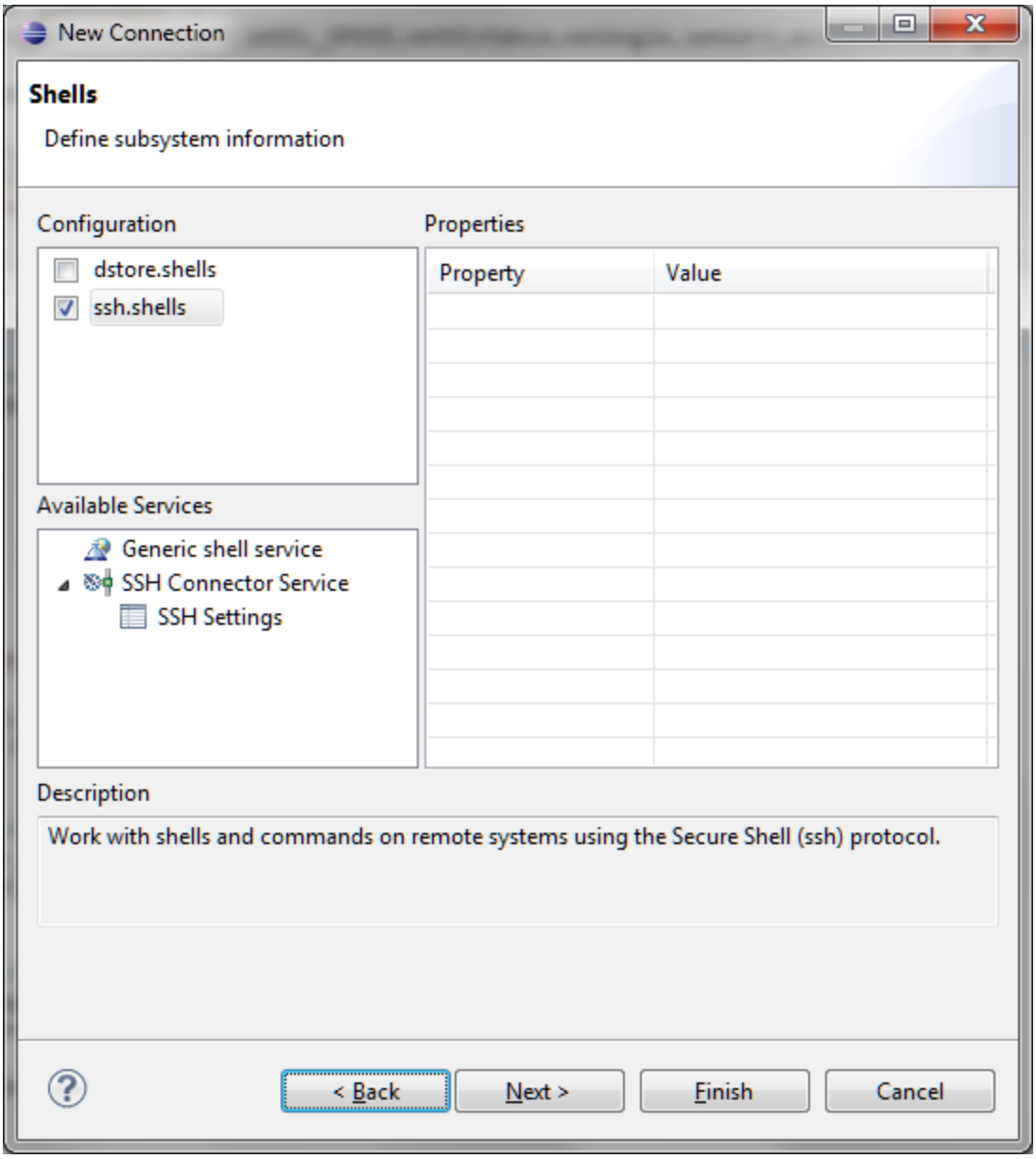


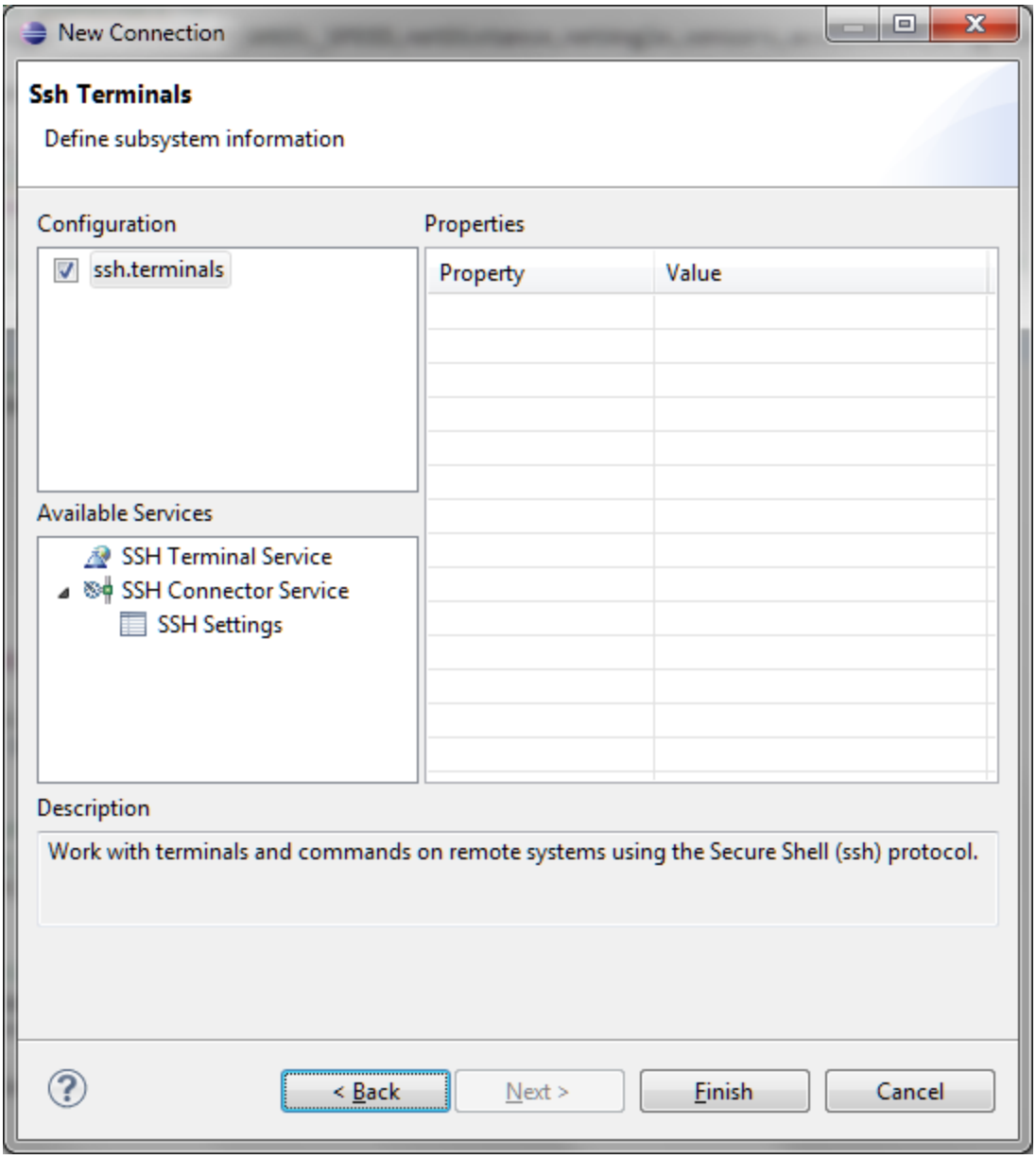
Type the IP address of the myRIO , in this case it will be "172.22.11.2"

