Automated Tool for Packet Generation and Verification

[1]Ms. Ch. Chandana, [2]Ms. K. Prathyusha, [3]Mr. Golla Rithwik

Student of CSE Department

Balaji Institute of Technology & Sciences, Narsampet, Warangal, Telangana, India.

ABSTRACT:

Networks are complex and wide so that administrators are having more trust on involving tools such as rectifying and correcting the problems. For debugging and testing the networks we have introduced a concept called as "Automatic Test Packet Generation (ATPG)".Independent device model is created by ATPG on reading router configurations. Minimum set of test packets are produced by this model. It exercises every link and rule in the network. By sending the test packets in regular manner we can detect the failures which are used to activate a specified mechanism to restrict the faults. We describe our preliminary ATPG results on two types of real-world data sets those are 1.Stanford University's backbone network and 2.Internet2. Only sufficient test packets are sent to verify every rule in network. For example, even though 44 packets are enough to cover all the links we are sending 3000 packets to cover all the rules in Stanford University's backbone network. Sending 3000 test packets 8 times per second that consumes less than 1% of link capacity. Codes and data sets of ATPG are available publicly.

INDEXTERMS: types of networks, patch work, architecture of networks, ATPG.

1. INTRODUCTION

The concept behind networking:

[1] Networking is a word which refers basically, the connectivity of computers. In computer world networking is often use for connection of computers. Networking is nothing but connection of two or more computers. It helps for sharing the data among the computers means through networking it is possible to share the data present in one computer into another. Due to launching of various software and hardware nowadays it is very common to use Network.

Fig 1.1 Structure of networking between different computers

Types of Networks:

Based on budget, size and structure Networks [3] can be divided into two categories:

- peer-to-peer
- server-based networks

Peer-to-Peer Network:

A peer-to-peer network has workstations to share the information among computer networks. It demands no dedicated servers. Primary companies will not spend lots of money. [8]

Server –Based Networks:

In this technique one server is enough to store all server based data files. In case if we lose the data, central point permits the server to back up the data. Which enables server based networks [5] to recollect the data they want.

Patchwork (WAN):

By using the signals computer networks will transmit the data. For computer networks communication services are provided by protocol. Distant networks are linked by local area networking that connect computers using wide area networking, shared, baseband medium and half duplex networks.[9] Clients and servers of enterprise networks are connected by a common backbone. Peer-to-peer network contains small number of computers on single local area networking.

2. LITERATURE SURVEY

Performance of network on localization and quirk detection:

Location of performance abnormalities and occurrence is being detected in order to ensure the network infrastructures effectively. There are three components in our framework:1-an algorithm for detecting anomolies,2-an algorithm for identifying anomalies and 3-an algorithm for selecting anomalies .By comparing the characteristics and guarantees of performance we can detect the path address of anomaly. We design a localization algorithm that checks the links that are responsible for observed performance anomaly and which minimizes path measurements. Ns-2 is responsible to execute the framework and by using network topologies experiments of simulation-based are abstraction to determine minimum test packets, To identify consistency enforcing between configuration conducted. Comparing to previous versions this method is useful in all aspects such as detecting the performance anomalies as well as to localize the performance anomalies with time friendly.

KLEE: generation of automatic and unassisted high-coverage tests for system programs complexity

KLEE a new presentation of symbolic representation is used to achieve the diverse set of complex and naturally-in depth programs which are capable for generating the tests. KLEE is used to check around 89 separate programs at a time by GNU COREUTILS utility suite, formed core user- level which is installed on UNIX systems which are million in number. High line generated tests achieved by KLEE over 90% tools. KLEE is also used for finding errors, if we apply KLEE to 452 applications it will find around 56 errors which includes 3 errors in COREUTILS which haven't found since last 15 years. We use KLEE for finding / checking errors in functionality, and irregularities in performance of network in COREUTILS and BUSYBOX. We can easily analyze the performance of this algorithm because it is very simple one [6][7].
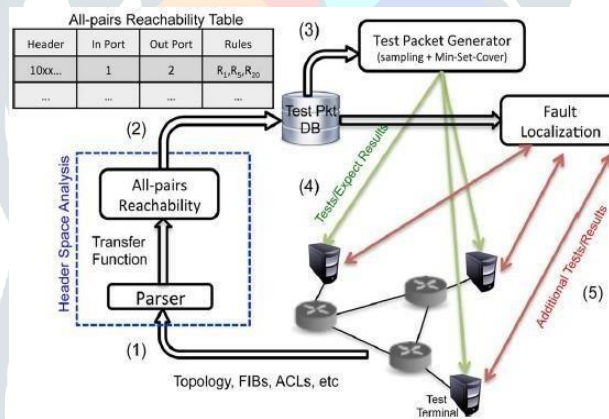
3. SYSTEM DESIGN
Architecture of System:

Fig 3.1: system architecture

There is a problem for large data centers and ISP's to check the concurrent execution of networks [4]. It is not possible to investigate the size and involvement of every edge port. To traverse each link it provides minimum end-to-end test packets. But it requires and policy.

4. AUTOMATIC TEST PACKET GENERATION (ATPG):

[2] Framework will automatically produces a minimum test packets to check the concurrent outcome of the beneath topology and the concurrence in between data plane state and layout designation. It can also generate packets automatically to test performance declaration (packet latency). In this system every link is checked only once. In the proposed system we have an automated tool which detects the packets if any errors or bugs occurred in the packet and it also increase the performance of the system. ATPG will find the exact route. In this Automated test packet the IP address of sender and receiver is identified and verified and checks whether the packet is received by the exact receiver and even it was send by the exact sender or not. Each and every packet has some number like p1, p2, p3 etc. When the packet is send from the sender to receiver for example if a packet is lost then we can identify that lost packet by using this ATPG and also we can recollect that lost packet.

5. COMPENSATION OF ATPG:

Root causes and common failures are revealed by network operators in a survey. A multi functioning localization algorithm is used for separation of unused or damaged files and rules. For performance and functional testing ATPG will use cases. Rectifying of a mock-up ATPG system, using instruction sets that are gathered from the Stanford University's backbone and Internet2 [10].

6. CONCLUSION:

The major problem for large data centre operators and ISP's is to test the concurrent computing of a network. It is neither exhaustive nor scalable to send probes between every pair of edge ports. To traverse each and every link minimum set of end-to- end packets are enough. However, a specified abstracting is necessary for creating headers to their corresponding links, and for special configuration files, and at last two of bring out minimal set of test packets. Using same framework, testing of livens is done by ATPG can also test for loss with test packets, performance measures and reach ability property. This implementation will include or use header space framework for creation and testing of simple fault localization method. As in software testing, while minimizing test packets to maximize test coverage we need the help of formal model. Small number of test packets exercised surprisingly in Stanford University's or internet2.Today primitive tools are being used by network managers; the results of our survey indicate that they are eager for more sophisticated tools. It also indicated by other fields of engineering that these are reasonable .Automatic test packet generation will become a well known acronym even though we built and name our system after many months, which will surprised us. For automated dynamic testing of production networks, we hope network ATPG will be equally useful.

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ATHOURS

Ms. Ch.chandana, Pursuing Second Year –CSE, in Balaji Institute of Technology &Science, Warangal, India. My domain includes cloud Computing, networking and IOT.

Ms. K.prathyusha, Pursuing Second year -CSE Balaji Institute of technology & science, Warangal, India. My domain includes networking and cloud computing.

Mr. G.Rithwik Pursuing Second year- CSE, Balaji Institute of Technology & Science, Warangal, India. My domain includes networking and hacking.