

NS2 COURSE DETAILS

ABOUT NS2:

- ◆ NS (Network Simulator) consists of group of series of distinct occurrence complex simulators, specifically NS-1, NS-2 and NS-3. All of them are discrete-event network simulator, mainly used in investigating and training.
- ◆ NS-2 is a very popular discrete event Network Simulator, which is widely used in the research field of Wired, Wireless and Satellite Networks across both academia and industry as a way of designing, testing and evaluating new and existing protocols and architectures, and has also proven a very useful tool for teaching purposes.
- ◆ NS-2 comes fully equipped of protocols, models, algorithms and accessory tools. NS-2 is an open source network simulator which is freely available for academic research purpose. Therefore, in terms of scientific acceptance, a number of tools/modules and cost, NS-2 would be a sort of ideal choice.
- ◆ NS is a discrete event simulator targeted at networking research. NS provides substantial support for simulation of TCP, routing, and multicast protocols over wired and wireless (local and satellite) networks.
- ◆ NS-2 started as a variant of the REAL network simulator in 1989 and has since been supported by the Virtual InterNetwork Testbed (VINT) project that is a DARPA-funded research project whose aim is to build a network simulator.

WHY NS2?

When the system under research is complex to either follow an analytical approach or implement it in real time to study its behavior, simulation is the solution that ultimately makes it feasible by modeling it and closely mimicking the actual process. Network researches wholly depend on the availability of numerous simulation tools like OPNET, NS2, OMNET++ and so on. Without these tools it would be difficult to even imagine the advancements we have reached in networking. Of the numerous tools available, Network Simulator or NS2 (as it is famously called) stands distinct from the rest of the simulators.

BENEFITS

- ◆ Will be experienced in writing the basic programming languages
- ◆ Will be able to write all the robust code around the I/O operation codes
- ◆ Will be able to directly apply relevant skills in the workplace in the latest project using NS2
- ◆ Will be define your own Programming development in NS2
- ◆ Course completion certificate with ISO standardized for job opportunities
- ◆ Will be able to design security controls and incorporate into applications Will be able for the essentials of Object oriented programming
- ◆ Basic Fundamentals and handling the software Environments

FUTURE SCOPE OF NS2

NS2 uses C++ language to implement the research projects. The future scope of the C/C++ Programming language is immeasurable. C and C++ ruled out the software programming structures in our life or in the entire software fields. C/C++ is basic for all the programming languages for today's life. C/C++ produces the great future for excellent programmers. C/C++ is the basic software structure of all programming languages like Java, Android, C# and so on.

S.NO	TOPIC
1	SIMULATION OF COMPUTER NETWORKS Layering concept- System modeling- Simulation Definition-Elements of simulation-Time dependent simulation -Protocols
2	INTRODUCTION TO NETWORK SIMULATOR-2 History of NS2- Application-Basic architecture- NS2 goals- NS2 functionalities- Languages used- Why two languages?
3	COMPONENTS AND TOOLS OF NS2 About NAM-About Xgraph-Trace files- Commands in ns2
4	TCL/OTCL PROGRAMMING Variables-List- Procedure- Array-Conditional statements- Looping Structures- Classes and objects-Expressions- File handling-Input/output Console
5	WIRED SCENARIO Simulator Class- Trace the events- Node creation- Link between nodes- Communication Agent- Traffic agent- Run the simulation-Example program
6	LAN Introduction-LAN Topologies-MAC protocols-Ethernet- Simulation using NS2
7	WIRED-CUM-WIRELESS SCENARIO Creating simple wired-cum-wireless scenario- Running Mobile-IP in wired-cum-wireless topology

S.NO	TOPIC
6	WIRELESS SCENARIO Node Configuration- Routing protocols- Energy model- Topology generation- Graphical events on node- Neighbor Discovery- Route Discovery- Event Scheduling- Example Program
7	MOBILITY MODELS Random Walk Mobility Model, Random Waypoint Mobility Model, Boundless Simulation Area Mobility Model, Gauss-Markov Mobility Model, Probe Walk Mobility Model, City Section Mobility Model, Group Mobility Model
8	MOBILE ADHOC NETWORKS Create Mobile nodes-Dynamic routing Protocols-Mobility prediction-Simulation example
9	WIRELESS SENSOR NETWORKS Energy model- Sense Power-Transmission Power-Energy efficient Routing Protocols- Clustering
10	INSTALLATION IN WINDOWS XP Cygwin installation- NS-allinone-2.28 installation- TCL Library installation
11	PROJECT DEMO