International Journal of Scientific & Engineering Research Volume 9, Issue 4, April-2018
ISSN 2229-5518

A Study and Analysis of Effective Data transmission Using UDP

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Abstract— This abstraction is grouped into layers of general functionality. For protocols on the transmission layer, many choices exist. But while popular protocols such as TCP, UDP and SCTP do provide connection oriented communication offering reliability, ordering and data integrity, solutions that offer such connections from one point to multiple endpoints. Evaluation of two well known transport layer protocol TCP and UDP using two popular queue Evaluation of two well known transport layer protocol TCP and UDP using two popular queue management methods; Random Early Detection (RED) and Drop Tail, in terms of throughput, queuing delay, packet drop rate and bandwidth utilization management methods; Random Early Detection (RED) and Drop Tail, in terms of throughput, queuing delay, packet drop rate and bandwidth utilization. The goal of our measurement study is to characterize packet reordering in the current Internet as it is reflected by Planet Lab infrastructure. Intrusion Detection System has to be addressed across the network. Each TCP/IP network layer has specific type of network. We substantially reduce the installation overhead when a FPGA shall communicate with several different PCs. The UDP/IP core is designed to occupy a minimum amount of hardware resources on the FPGA.

Keywords— Analysis and effective data transmission using UDP, TCP, SCTP.

1 INTRODUCTION

UDP is the connectionless transport layer protocol. The User Datagram Protocol offers only a minimal transport service nonguaranteed datagram. An application program running over UDP must deal directly with end-to-end communication problems that a connection-oriented protocol would handle. It is important to understand the behavior of RO because it is often detrimental for both, TCP and UDP based applications. At a TCP receiver, duplicate acknowledgements are generated when reordered packets are received. UDP and SCTP do provide connection oriented communication offering reliability, ordering and data integrity, solutions that offer such con-sections from one point to multiple endpoints are still limited. TCP only supports point-to-point communication and SCTP offers multi-homing functionality. Second, as it is known, firewalls operate at different TCP/IP network layers by using different criteria to restrict traffic, but this step is far from running an entirely secure network Because of that, IDS must be allocated as a second line of defense the ipv4 and UDP protocols represents an efficient solution for establishing a connection between a PC and a FPGA, with respect to reconfigurable hardware utilization. We achieve low resource utilization because the architecture employs a simplified method for calculating the Ipv4 Header Checksum based on a pre-calculated template.

The detailed break-down of such a highly complex science instrument is beyond the scope of this

Paper, but both the antenna processing, as well as the on-site correlate are expected to use highly specialized custom hardware to generate, reduce and transmit large volumes of data. As such, the quos Recognized by prospects is an end-to-end issue and it is therefore afflicted with every area of the network, the particular protocol tiers, and the way they all work. Although some previously proposed methodologies for handling dodo's attacks apply to UDP, there is a lack of understanding on whether key assumptions made in these works hold for UDP traffic. The remainder of this paper is organized as follows: Section II provides a short overview of related work on UDP/IP and TCP/IP cores and PC $ FPGA communication platform. This section introduces a brief description of TCP/IP model, ides, and classification of intrusions, UDP attacks and Fuzzy Enhanced Support Vector Decision Function (Fuzzy ESVDF) .In Section 3 we present the design of our one-to-many communication protocol and in Section 4 we provide implementation details. In Section 5 we present experimental results. Finally, in Section 6 we conclude and discuss future work. Load shedding is a congestion control mechanism in which when the routers are being inundated by packets that they cannot handle, they just throw them away. The queue management algorithm is one such way of deciding which packets to drop in a router to improve quos measurements. Queuing management algorithm is responsible for packet Admission control. The differences between the in order and reordered packets give insight into the characteristics of RO and allow us to show that different Source-destination pairs often observe extremely different RO rates; that packet RO occurs with diurnal cycles; that the size of transmitted packets can significantly impact the probability with which they will be reordered, and that there Are two distinct time-scales manifested by RO.

2 RELATED WORKS

The fields stored in HLUT form part of the 802.3 MAC frame, the ipv4 header Section and the UDP header section. The main fields of the 802.3 MAC frame are the Destination Address, the Source Address, and the Ethernet Type. UDP's Simple transmission model without implicit connectivity provides a fast way to transmit data. One of

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the features of UDP is multicast addressing. Multicast is the delivery of a message or information to a group of destination computers simultaneously, in a single transmission from the source [3]. The measurements were performed on 140 nodes topologically close to the MAE-East exchange point.

The traffic generated between the nodes consisted of five 56-byte bursts of ICMP-ping packets followed by back-to back Burst of 50 ping-packets. The authors reported that more that 90% of the probing instances experienced RO. UDP is probably the network protocols which can be commonly found in the world-wide-web for helping better info buffer. The services given by UDP are usually a unordered supply of packets, connectionless support, full duplex connection and meaning boundaries keeping, no traffic jam control along with packet supply Protocol design.

