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CHALLANGES IN ANALYSIS OF IP PACKET IN LTE BSAED NETWORK

Engineering

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ABSTRACT

The LTE based IMS system is the system with voice over IP support . The aim of this project is to implement the real time Implemantation of how the IP packet being transfer in real time view ,capture the same packet using captureing software and make the advanced analysis of protocol involved version , header length ,decoding of MAC acknowldgement being used for data transfer. For this project we using python to make the connection between two nodes , and TCL -TK programming language to implement real time packet transfer, using network stimulator 2, and ubentu linux is used to implement all praposed system because it is highly secure which is the most important criteria in any communication system

KEYWORDS

Long Term Evolution , Ip Multimedia Subsystem , 3gpp, Tcp

INTRODUCTION

LTE is ip based network , In IP based network data and singnaling is tramitted using packet , all the packet have some specific packet format , header field and version, the most critcal thing in capturing and analysis of packet is decoding of mac header field in order to analysed the complete header and subheader , In this project we are going to implement the two nodes one as a server and another as a client make a socket module using python scripting langauge . We consider client as our UE in LTE system and server being considerd as a lte network. Using Network stimulator 2 we can show real time how packet getting transfer in system , tcl-tk is the scripting langage used to create a nodes such that communicaton between them is possible , one thing to rember is all this setup will be done in linux ubentu enviroment Decoding the acknolgment message which is getting in reply and determine the information element which is transfer in packet in lte network

PRAPOSED SYSTEM

The project is entirely software based and to implement the system we required the following tools

SOFTWARE TOOLS

1. python 2.7
2. wireshark tool
3 .network stimulator 2 .

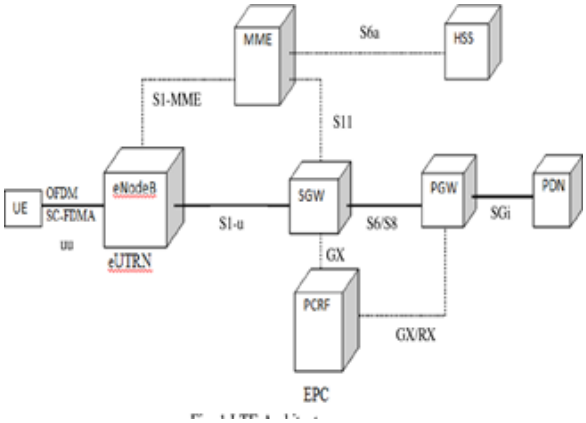

FIGURE 1: Block diagaram of LTE network

Sources: www.googleimages .com / lte network node
System block consist of

1. user equipmnt
2. evolved packet core (EPC)
3. PDN network

1. user euipment

Mobile Termination (MT) : This handles all the communication functions.

Terminal Equipment (TE) : This terminates the data stream

Universal Integrated Circuit Card (UICC) : This is also known as the SIM card for LTE equipments.

2. Evolved packet core (EPC).

2.1 HSS

The Home Subscriber Server (HSS) component has been carried forward from UMTS and GSM and is a central database that contains information about all the network operator's subscribers.

2.2 PDN

The Packet Data Network (PDN) Gateway (P-GW) communicates with the outside world ie. packet data networks PDN, using SGi interface. Each packet data network is identified by an access point name (APN). The PDN gateway has the same role as the GPRS support node (GGSN) and the serving GPRS support node (SGSN) with UMTS and GSM.

2.3 SGW

The serving gateway (S-GW) acts as a router, and forwards data between the base station and the PDN gateway.

2.4 MME

The mobility management entity (MME) controls the high-level operation of the mobile by means of signalling messages and Home Subscriber Server (HSS).

2.5 PCRF

The Policy Control and Charging Rules Function (PCRF) is a component which is not shown in the above diagram but it is responsible for policy control decision-making, as well as for controlling the flow-based charging functionalities in the Policy Control Enforcement Function (PCEF), which resides in the P-GW.

PRACTICAL IMPLEMENTATION OF SYSTEM

1. python socket module

python 2.7 is used to create the client server communication between the two nodes , in this approch we defined one node as a server and other as client and make a connection on any port . For that we need two separate terminal or we also use single pc with virtual support .

2. NS2 stimulation using TTCN

In ns2 we make a real time implementation of two nodes , which transfer the real time data between each other , we use TTCN scripting langauge to implement that as shown in fig 2

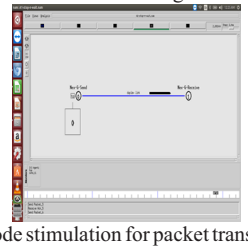

FIGURE 2: ns2 node stimulation for packet transfer snapshot

3 wireshark

wireshark is a protocol analyser tool used for capturing packet between the nodes , which detemine the all informtion about transitted packet like protocol used , version , header information , times laps , source and destination adderess, etc fig 3 show sample screen shot for the packet capture

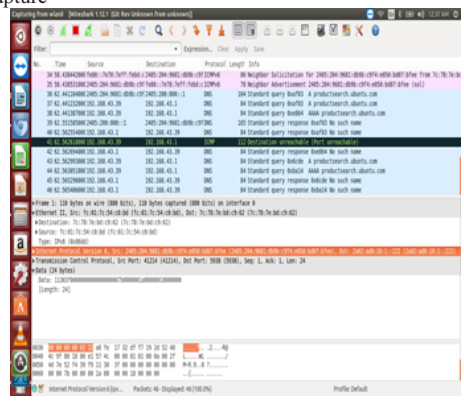

FIGURE 3 : wireshark packet analysis snapshot

CONCLUSIONS

In this implantation we noticed that the every packet.

that is transmitted in IP based network use different protocol version , byte , header length , sub-header , most likely TCP and UDP is the protocol that is used in IP packet flow , we also decode the MAC acknowldge from network which is hex coded for security point of view is formed through this study

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