

STEP BY STEP GUIDE ON HOW TO INSTALL NETWORK SIMULATOR (NS2) ON LINUX MACHINE (UBUNTU 8.10)

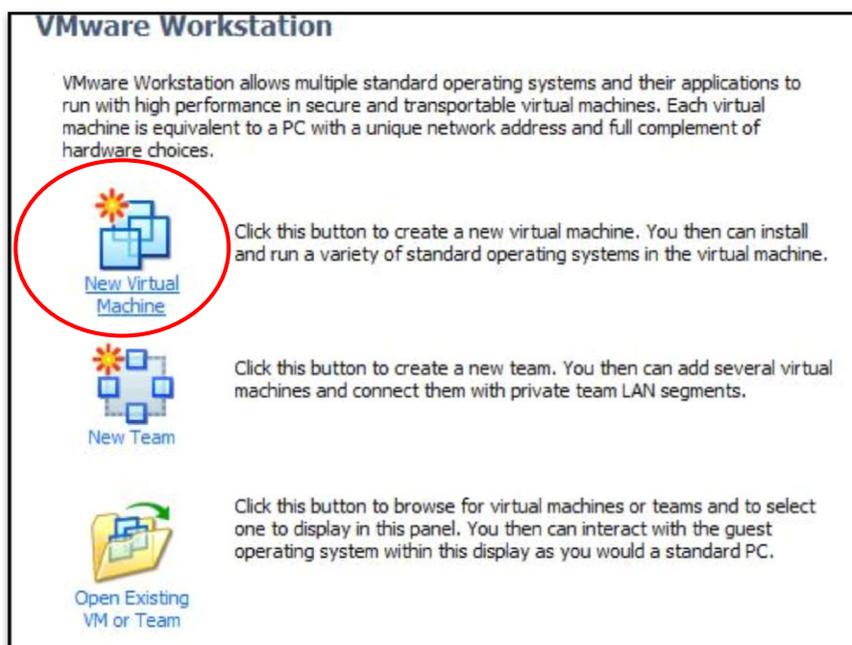
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I. INSTALL LINUX (UBUNTU 8.10)

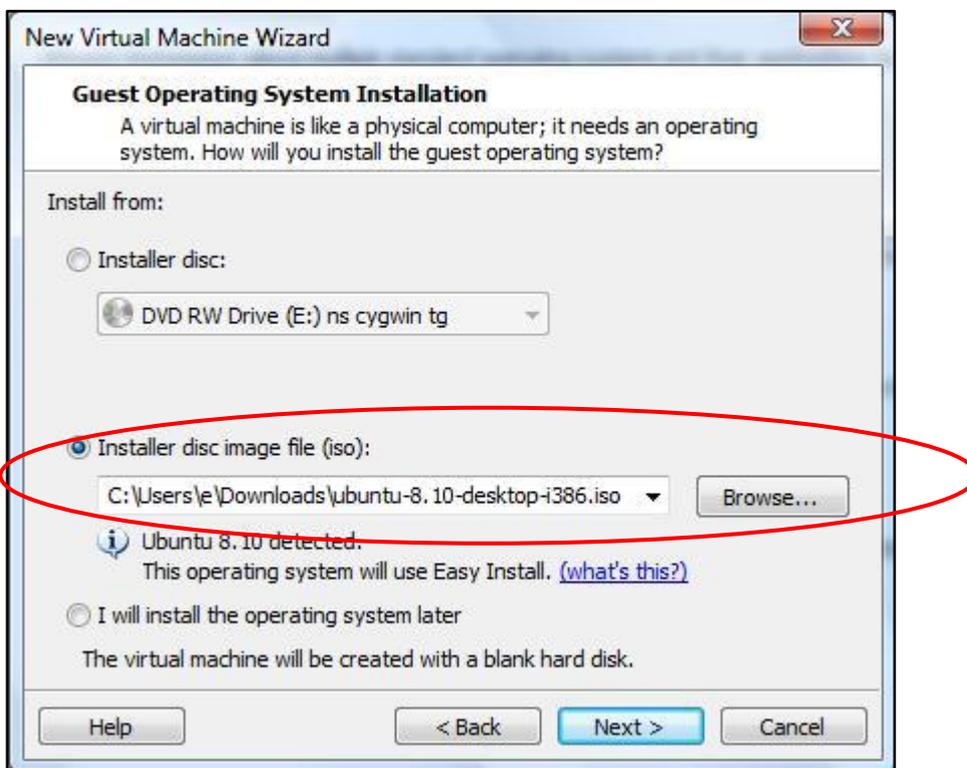
1. First of all, get the Linux OS image or CD. You can get it for free from Linux website <http://www.ubuntu.com/GetUbuntu/download>
Or, if you are looking for old versions, you can find it in:
<http://mirrors.isu.net.sa/>
2. If you are a windows user, then you have to download Linux in a separate partition, or use a virtual machine. My advice to you is to use a virtual machine. One of the best virtual machine SW is Vmware. You can buy it or Install trial Vmware Workstaion SW from:
<http://www.vmware.com/support/product-support/workstation/>
There are bunch of alternative Free SW to create Virtual machines, one of them is Virtual Box. You can download it from:
<http://www.virtualbox.org/wiki/Downloads>
3. In this manual, I will be using Vmware to create my virtual machine. To create a virtual machine:
Open the Vmware workstation -> Click "**New Virtual Machine**"