3 Methodologies

There are many design paths to take when developing a user Space networking protocol. The first option considered was implementing the protocol via overloading existing functions and using callback mechanisms. However, this makes the code hard to follow and even harder to extend or tweak particular functionalities. To make the implementation of a communication protocol easier and to have better defined functions for certain tasks, the protocol needs an entity that would always run and send/receive messages. A separate process would require intensive IPC (Inter-Process Communication) and synchronization, while a separate thread would mean every application that uses the protocol will each have its own thread that performs communication.

4 Protocol Operations

The primary purpose of the protocol is to provide a reliable logical circuit or connection service between one too many endpoints. To provide this service on top of a less reliable communication system the following facilities are required.

5 Basic data transfer

The protocol packs some number of octets into packets for transmission through the networking system. This way, the protocol is able to transfer a stream of octets in each direction grouped into messages.

6 Reliability

In case data is damaged, lost, duplicated or delivered out Of order, the protocol must recover and never enter an unknown state. This is achieved by assigning a sequence number to each packet transmitted and requiring an acknowledgment (ACK) from the receiving end. If the ACK Is not received within a timeout interval, the data is retransmitted. The sequence numbers are also used by the receiver to correctly order packets that may be red of order or to eliminate duplicates. Damage is handled by having a checksum the end of the packet header, calculated By the sender and checked by the receiver, who discards damaged packets.

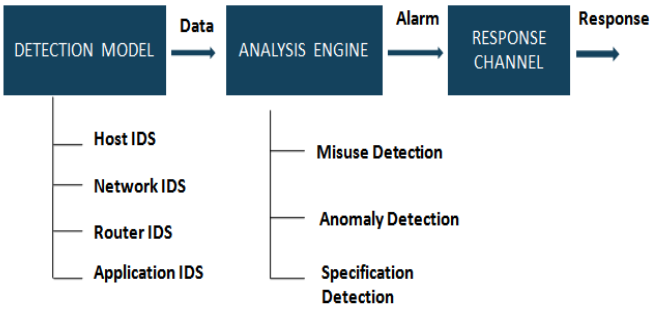
7 Multiplexing

To allow for many execution units within a single host tousle the communication facilities simultaneously, the protocol provides a set of streams within each process, further developing on the address and port identification elements. The protocol must allow for multiple distinct communications to take place on the same machine or by the same Process, but each one must use a different source endpoint.

1. TCP can establish a Connection and UDP cannot.
2. TCP guarantees that as long as you have a connection data all.
3. UDP is faster for sending small amounts of data since no connection setup is required, the data can be sent in less time than it takes for TCP to establish

8 Intrusion detection system

A detection Model: It collects data that may contain signs of intrusion. It monitors Host IDS, Network IDS [7, 8, 13], Router IDS [3, 13], and Application IDS. It takes the appropriate action to cut off network connections, record events, give alarm, and remind the system administrator to take the proper measures. Modern IDSs are extremely diverse in the techniques they employ to gather and analyze data



9 Classification of Intrusions

An intrusion is generally defined as a set of actions that attempt to exploit vulnerabilities thereby gain access to confidential data.

Normally, attacks can be categorized into four main categories.

- Probing
- Does
- U2R
- R2L

We, categorize the attacks into four types depending on the TCP/IP layer

– Application layer attacks: These attacks are specific to the application layer in the network protocol stack such as back, pod, surf, buffer overflow, load module, Perl, guess password, Satan, etc.

– Transport layer attacks: These attacks are specific to the transport layer in the network protocol stack such as land, Neptune, port sweep, and many others.

– Network layer attacks: These attacks are specific to the network layer in the network protocol stack such surf, POD (Ping of Death), IP sweep attack, etc.

– Link layer attacks: These attacks are specific to the link layer in the network protocol stack such as MAC attacks, DHCP (Dynamic Host Configuration Protocol) attacks, ARP (Address Resolution Protocol) attacks, STP and VLAN-Related attacks.

10 TCP AND UDP MODEL

TCP/IP model which are based on layered concept of networking was developed to accommodate changes in technology. Each layer of specific network model may be responsible for different functions of the network. The TCP/IP protocol enables computers to communicate over the network, specifying the processing information of a packet. The TCP/IP layer uses four layers which differ significantly from ISO/OSI layers even though they are very similar on the L3 and L4 layers. In the TCP/IP model, each layer has its own functionality and service which means that each layer needs a specific protection process. Following is the major differences between UDP and TCP.

11 CONCLUSION

We presented a significantly enhanced version of our widely used open-source UDP/IP core for efficient direct PC $ FPGA communication. The improved version allows For automatic configuration of the UDP/IP core. In addition, we introduce a light-weight PC $ FPGA communication Protocol and provide an appropriate software/hardware interface And communication library implementation. This library Allows for easy integration with PC application codes written In C or C++.A new categorization for IDS based on TCP/IP network model which focus on UDP Layer 4(UDP protocol) is designed that accommodates the three main form of security measure. This categorization improves the performance and scalability of the TIDS over the Transport layer. The implementation of multiple endpoints is reliable, unlike multicast over UDP, and is not limited to only two endpoints that may have multiple IPs, like SCTP's implementation of multi-homing. Using the new protocol, applications can easily choose the type of connection they desire with the endpoints. Connection oriented multicast, any cast and load balancing are all fully integrated in our protocol.

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