## DECLARATION OF SANDY GINOZA FOR IETF RFC 768: USER DATAGRAM PROTOCOL

I, Sandy Ginoza, based on my personal knowledge and information, hereby declare as follows:

1. I am an employee of Association Management Solutions, LLC (AMS), which acts under contract to the Internet Society (ISOC) as the operator of the RFC Production Center. The RFC Production Center is part of the "RFC Editor" function, which prepares documents for publication and places files in an online repository for the authoritative Request for Comments (RFC) series of documents (RFC Series), and preserves records relating to these documents. The RFC Series includes, among other things, the series of Internet standards developed by the Internet Engineering Task Force (IETF), an organized activity of ISOC. I hold the position of Director of the RFC Production Center. I began employment with AMS in this capacity on 6 January 2010.

2. Among my responsibilities as Director of the RFC Production Center, I act as the custodian of records relating to the RFC Series, and I am familiar with the record keeping practices relating to the RFC Series, including the creation and maintenance of such records.

3. From June 1999 to 5 January 2010, I was an employee of the Information Sciences Institute at University of Southern California (ISI). I held various position titles with the RFC Editor project at ISI, ending with Senior Editor.

4. The RFC Editor function was conducted by ISI under contract to the United States government prior to 1998. In 1998, ISOC, in furtherance of its IETF activity, entered into the first in a series of contracts with ISI providing for ISI's performance of the RFC Editor function. Beginning in 2010, certain aspects of the RFC Editor function were assumed by the RFC Production Center operation of AMS under contract to ISOC (acting through its IETF function and, in particular, the IETF Administrative Oversight Committee). The business records of the RFC Editor function as it was conducted by ISI are currently housed on the computer systems of AMS, as contractor to ISOC.

5. I make this declaration based on my personal knowledge and information contained in the business records of the RFC Editor as they are currently housed at AMS, or confirmation with other responsible RFC Editor personnel with such knowledge.

6. Prior to 1998, the RFC Editor's regular practice was to publish RFCs, making them available from a repository via FTP. When a new RFC was published, an announcement of its publication, with information on how to access the RFC, would be typically sent out within 24 hours of the publication.

7. Any RFC published on the RFC Editor website or via FTP was reasonably accessible to the public and was disseminated or otherwise available to the extent that persons interested and ordinarily skilled in the subject matter or art exercising reasonable diligence could have located it. In particular, the RFCs were indexed and placed in a public repository.

8. The RFCs are kept in an online repository in the course of the RFC Editor's regularly conducted activity and ordinary course of business. The records are made pursuant to established procedures and are relied upon by the RFC Editor in the performance of its functions.

9. It is the regular practice of the RFC Editor to make and keep the RFC records.

10. Based on the business records of the RFC Editor and the RFC Editor's course of conduct in publishing RFCs, I have determined that the publication date of RFC 768 was no later than October 1992, at which time it was reasonably accessible to the public either on the

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RFC Editor website or via FTP from a repository. A copy of that RFC is attached to this declaration as an exhibit.

Pursuant to Section 1746 of Title 28 of United States Code, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct and that the foregoing is based upon personal knowledge and information and is believed to be true.

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	,		Sandy Ginbza		
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J. Postel ISI 28 August 1980

User Datagram Protocol

Introduction

This User Datagram Protocol (UDP) 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 (IP) [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 protocol is transaction oriented, and delivery and duplicate protection are not guaranteed. Applications requiring ordered reliable delivery of streams of data should use the Transmission Control Protocol (TCP) [2].

Format

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0	78	15 16	23 24	31	
+	+	+	+	+	
	Source	I	Destinatio	on	
	Port		Port		
+	+	+	+	+	
	Length		Checksum		
+	+	+	+	+	
data octets					
+					

User Datagram Header Format

# Fields

Source Port is an optional field, when meaningful, it indicates the port of the sending process, and may be assumed to be the port to which a reply should be addressed in the absence of any other information. If not used, a value of zero is inserted.

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User Datagram Protocol Fields

Destination Port has a meaning within the context of a particular internet destination address.

Length is the length in octets of this user datagram including this header and the data. (This means the minimum value of the length is eight.)

Checksum is the 16-bit one's complement of the one's complement sum of a pseudo header of information from the IP header, the UDP header, and the data, padded with zero octets at the end (if necessary) to make a multiple of two octets.

The pseudo header conceptually prefixed to the UDP header contains the source address, the destination address, the protocol, and the UDP length. This information gives protection against misrouted datagrams. This checksum procedure is the same as is used in TCP.

0		78	15 16	23 24	31	
+-		-+	+	+	+	
	source address					
++						
destination address						
+-		-+	+	+	+	
	zero	proto	col  UD	P length		
+-		-+	+	+	+	

If the computed 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 port and source address,

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

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IP Interface

The UDP module must be able to determine the source and destination internet addresses and the protocol field from the internet header. One possible UDP/IP interface would return the whole internet datagram including all of the internet header in response to a receive operation. Such an interface would also allow the UDP to pass a full internet datagram complete with header to the IP to send. The IP would verify certain fields for consistency and compute the internet header checksum.

Protocol Application

The major uses of this protocol is the Internet Name Server [3], and the Trivial File Transfer [4].

Protocol Number

This is protocol 17 (21 octal) when used in the Internet Protocol. Other protocol numbers are listed in [5].

#### References

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- [1] Postel, J., "Internet Protocol," RFC 760, USC/Information Sciences Institute, January 1980.
- [2] Postel, J., "Transmission Control Protocol," RFC 761, USC/Information Sciences Institute, January 1980.
- [3] Postel, J., "Internet Name Server," USC/Information Sciences Institute, IEN 116, August 1979.
- [4] Sollins, K., "The TFTP Protocol," Massachusetts Institute of Technology, IEN 133, January 1980.
- [5] Postel, J., "Assigned Numbers," USC/Information Sciences Institute, RFC 762, January 1980.

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