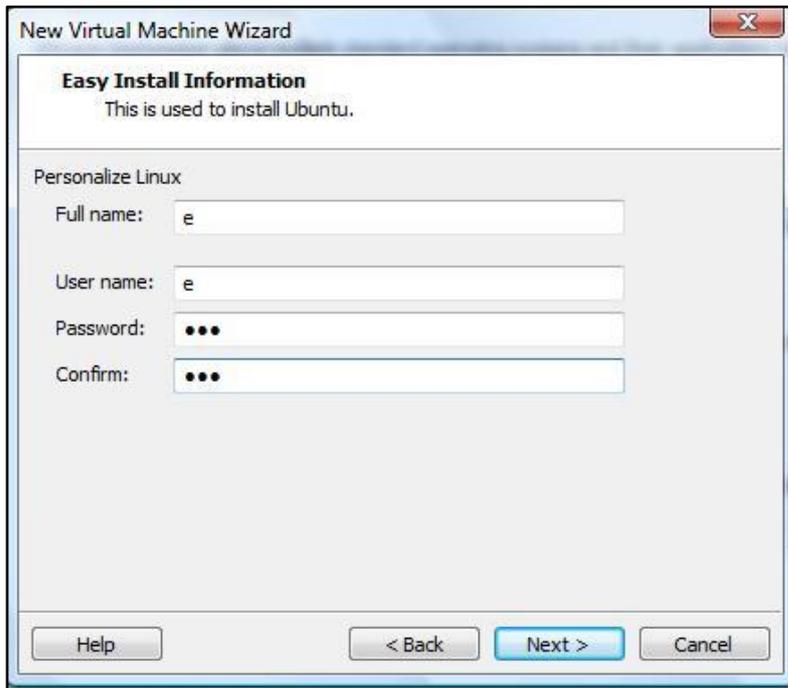
4. Choose "Typical" and click "Next"



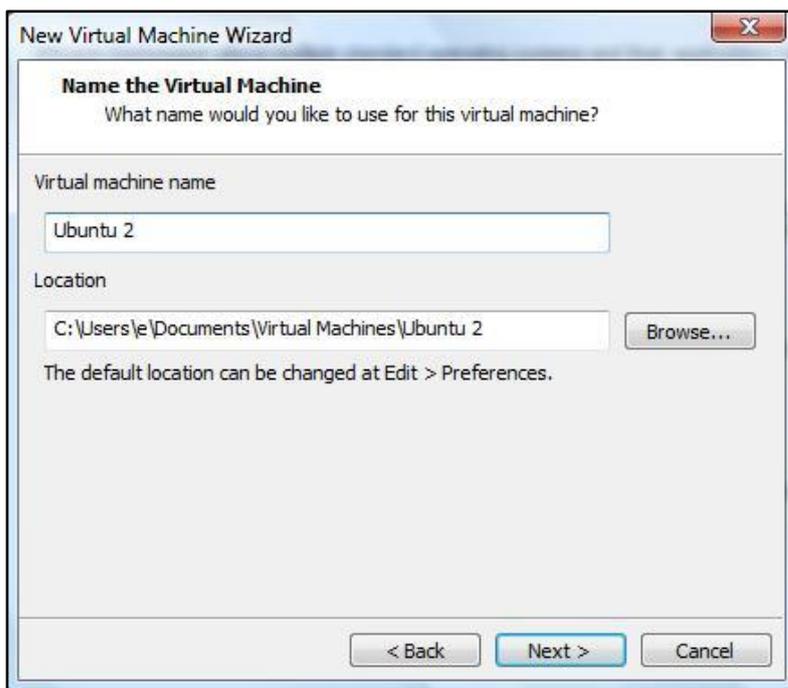
5. Then browse to the directory where you saved the Ubuntu iso image, or choose install it from a dis if you Ubuntu is placed in a CD and click "Next".



