



RESEARCH ARTICLE

A STUDY ON NETWORK SIMULATOR 2 ANKIT KHANDELWAL

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ABSTRACT

The principle objective of this paper is to display how to utilize NETWORK SIMULATOR 2 reenactment for outlining remote systems and utilizing Cryptography calculation as to security data. It quickly depicts the fundamental remote systems classifications, dissects remote LAN systems, quickly portrays their parts and advances, clarifies the Wi-Fi innovation and investigates property sources identified with remote systems test systems and its nitty gritty portrayal, Specify the arrangement for the straightforward remote system and make comparing model by utilizing ns-2 test system, exhibits those qualities of the predetermined system design utilizing the recreation model, and show situation of transmission information among hubs.

Key words: NETWORK SIMULATOR 2, Wireless Network, Security, RC5 algorithm.

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INTRODUCTION

Outline of remote Network utilizing NETWORK SIMULATOR 2, as an idea of Security assessment, and portrays the proposed model of the framework and finish depiction of the Simulations and programming program required for actualizing the remote Network. Ns-2 is a broadly utilized apparatus to reproduce of systems. System test system is a piece of programming that predicates the execution of a system without a genuine system being there. System SIMULATOR 2 is an imperative reproduction instrument for systems. It bolsters various calculations for directing and lining. System SIMULATOR 2 is extremely useful in light of the fact that it is exorbitant to confirm suitability of new calculations, test designs, check topologies, check information transmission and so on. System test systems are names for arrangement of discrete occasion organize test systems and are intensely utilized as a part of specially appointed systems administration res. what's more, bolster well known system conventions, offering recreation comes about for remote systems. Additionally utilizing security in the system the fundamental originations in the security of the system, at that point it talk about encryption and unscrambling idea the usage of non-ordinary (the two squares and stream figures).

What is wireless and wireless communication?

Wireless is a term used to describe telecommunications in

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which electromagnetic waves (rather than some form of wire) carry the signal over part or the entire communication path. Some monitoring devices, such as intrusion alarms, employ acoustic waves at frequencies above the range of human hearing; these are also sometimes classified as wireless. The wireless communication revolution is bringing fundamental changes to data networking, telecommunication, and is making integrated networks a reality. By freeing the user from the cord, personal communications networks, wireless LAN's, mobile radio networks and cellular systems, harbor the promise of fully distributed mobile computing and communications, anytime, anywhere. Focusing on the networking and user aspects of the field, Wireless Networks provides a global forum for archival value contributions documenting these fast growing areas of interest. The journal publishes refereed articles dealing with research, experience and management issues of wireless networks. Its aim is to allow the reader to benefit from experience, problems and solutions described.

Characteristics of NS2

We embed the characteristics in academic projects are:

- Easy to use descriptive language.
- Object oriented, discrete event driven simulator.
- Initiate different scheduler with various network topologies.
- Separation of control path and data path implementation.
- C++ and OTCL programming languages are used.

