SNS COLLEGE OF TECHNOLOGY
(An Autonomous Institution)
COIMBATORE- 641 035
Department of Computer Science and Engineering

19CSE314 – Open Source Software

NS2 (Network Simulator 2) Installation

NS2 (Network Simulator 2) is a popular discrete-event simulator used primarily for the research and development of network protocols, algorithms, and systems. It supports both wired and wireless networks and is often used for network simulations in research fields such as computer networks, communications, and distributed systems.

NS2 is mainly available on Unix-like systems, such as Linux and macOS, but it can also be installed on Windows with the help of Cygwin.

Below are the steps for installing NS2 on a **Linux** system (Ubuntu/Debian), followed by installation instructions for **Windows** using Cygwin.

Installing NS2 on Ubuntu/Debian (Linux)

Step 1: Update Your System

Before starting the installation, it's a good idea to update your system packages.

```
sudo apt-get update
sudo apt-get upgrade
```

Step 2: Install Required Dependencies

NS2 requires several development libraries to be installed on your system. These libraries are required for compilation and functionality.

```
sudo apt-get install build-essential autoconf automake gcc g++ libx11-dev
sudo apt-get install libxmu-dev libxml2-dev libssl-dev libdb-dev
sudo apt-get install tcl8.5-dev tk8.5-dev
sudo apt-get install python-dev
```

Step 3: Download NS2 Source Code

You can download the latest version of NS2 from its official website or from a GitHub mirror. You can also use `wget` to directly download the tarball.

```
wget http://www.isi.edu/nsnam/dist/ns-allinone-2.35.tar.gz
```

Note: The version number (e.g., `2.35`) might change, so make sure to check the NS2 download page for the most recent version.

Step 4: Extract the Tarball

Once the file is downloaded, extract it:

```
tar -xzvf ns-allinone-2.35.tar.gz
```

Change to the directory where the files were extracted:

```
cd ns-allinone-2.35
```

Step 5: Install NS2

Now that the necessary files are extracted, run the installation script.

```
./install
```

This will start the installation process. It might take some time depending on your system's resources.

During the installation, NS2 will compile all the necessary components, including **TCL**, **OTcl**, and **NS2** itself.

Step 6: Set Environment Variables

Once the installation completes, set up the environment variables for NS2 to make sure your shell knows where the binaries and libraries are located.

Add the following lines to your ~/.bashrc file (or the shell configuration file you're using):

```
export PATH=$PATH:/path/to/ns-allinone-2.35/bin
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/path/to/ns-allinone-2.35/lib
export TCL_LIBRARY=/path/to/ns-allinone-2.35/tcl8.5.10/library
```

Replace /path/to/ns-allinone-2.35 with the full path to the ns-allinone-2.35 directory.

Source your .bashrc file to apply the changes:

```
source ~/.bashrc
```

Step 7: Test the Installation

You can test the installation by running a simple NS2 script.

Create a new file called test.tcl with the following content:

```
# Create a simulator object
set ns [new Simulator]

# Create two nodes
set n1 [$ns node]
set n2 [$ns node]

# Create a link between the nodes
```

```
$ns duplex-link $n1 $n2 1Mb 10ms

# Run the simulation
$ns run
```

Now, run the simulation:

```
ns test.tcl
```

If everything is working properly, NS2 should run without errors, and you should see output related to the simulation.

Installing NS2 on Windows (using Cygwin)

While NS2 is not natively supported on Windows, you can run it using **Cygwin**, a large collection of GNU and Open Source tools that provide functionality similar to a Linux distribution on Windows.

Step 1: Install Cygwin

1. Download Cygwin from the official Cygwin website.
2. Run the installer, and during the installation, ensure the following packages are selected:

    - gcc-core
    - gcc-g++
    - make
    - gdb
    - libx11-devel
    - libxml2-devel
    - tcl-devel
    - tk-devel
    - python-devel
    - wget

Step 2: Download and Extract NS2

Similar to the Linux instructions, download the latest version of NS2.

```
wget http://www.isi.edu/nsnam/dist/ns-allinone-2.35.tar.gz
tar -xzvf ns-allinone-2.35.tar.gz
cd ns-allinone-2.35
```

Step 3: Install NS2

Run the following command to start the installation:

```
./install
```

The Cygwin environment will compile and install all components needed for NS2, including **TCL**, **OTcl**, and **NS2** itself.

Step 4: Set Environment Variables

You will need to set the environment variables for Cygwin to locate the installed NS2 binaries. This is done by modifying the ~/.bashrc file in the Cygwin home directory. Add the following:

```
export PATH=$PATH:/cygdrive/c/ns-allinone-2.35/bin
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/cygdrive/c/ns-allinone-2.35/lib
export TCL_LIBRARY=/cygdrive/c/ns-allinone-2.35/tcl8.5.10/library
```

Ensure you replace /cygdrive/c/ns-allinone-2.35 with the correct path to the ns-allinone-2.35 directory in the Cygwin environment.

Source the .bashrc file to apply the changes:

```
source ~/.bashrc
```

Step 5: Test the Installation

To verify that NS2 is working properly on Windows via Cygwin, you can follow the same test procedure as you would on Linux:

1. Create a new test.tcl file with the same contents as before.
2. Run the simulation by executing:

```
ns test.tcl
```

If the installation was successful, the simulation should run, and you should see the output of the NS2 simulation.

Installing **NS2** on Linux is straightforward, and it involves downloading the NS2 source code, installing dependencies, compiling the code, and setting up the appropriate environment variables. On Windows, you can install NS2 using **Cygwin**, which provides a Linux-like environment for Windows users.

Once NS2 is installed successfully, you can start writing your network simulations and explore its vast features to simulate different networking protocols, topologies, and scenarios.