On the next 4 steps follow the bellow figures to set correct settings

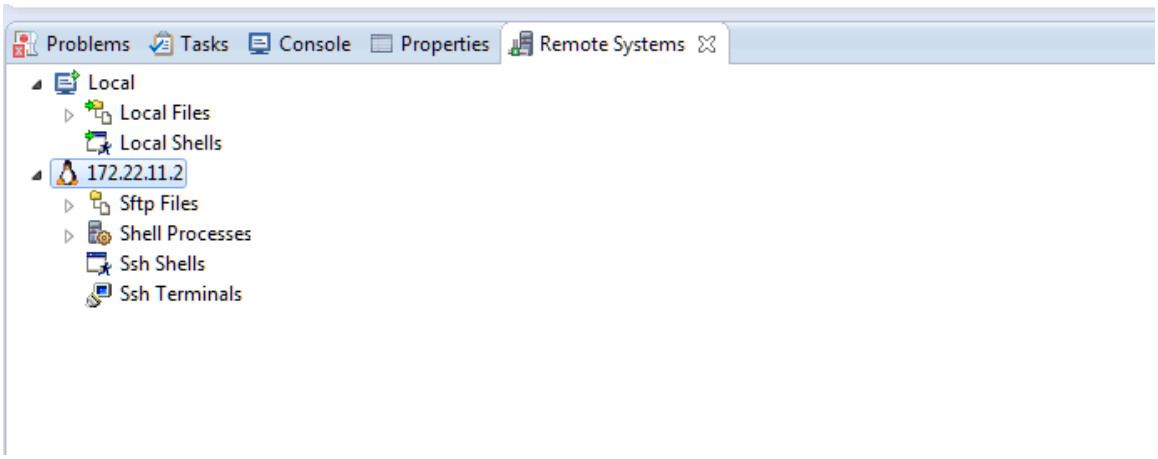

New Connection
Files
Define subsystem information
Configuration
dstore.files
ftp.files
ssh.files
Properties
Property
Value
Available Services
Ssh / Sftp File Service
SSH Connector Service
SSH Settings
Description
Work with files on remote systems using the Secure Shell (ssh) protocol.
< Back
Next >
Finish
Cancel


New Connection
Processes
Define subsystem information
Configuration
dstore.processes
processes.shell.linux
Available Services
Shell Process Service
Properties
Property
Value
Description
This configuration allows you to work with processes on remote linux systems using any contributed Shell subsystem.
< Back
Next >
Finish
Cancel