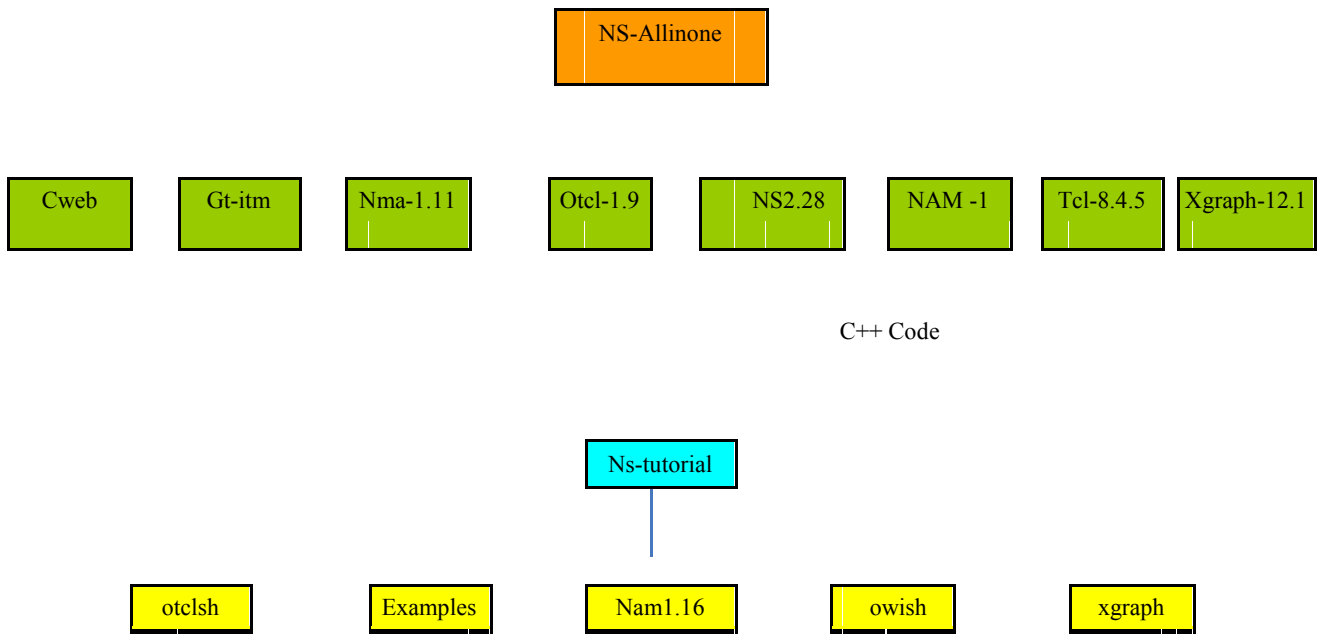


Figure 1 refers to directory of NS2 to run tcl program to show Nam tool and show nodes

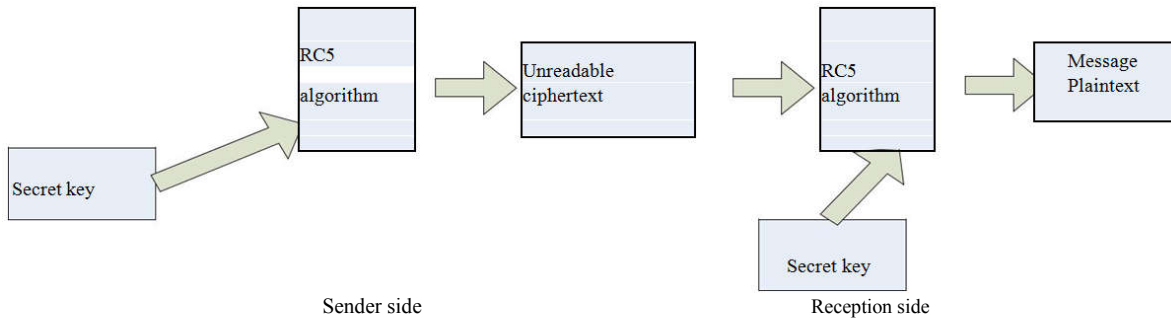


Figure 2. Encryption and decryption information

Features of NS2

NS2 (Network Simulator version2)

NS2 is a discrete occasion test system focused at systems administration look into. It offers help for reenactment of TCP, steering, and multicast protocols over all network wireless. NS2 can be utilized in most UNIX frameworks and windows (XP, VESTA and 7), and in this paper windows 7 is utilized. Most method procedures of the NS2 code are composed in C++. It utilizes TCL as its scripting dialect, Otcl adds protest introduction to TCL. NS (form 2) is a question arranged, discrete occasion driven system test system that is uninhibitedly dispersed and open source.

Structure of ns2

a. NS is an object oriented discrete event simulator

- Simulator maintains list of events and executes one event after another.
- Single thread of control: no locking or race conditions.

b. Back end is C++ event scheduler

- Protocols mostly.

c. Source code

- Most of process procedures of NS2 code are written in C++ code.

D. Scripting language

- It uses TCL as its scripting language OTcl adds object Orientation to TCL

e. Protocols implemented in NS2

- Transport layer (Traffic Agent) – TCP, UDP.(TCP using in our design of wireless network).
- Interface queue, Drop Tail queue.

f. Scalability

- Per-packet processing must be fast
- Separating control and packet handling

g. Import C++ code to TCL script program

Security

All security frameworks must give a pack of security works that can affirm the mystery of the framework. These capacities are normally alluded to as the objectives of the security framework. These objectives can be recorded under the accompanying three principle classes in this paper:

- Confidentiality
- Integrity
- Availability

In this paper, the data Encryption utilizes cryptography calculations symmetric to encryption information data to send information safely between hubs. The framework must encode the information or "methodically scramble data so it can't be perused without knowing the coding key". This operation is resolved to a specific level of the security framework; the harder it is to break the encoded message, the more secure the framework is to be. Figure 3 shows the regular utilization of encryption/unscrambling strategies, where unsecured messages (plain content) are encoded utilizing an exceptional encryption strategy for my propose utilizing Symmetric cryptography (RC5 calculation), sent over the system, at that point decoded at the goal to saw back a sun scrambled messages.

