



E2MATRIX

Training and Research Institute

www.e2matrix.com

NS3 COURSE STRUCTURE

NS-3 is a discrete-event network simulator for Internet systems, targeted primarily for research and educational use. The goal of the ns-3 project is to develop a preferred, open simulation environment for networking research. The ns-3 project is committed to building a solid simulation core that is well documented, easy to use and debug, and that caters to the needs of the entire simulation workflow, from simulation configuration to trace collection and analysis. Furthermore, the ns-3 software infrastructure encourages the development of simulation models which are sufficiently realistic to allow ns-3 to be used as a real time network emulator, interconnected with the real world and which allows many existing real-world protocol implementations to be reused within ns-3. The ns-3 simulation core supports research on both IP and non-IP based networks. However, the large majority of its users focuses on wireless/IP simulations which involve models for Wi-Fi, WiMAX, or LTE for layers 1 and 2 and a variety of static or dynamic routing protocols such as OLSR and AODV for IP-based applications. NS-3 also supports a real-time scheduler that facilitates a number of "simulation-in-the-loop" use cases for interacting with real systems. For instance, users can emit and receive ns-3-generated packets on real network devices, and ns-3 can serve as an interconnection framework to add

link effects between virtual machines.

Another emphasis of the simulator is on the reuse of real application and kernel code. Frameworks for running unmodified applications or the entire Linux kernel networking stack within



ns-3 are presently being tested and evaluated. Because creating a network simulator that sports a sufficient number of high-quality validated, and maintained models requires a lot of work, ns-3 attempts to spread this workload over a large community of users and developers.

Module 1

1. NS-3 Architecture
2. Comparison with NS2
3. Installation of Ubuntu, VMware and Network simulation 3 Tools.
4. Simple Wireless Network Architecture
5. NetAnim Output Construction
6. Gnuplot installation and working

Module 2

1. Routing Protocol Construction
2. Performance Comparison
3. Simulation models construction Wi-Fi, WiMAX, and LTE
4. Applying patches to NS-3
5. Discussion Session

Module 3

1. To understand how to create new modules in ns3
2. Construction of graphical output
3. Discussion Session