6. Enter a user name and password to log in to Ubuntu after you install it, and click "Next"



7. Give your virtual machine a name, and choose its location, and click "**Next**"

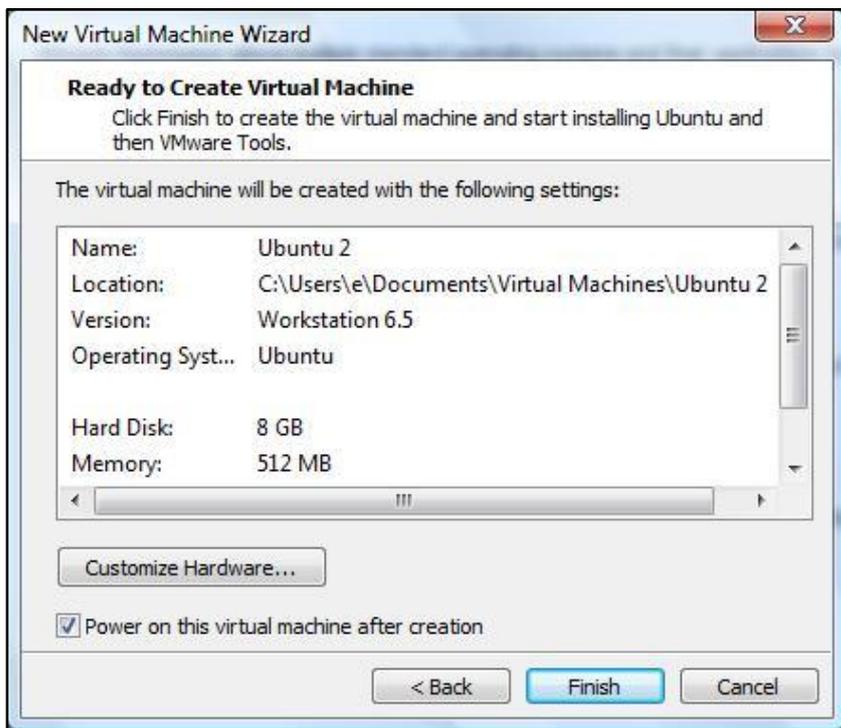


8. Choose the size for the hard disk for the virtual machine, I will leave this as default, and then click "**Next**"



9. Click "**Finish**", and the Ubuntu installation will start

Note: You can change the RAM size and many of the virtual machine specifications but this is out of this manual scope. Just keep in mind that you are using your real machine resources like RAM, Processor to run the virtual machine.