Simulation scenario

In this segment, remote system execution depends mostly on the conclusion to end. We will show recreation situation went for actuating the system security through system throughput, parcel exchange between hubs inside the situation by utilizing cryptography calculations; in our test system we utilizes RC5 calculation to figure bundle data that exchange between hubs. Recreation standards and methodologies embracing the isolated question model and utilizing two dialects C++ and tclNS2 satisfies the accomplishment of reenactment for particular conventions and the arrangement hubs and foundation of system reproduction condition separately. Table 1 alludes parameter utilizing as a part of situation, utilizing the supported programming like NAM to make a further report, and reproduction process and results investigation. As a matter of first importance, we set the topology and the arrangement of hubs properties and furthermore properties of MAC layer like address compose, convention write, channel write, recreation time, tweak write, tx ,rx, sit out of gear, rest power and transmission method for remote. The accompanying is the parameters of reproduction situation figure 7 and hubs design before exchanging data between them. Figure 8 alludes to engendering of all hubs and is scope of hubs sooner or later. Figure 9 alludes to exchange data (bundle data) amongst hubs and scope are of radio single and send (data secure), this data change over from plaintext to figure content are (Kurdistan local government) between hub (0) and hub (24) as situation. Figure 10 allude to two situation transmission data amongst (node0 and node24, hub 17 and hub 9) sooner or later, additionally data is exchanged between hubs (17 and 9) are (Sulaimaniyah International Airport). Figure 11 allude to drop of bundles when reenactment wrapped up.

Table. 1

Parameters	Values
Area of Simulation	(500X500)m
Nodes number	35
Types of Routing protocol	AODV
Internet protocol type	TCP
Antenna Model	Omnidirectional
Max package	50
Type of the MAC	802.11
Transmission speed	1,2 Mbps
Bandwidth	20MHz
Security algorithm	RC5

