Data Communication and Networking Concepts in User Datagram Protocol (UDP)

T. Vedavathi, R. Karthick, R. Senthamil Selvan, P. Meenalochini

Abstract: In most popular standards, the UDP (User datagram protocol plays a vital role in Internet protocol. Normally, in the networking concepts are not required for set up communication between data paths and also the channels. It has used to addressing several different function and also provides data integrity at the source and destination. TCP and SCTP are designed for many applications in the network interface if error free network needed. So that, to improve the performance metrics of teaching learning process, the wireless technology based networking concepts involved major parts.

Keywords: User Datagram, Internet Protocol, Internet of Things.

I. INTRODUCTION

The basic RFC 768 protocol was designed by David P. Reed in 1980. The error correction and checking are achieved by UDP protocol stack avoids the overhead of such processing. Due to transmit again and again, the dropping packets are waiting for time-sensitive applications. RFC 768 was used more in simple message oriented transport layer protocol[1]. The message delivery for upper layer protocol and the UDP messages are sent once, there is no state for the UDP layer retains in it. For all users applications, it should be calculated by means of desired transmission reliability.

Application specific UDPs attributes are:

1. The network type protocol are simply suits for query and response protocol, also it is a transaction oriented protocol [2].
2. For modelling that is Internet protocol provides datagrams for remote cell and file systems in network.
3. For a full stock protocol, the trivial file transfer protocol used in bootstrapping.
4. IPTV has very much amount of clients are available in stateless.
5. Real time streaming protocol are used in online games which makes transmission delays.
6. The broadcast application is only suits in multicast precision time protocol.

II. PACKET STRUCTURE

The User Data gram protocol holds 16 bits of data with the combination of source fields as well as checksum in IPv4. But the usage of IPv6 is kept reserved[4].

Source port number

If the state is idle, the port is zero initially [5]. The ephemeral port is used for the client which identifies the port number from sender. The best example for the user friendly port number is assigned the server as the source host.

Destination port number

If assumption made for destination port number, the server will act as superior port number which also be identifies the receiver’s port. Now the client has the ephemeral port number.

![Figure 1. The basic functional packet structure of UDP.](image)

Length

The several bytes of UDP data and header specify its length. The total size of UDP is about 65535 bytes with the minimum length of 8 bytes. In IPVS protocol is about 65507 to be imposed the actual data length. The important IPVS protocol have larger amount of UDP header with...
bytes larger than 20 byte IP header [6].

Checksum
In checksum all the fields are ‘0’ for unused IPv4 and the protocol IPv6 should have attempted the error-checking for the header and the data fields.

III. CHECKSUM COMPUTATIONS
To manipulate the checksum by using RFC 768.

The product of two octet consists of 16-bit number which derives the one’s complement sum of pseudo, IP, UDP header with zero padding [7]. Actually 16-bit words are added using arithmetic’s complement. After adding 17th bit and also add significant bit in total. The total sum of 1’s complements which gives checksum field. The pseudo header shows the exact difference between the IPv4 and IPv6 is used to calculate checksum. The duplicate IPv4 contains pseudo header with the same message from original message. The fake IPv4 is only used to calculate the checksum value properly.

Figure 2. IPv4 Pseudo Header format
The user datagram protocol has length field contains UDP data and header in the protocol IPv4. Actual transmission data used to transmit the transmission data.

The checksum value is usually zero when not in use so the UDP calculation is optional. In IPv6 pseudo header the user datagram protocol is important to compute and also change as RFC 2460 [8],[9],[10],[11],[12].

To include 128-bit IPv6 addresses for any transport or high level protocol taken from the address in its checksum computation[13],[14],[15]. If we compared with the pseudo header the computation gives real header [16],[17],[18],[19],[20].

Figure 3. IPv6 pseudo header format.
The IPv6 header have only consists of IPv6 source address and destination address and there is no routing header [21],[22],[23],[24],[25],[26],[27],[28],[29],[30]. If it is starting node, the address is the very last routing header and if it is destination node, it shoes IPv6 header. The overall length field is called as UDP header and data.

Reliability and Congestion Control
Actually, there is lot of reliability lacking with packet loss and duplication. Redundancy reliability will be increased by means of TFTP mechanism to which application layer is needed. To improve high degree of reliability, we can use transmission control protocol[31],[32],[33],[34].

IV. RESULTS AND DISCUSSION
Most of the UDP application have themselves to achieve self-employable reliability mechanism which provides real-time multiplayer streaming with examples for voice over IP([VoIP]. In case of VoIP , the packet loss is not at all a problem. But in case of VoIP the primary concern is a latency as well as jitter. The transmission control protocol used to resending the original data.

<table>
<thead>
<tr>
<th>Version</th>
<th>Offset</th>
<th>Octets</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPv4</td>
<td>16</td>
<td>128</td>
</tr>
<tr>
<td>IPv6</td>
<td>44</td>
<td>352</td>
</tr>
</tbody>
</table>

Fig 4a and 4b. Comparison of IPv4 and IPv6.

V. CONCLUSION
This paper concludes that many wireless users may be preferred to increase. Initially, the work gives and overview and then defined the basic networking concepts as well as discuss various technology relevant to networking. Many people trusted to use wireless networking based solutions recently and also good affordability. This work also gives detailed information about wireless networking with flexibility and scalability. To improve latency and loss-tolerance, the UDP (User Datagram Protocol) is an alternative communications protocol to Transmission Control Protocol (TCP) between applications on the internet.
REFERENCES


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