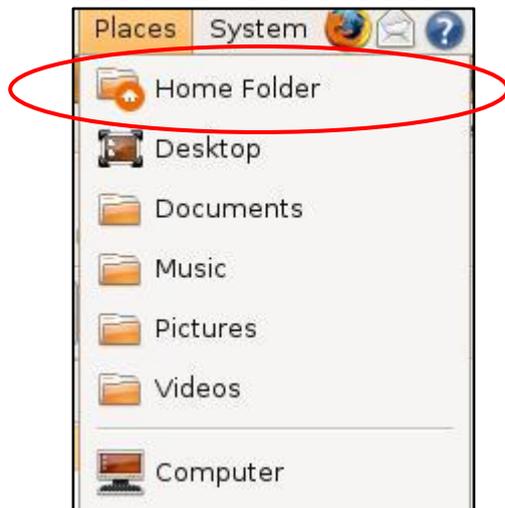


10. After that, the installation will continue, and after that you finish installing ubuntu

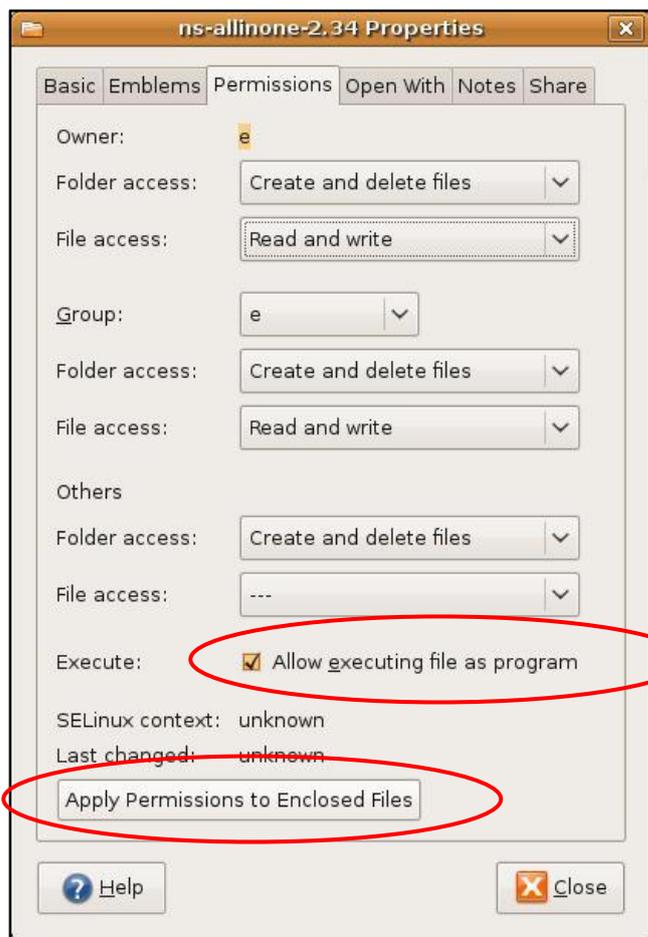
II. INSTALL NS2

1. Download the NS2 files from the Internet
<http://sourceforge.net/projects/nsnam/files/ns-2/2.34/>
2. Extract the files

- Put the files in the **Home** folder

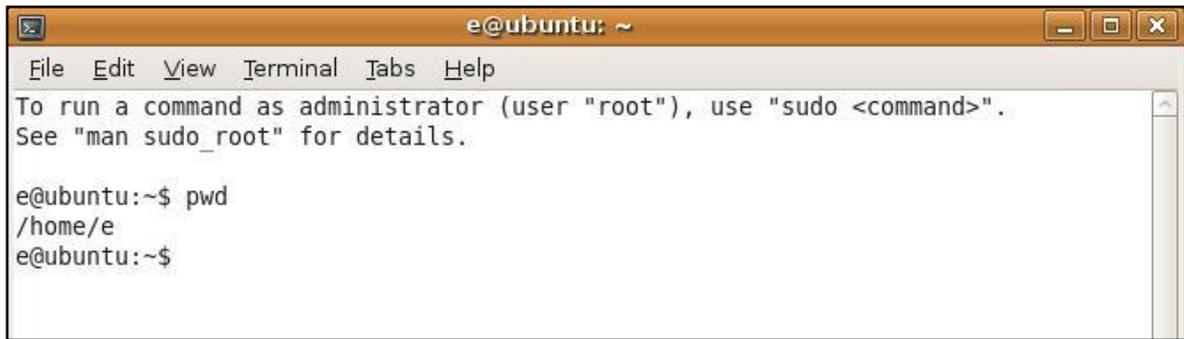


- Set the appropriate permissions for the **ns-allinone-2.34** to allow executing the files inside it. To do that: **Right click the folder** -> **Properties** -> **Permissions**, and choose the appropriate group with the appropriate file access, then click "**Allow executing file as program**" and then click "**Apply permissions to enclosed files**"



- From the **Accessories** -> **Terminal**
- Type the following command to know in which directory you are:

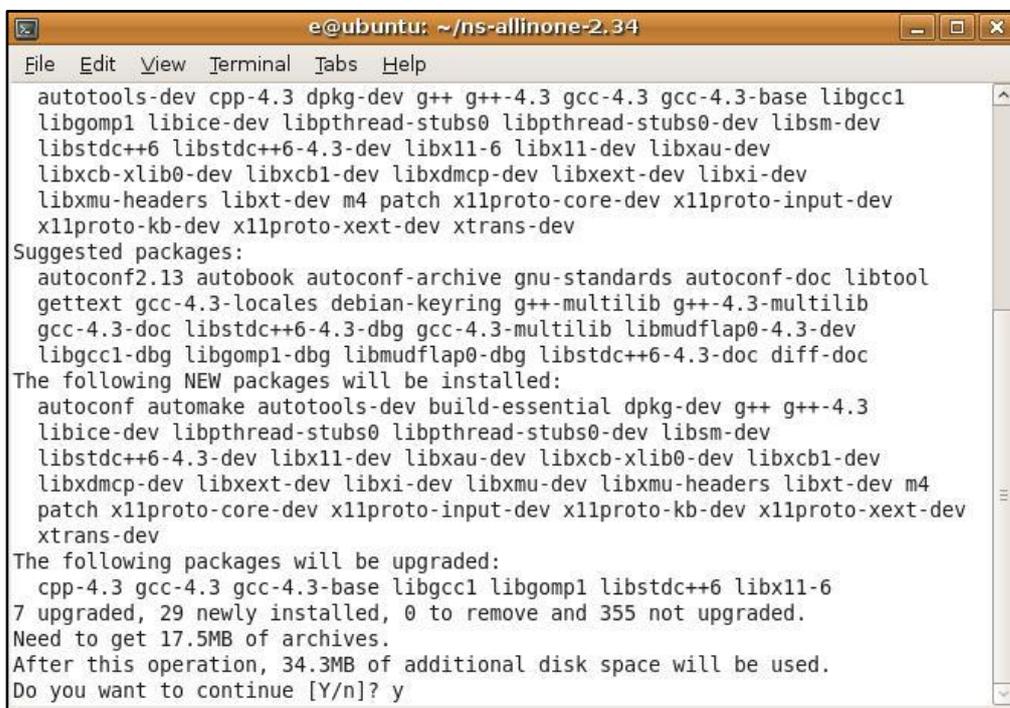
~\$ pwd



```
e@ubuntu: ~
File Edit View Terminal Tabs Help
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

e@ubuntu:~$ pwd
/home/e
e@ubuntu:~$
```

7. You need to be in the directory where you placed the **ns-allinone-2.34** folder
8. If you are not in the `/home/e`, then move to it by using the command `cd`
9. Now, supposing you are in the directory `/home/e` (**e** can be any other user) type the following command to move inside the **ns-allinone-2.34** using the command `cd`
`$ cd ns-allinone-2.34`
10. Then, type the following command (you will be asked to enter the system password to process. Also, you will be asked if you want to continue, type: `y` to continue):
`$ sudo apt-get install build-essential autoconf automake libxmu-dev`



```
e@ubuntu: ~/ns-allinone-2.34
File Edit View Terminal Tabs Help
autotools-dev cpp-4.3 dpkg-dev g++ g++-4.3 gcc-4.3 gcc-4.3-base libgcc1
libgomp1 libice-dev libpthread-stubs0 libpthread-stubs0-dev libsm-dev
libstdc++6 libstdc++6-4.3-dev libx11-6 libx11-dev libxau-dev
libxcb-xlib0-dev libxcb1-dev libxdmcp-dev libxext-dev libxi-dev
libxmu-headers libxt-dev m4 patch x11proto-core-dev x11proto-input-dev
x11proto-kb-dev x11proto-xext-dev xtrans-dev
Suggested packages:
autoconf2.13 autoconf autoconf-archive gnu-standards autoconf-doc libtool
gettext gcc-4.3-locales debian-keyring g++-multilib g++-4.3-multilib
gcc-4.3-doc libstdc++6-4.3-dbg gcc-4.3-multilib libmudflap0-4.3-dev
libgcc1-dbg libgomp1-dbg libmudflap0-dbg libstdc++6-4.3-doc diff-doc
The following NEW packages will be installed:
autoconf automake autotools-dev build-essential dpkg-dev g++ g++-4.3
libice-dev libpthread-stubs0 libpthread-stubs0-dev libsm-dev
libstdc++6-4.3-dev libx11-dev libxau-dev libxcb-xlib0-dev libxcb1-dev
libxdmcp-dev libxext-dev libxi-dev libxmu-dev libxmu-headers libxt-dev m4
patch x11proto-core-dev x11proto-input-dev x11proto-kb-dev x11proto-xext-dev
xtrans-dev
The following packages will be upgraded:
cpp-4.3 gcc-4.3 gcc-4.3-base libgcc1 libgomp1 libstdc++6 libx11-6
7 upgraded, 29 newly installed, 0 to remove and 355 not upgraded.
Need to get 17.5MB of archives.
After this operation, 34.3MB of additional disk space will be used.
Do you want to continue [Y/n]? y
```