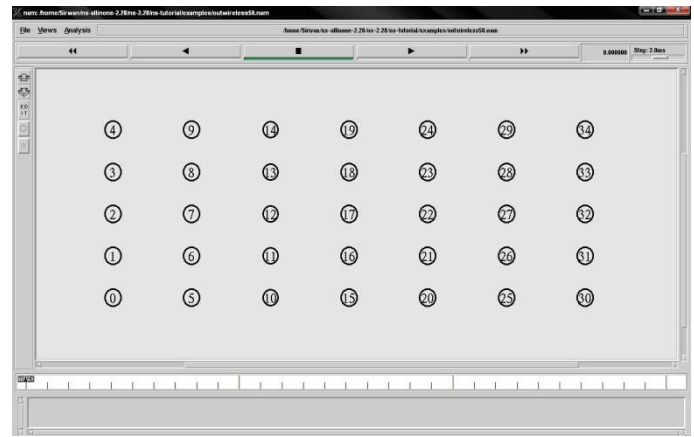


Figure. 7 Nam output showing nodes of wireless networks

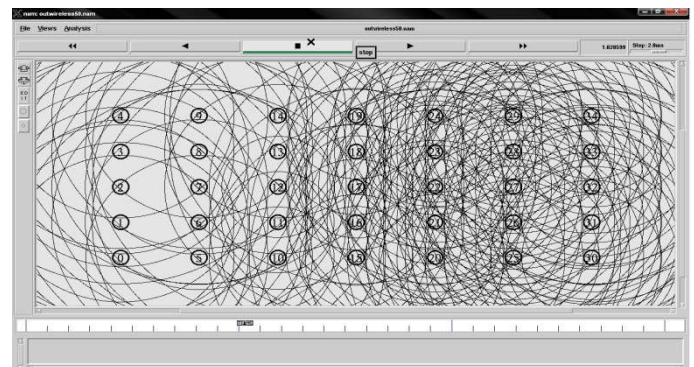


Figure. 8 Nam output showing Signal propagation of wireless nodes

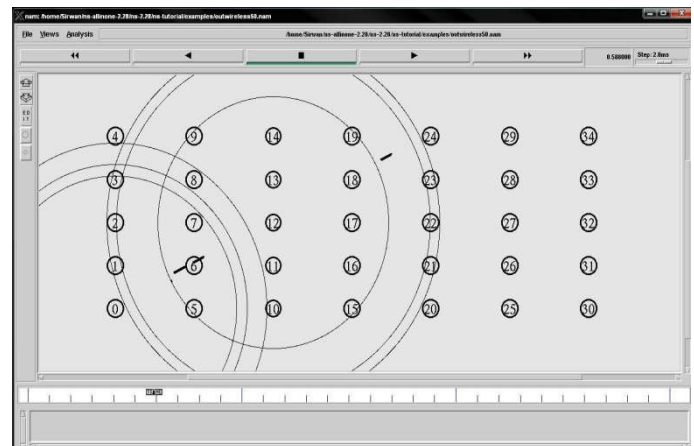


Figure 9. Nam output – Transmission Security packets (one Scenario)

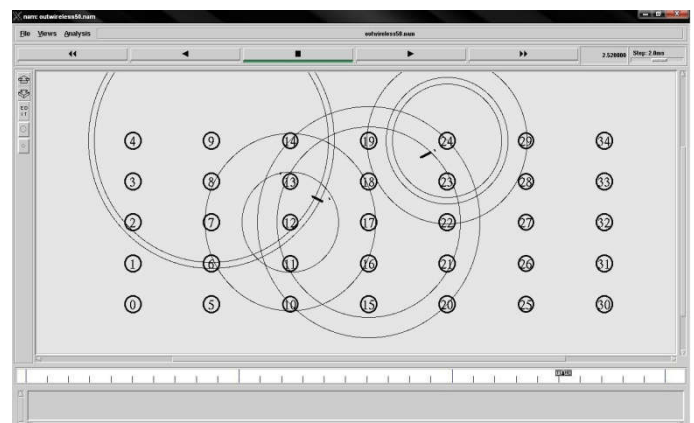


Figure 10. Nam output – Transmission Security packets (two Scenario)

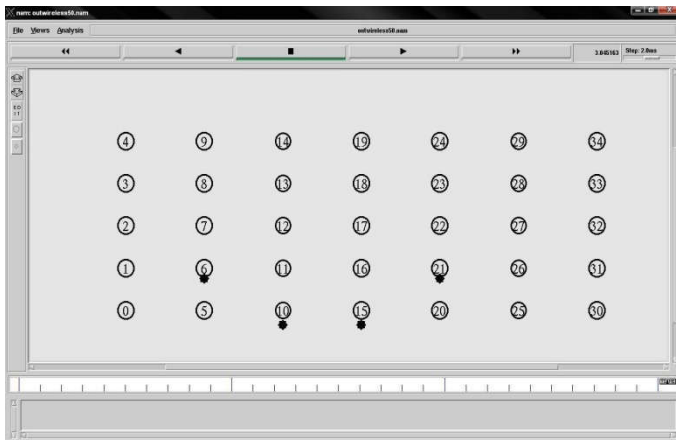


Figure 11. Packets are dropped

Conclusion and future work

Remote system is a PC or gadgets organize which are remote, and they are usually connected with a media communications arrange whose interconnections between hubs are executed without the utilization of wires. Remote media transmission systems are for the most part executed with some kind of remote information transmission framework and control or to robotization that utilizations electromagnetic waves, for example, radio waves, for the bearer, and this usage ordinarily happens at the physical level or "layer" of the system. The remote system is likely utilized in light of the fact that it is effective particularly in those regions that wiring is unthinkable contrasted with different systems. When planning remote systems or potentially examining their conduct under different conditions, programming reproduction instruments are regularly utilized. In this paper, the product instrument Network Simulator (Version 2), generally known as ns-2, is portrayed and utilized for the reproduction of those illustrative cases of remote systems.

By and large, ns2 gives clients a method for determining system conventions and reproducing their conduct. The aftereffect of the reproduction are exchange data secure between hubs. In the paper we have ns2.28 test system the end client execution of remote system comprising 35 hubs, the recreation bring about after decision about system conduct:

- First is exchange data bundle between hubs (two situation once if hub 0 and node 24 as two route correspondence amongst them, and hub 17 and hub 9 additionally two way correspondence).
- Second utilizing cryptography calculation (rc5 calculation) to secure data of bundle move in interchanges.
- Third vital element of reproduction utilizing c++ program to security data and TCL dialect for situation content.
- For future work to utilize consolidate of two kind cryptography calculation as (hybrid) to more secure data exchange among hubs.

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