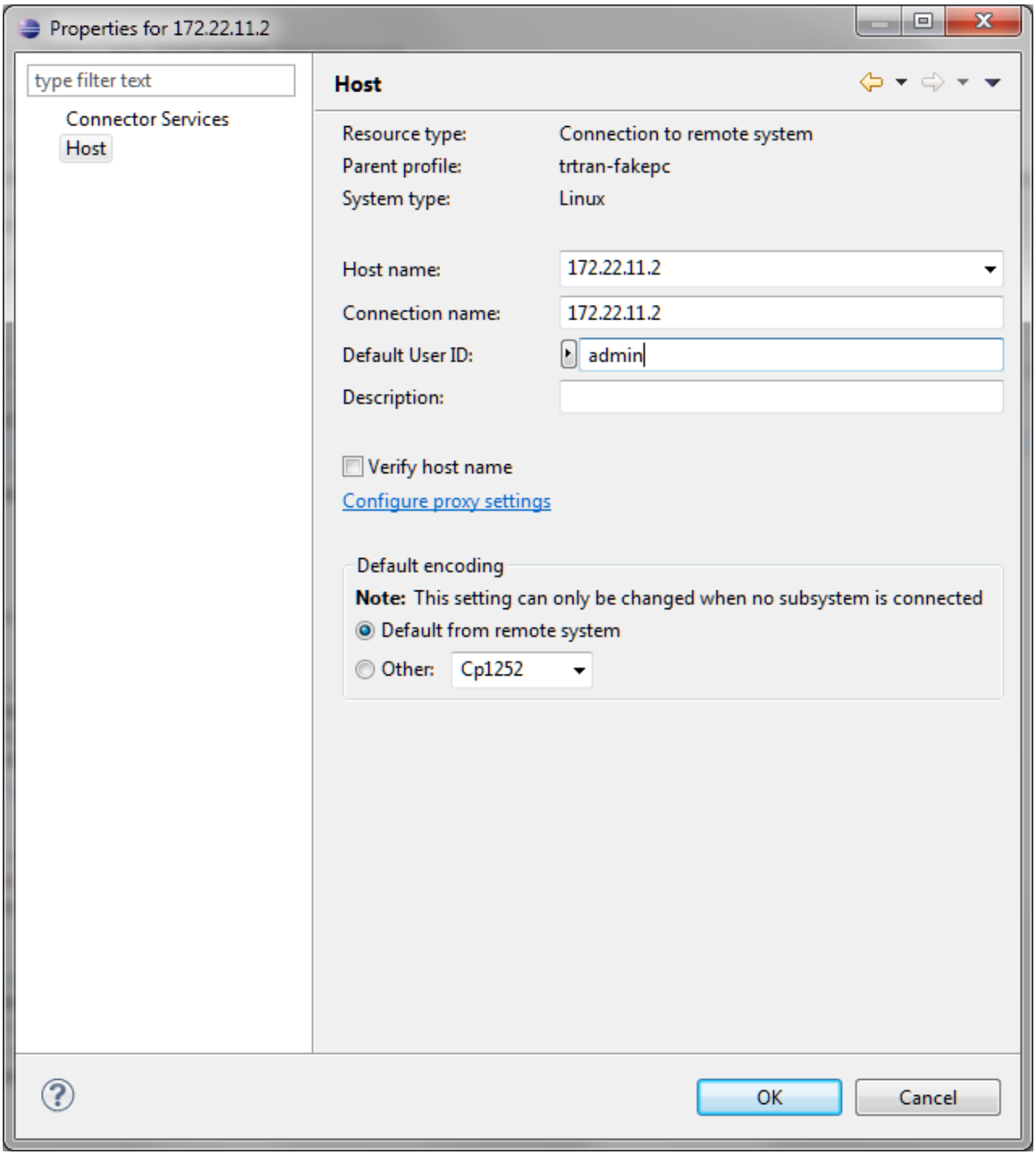

New Connection
Shells
Define subsystem information
Configuration
dstore.shells
ssh.shells
Properties
Property
Value
Available Services
Generic shell service
SSH Connector Service
SSH Settings
Description
Work with shells and commands on remote systems using the Secure Shell (ssh) protocol.
< Back
Next >
Finish
Cancel



Now you can "Finish"



Target will show as above figure . Right click on the target (little penguin) and select "Properties"

