

# DEPARTMENT OF INFORMATION TECHNOLOGY

## Two Day workshop

on

## Network Simulation using NS-2

The Department of IT organized a 2-Day workshop on "Network Simulation Using NS-2, during 14-15 December 2012 under TEQIP – II. The objective of this workshop is to impart knowledge on networks and to explore an open simulation environment for computer networking projects and research. The targeted audiences are UG and PG students.

This workshop mainly focused on Introduction to Linux, TCL,C++ and NS-2, Basics of OTCL, Developing various routing protocols, scripting and programming using NS-2, wired network design and performance evaluation, wireless network design and performance evaluation and implemented various case studies.

The workshop started with welcome address that was given by **Dr.V.V Rama Prasad**, Vice-Principal and HOD, Department of IT. He introduced the resource person Mr.Mohit P.Tahiliani, NITK, Surathkal. Principal **Dr. P.C. Krishnamachary**, Dean Academics **Dr.C Subhas** were attended the inauguration.



Chief Guest Dr. S.P Setty, and other Dignitaries, lighting the lamp

The session started by **Mr.Mohit P.Tahiliani** with the Introduction of Communication and Networks. Then he gave the clear view of what is wired and wireless networks and about MANET, VANET and Sensor. The detailed explanation of OSI layers, Ad-hoc network and NS2 was given. The front end and back end language used for the NS2 Simulator was discussed and detailed description of front-end(TCL Language) was clearly explained. The type of file that has to be created for the simulation process was shown as

demo. The steps to be followed to do a Network Simulation process and the application and links to be used for the TCP and UDP protocols were discussed.



Mr.Mohit P.Tahiliani addressing the gathering

In the second session, list of commands that has to be used in TCL was explained and also the sample programs by using those commands. This session was fully focused on Wired Network of Simulation process.

The Third session was started by **Mr.Shaik Munwar**, Assistant professor, Department of Information Technology. His lecture is about simulation and Interpretation of Trace file format, trace file analysis using Trace graph & Xgraph.

The fourth session was hands-on session started with a program for simulating a TCP connection by using 2 nodes. The visual movement of how packets are moving from one node to another was seen. Then the simulation was tried with more nodes by taking the previous program as a sample. The commands for changing the orientation of the nodes, color of the packets, shape of the nodes and giving labels for the nodes were discussed. The program by making the above changes was implemented.

On second day, first session was started by Prof. **K.Manikandan**, VIT University, Vellore. He fully focused on the Wireless Simulation process. The channels, antenna, type of the channel, protocol, attaching agent, topology, GOD operator and routing protocols that has to be used in the Wireless Simulation process were explained. He also explains How to create wireless system model, its configuration, and sample programs were implemented.

In the second session, Trace file format & Result analysis using trace graph and performance evaluation of a routing protocol using Trace Graph, simulation on WPAN and how to recompile new protocol in NS-2 were explained by Prof. **K.Manikandan**.



Prof. Manikandan addressing the gathering

The third session was delivered by Dr. **K.Ganesan**, Director TIFAC-CORE Project, VIT University, Vellore. He explains about TCL Programming, Advanced areas of wired and wireless networks and research challenges.



Dr. K.Ganesan delivering a lecture to the gathering

The fourth session was hands-on session for implementing the Wireless Simulation process. The sample programs were given by the resource person. By using that sample program the simulation of wireless network was done. The clear view of how a single node is broadcasting the packets to its neighbouring nodes and the RTS, CTS and ACK signals

were visually seen. Then the mobility for the nodes and command for setting the coordinates for the NAM window was explained. Then the attacks possible in the simulation such as Blackhole attack, selfish node attack Wamphire attack, Wormhole attack were explained.

Vote of thanks was given by **Mr. Shaik. Munwar**, Asst Professor of IT. One of the final year students gave a feedback about the workshop and thanked the management, department and the organizer for arranging the workshop. Certificates were distributed to all the participants.