11. Type the following command to install NS2
`$. /install`

III. SET ENVIRONMENTAL VARIABLES

1. Write the following line:
`gedit ~/.bashrc`
2. After the previous command, a file will open to you. Add the following lines to the end of the file. Replace `"/your/path"` by the folder where you placed the extracted **ns-allinone-2.34** (For example, if your Linux user name is **e**, and you placed the **ns-allinone-2.34** in the home directory, you have to change `"/your/path"` to `"/home/e"`)

```

# LD_LIBRARY_PATH
OTCL_LIB=/your/path/ns-allinone-2.34/otcl-1.13
NS2_LIB=/your/path/ns-allinone-2.34/lib
X11_LIB=/usr/X11R6/lib
USR_LOCAL_LIB=/usr/local/lib
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$OTCL_LIB:$NS2_LIB:$X11_LIB:$USR_LOCAL_LIB

# TCL_LIBRARY
TCL_LIB=/your/path/ns-allinone-2.34/tcl8.4.18/library
USR_LIB=/usr/lib
export TCL_LIBRARY=$TCL_LIB:$USR_LIB

# PATH
XGRAPH=/your/path/ns-allinone-2.34/bin:/your/path/ns-allinone-
2.34/tcl8.4.18/unix:/your/path/ns-allinone-2.34/tk8.4.18/unix
NS=/your/path/ns-allinone-2.34/ns-2.34/
NAM=/your/path/ns-allinone-2.34/nam-1.14/
PATH=$PATH:$XGRAPH:$NS:$NAM

```

3. Save the file changes after your edit
4. Ensure that it immediately takes effect:

```
$ source ~/.bashrc
```

Note: the previous step is important; else you cannot successfully run ns-2.

5. Now, the installation has been completed. Try:


```
$ ns
```
6. The "%" symbol appears on the screen. Type "exit" to quit.

IV. Validation

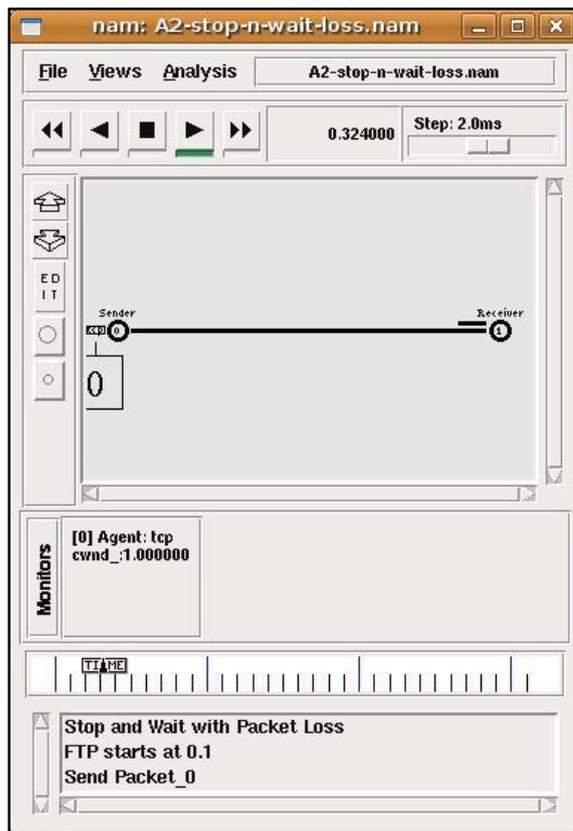
1. To run the ns validation suite:


```
$ cd ns-2.34
$ ./validate
```
2. The validation will take long time, wait until it finish.

V. RUN YOUR FIRST NAM EXAMPLE

1. From the terminal type the following:


```
$ cd ns-allinone-2.34
$ cd nam-1.14
$ cd edu
$ exec nam A2-stop-n-wait-loss.nam
```
2. The following window appears, click the Play button to see the protocol animation



References :

Dr. Basem Alkazemi pag:

<http://uqu.edu.sa/page/ar/4519>