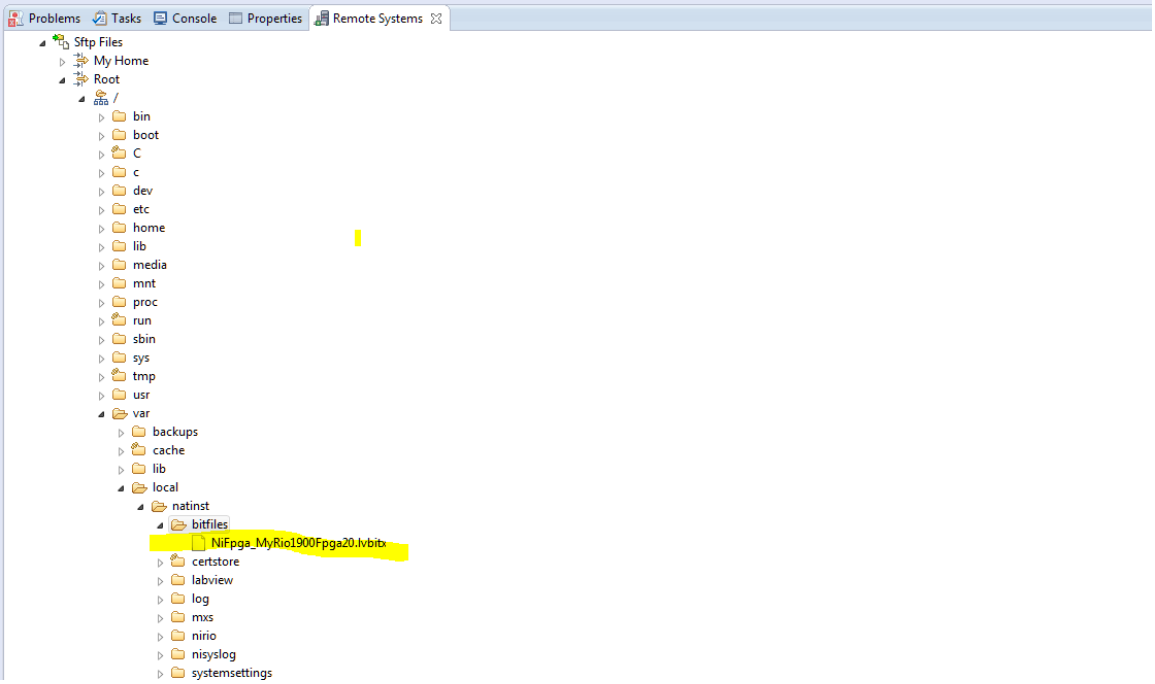


Select "Host" , click on the "Default User ID" then type in "admin" .

The default "admin" password is empty . Please don't change the password when you know how to .:)

Now you can right click on the little penguin and select "Connect" to your myRIO (I assume you already plug myRIO to the dev computer please double check). It will ask you to "enter password" just click ok since "admin" user is empty password. There will be couple pop-up asking you permission of keys ,creating folders , etc ... just click ok thru.

When this connect correctly you can search through the "Sftp files" under the target :



..Make sure there's "/var/local/natinst/bitfiles/NiFpga_MyRio1900Fpga20.lvbitx"

If it is not there , first create or make sure there's /var/local/natinst/bitfiles folder. Then drag "NiFpga_MyRio1900Fpga20.lvbitx" from kobukiNavigtaion-->myRIO-->NiFpga_MyRio1900Fpga20.lvbitx to /var/local/natinst/bitfiles

Q: Why should I do this ?

A: The C code that you use in will use this FPGA bitfiles to talk to the I/Os such as Accelerometer , LEDs, GPIO , ADC ,etc ... You need this to control those I/Os

Congratulation , you made a remote target from Eclipse.

2/ Run the Application from SSH terminal

Application name : kobukiNavigation .

Compile your code with no error then using drag and drop method on "Sftp files" view to copy your code to /home/admin . You can use "My Home" for the short cut .

Q: Can we just click run button ?

A: No .

Q: Why not?

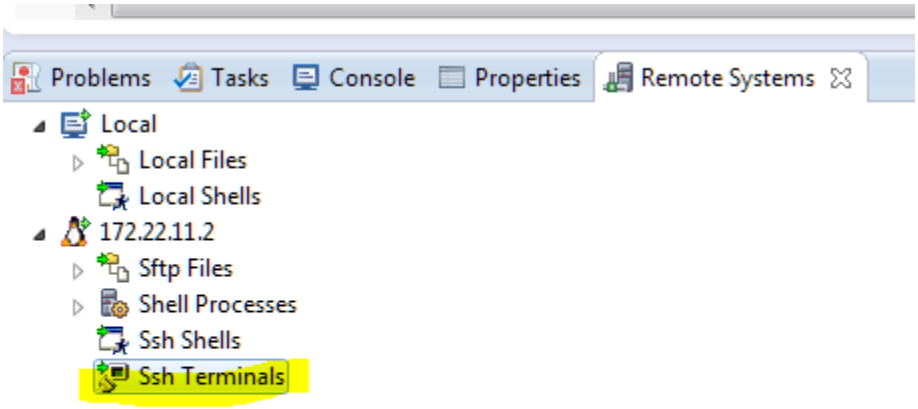
A: When clicking on the run button , Eclipse will automatically try to compile your code to the Dev machine in this case Windows 7 on x86 . That's not what we want we want to execute this code on Linux on ARM .

