

IEN-71

User Datagram Protocol

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## User Datagram Protocol

## Introduction

This User Datagram Protocol is defined to make available a datagram mode of packet-switched computer communication in the environment of an interconnected set of computer networks. This protocol assumes that the Internet Protocol [1] is used as the underlying protocol.

This protocol provides a procedure for application programs to send messages to other programs with a minimum of protocol mechanism. The messages delivery is unordered and unreliable. Applications requiring ordered reliable delivery of streams of data should use the Transmission Control Protocol (TCP) [2].

## Format

```

      0                15 16                31
+-----+-----+-----+
| Source      | Destination |
| Socket      | Socket      |
+-----+-----+-----+
| Length      | Checksum    |
+-----+-----+-----+
|
| data octets .....
+-----+ ...

```

## User Datagram Header Format

## Fields

Source Socket is optional, used for replies, if any.

Destination Socket has a meaning within the context of a particular internet destination (net,host). There are no "well known" sockets.

Length is the length in octets of the data octets of the datagram.

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Fields

Checksum is the 16-bit one's complement of the one's complement sum of the parts of the internet header involved in the TCP checksum, the fields above, and the data, padded with zero octets at the end to make a multiple of two octets.

If the checksum is zero, it is transmitted as all ones (the equivalent in one's complement arithmetic). An all zero transmitted checksum value means that the transmitter generated no checksum (for debugging or for higher level protocols that don't care).

User Interface

A user interface should allow

the creation of new receive ports,

receive operations on the receive ports that return the data octets and an indication of source socket, if any,

and an operation that allows a datagram to be sent, specifying the data and source socket to be sent.

Protocol Application

The major use of this protocol is the Internet Name Server [3].

Protocol Number

This is protocol 17 (21 octal) when used in the Internet Protocol. Other protocol numbers are listed in [4].

References

- [1] Postel, J., "Internetwork Protocol Specification -- Version 4," IEN-54, USC-Information Sciences Institute, September 1978.
- [2] Postel, J., "Specification of Internetwork Transmission Control Protocol -- Version 4," IEN-55, USC-Information Sciences Institute, September 1978.
- [3] Postel, J., "Internet Name Server," USC-Information Sciences Institute, IEN-61, October 1978.
- [4] Postel, J., "Assigned Numbers," USC-Information Sciences Institute, RFC-750, NIC-45500, September 1978.