Q: But we did click run in the Lab 2

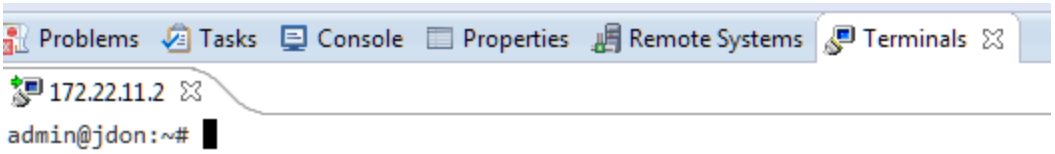
A: Yes that is the using remote target setup in run configurations. You can follow lab2 guidance to do so . But I found out that method is hard to control if things went wrong .

myRIO is one of the embedded Linux Target . In this case myRIO have NI Linux RT on it(to know more about NI Linux RT follow this link http://www.ni.com/white-paper/14627/en/)

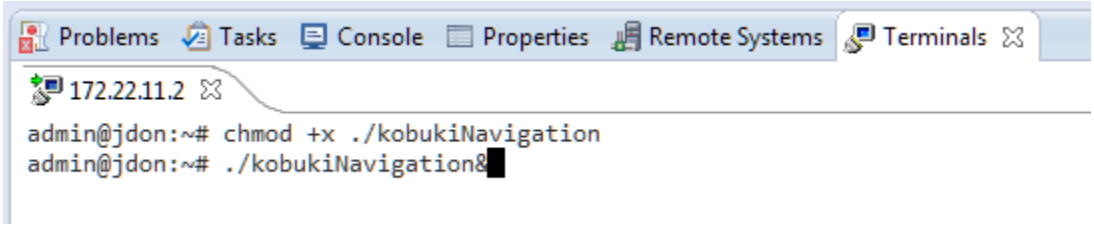
The advatage of Linux is that we can use it as regular computer with "cool" terminal . In this case it is SSH terminal .



To Run the application : right click on "SSh terminals" under the little penguin and select "Launch Terminal"



It will bring you similar above command prompt . Make sure you click on this window again to refocus before you can type anything (weird UI bug from Eclipse)



Type in those 2 commands above . They are (here that you can copy and paste :

chmod +x ./kobukiNavigation

./kobukiNavigation&

First command makes your compiled code executable on the Linux system . Second command is running kobukiNavigation and give back the control on the prompt .

If there's nothing wrong , congratulation . Your apps is running .. now unplug the cable .. move the robot to the floor and press B0 !

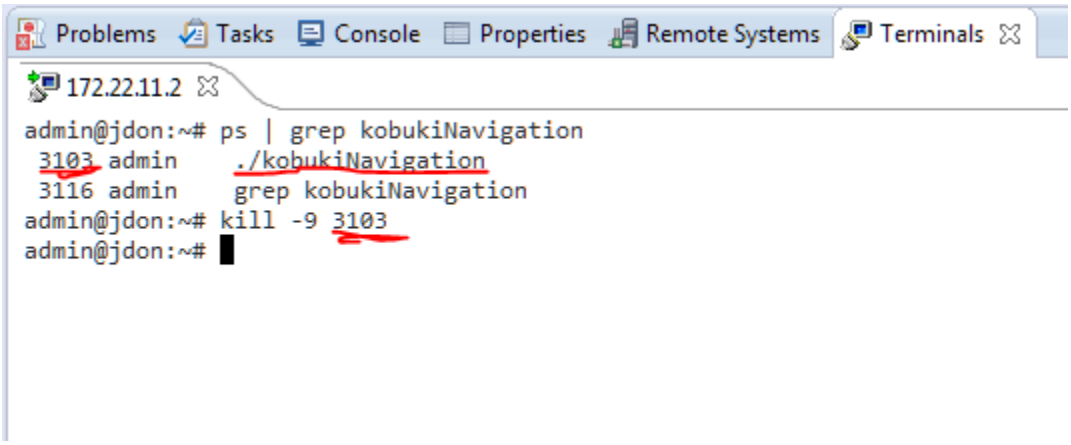
3/ Reconnect the target and load a new code :

This step is tricky since Eclipse doesn't do a very good job on managing these targets ,pretty much up to users .

And this is how I do it :

Reconnect your "little penguin"(Remote system right click and select connect the 172.22.11.2) again . When this success . you will need to relaunch the SSH terminal

Make sure kobukiNavigation app stop running , else kill it



Type those command above

the first command is finding out to see any running process name kobukiNavigation :ps | grep kobukiNavigation

Second command will kill with the Process ID (PID) that list with the ps command above.

When those commands execute correctly , drag your new files