Network Working Group
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PROTOCOL STANDARD FOR A NetBIOS SERVICE ON A TCP/UDP TRANSPORT: DETAILED SPECIFICATIONS

ABSTRACT

This RFC defines a proposed standard protocol to support NetBIOS services in a TCP/IP environment. Both local network and internet operation are supported. Various node types are defined to accommodate local and internet topologies and to allow operation with or without the use of IP broadcast.

This RFC gives the detailed specifications of the NetBIOS-over-TCP packets, protocols, and defined constants and variables. A more general overview is found in a companion RFC, "Protocol Standard For a NetBIOS Service on a TCP/UDP Transport: Concepts and Methods".

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PROTOCOL STANDARD FOR A NetBIOS SERVICE ON A TCP/UDP TRANSPORT: DETAILED SPECIFICATIONS

1. STATUS OF THIS MEMO

This RFC specifies a proposed standard for the DARPA Internet community. Since this topic is new to the Internet community, discussions and suggestions are specifically requested.

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Distribution of this memorandum is unlimited.

2. ACKNOWLEDGEMENTS

This RFC has been developed under the auspices of the Internet Activities Board.

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The system proposed by this RFC does not reflect any existing Netbios-over-TCP implementation. However, the design incorporates considerable knowledge obtained from prior implementations. Special thanks goes to the following organizations which have provided this invaluable information:

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3. INTRODUCTION

This RFC contains the detailed packet formats and protocol specifications for NetBIOS-over-TCP. This RFC is a companion to RFC 1001, "Protocol Standard For a NetBIOS Service on a TCP/UDP Transport: Concepts and Methods" [1].

4. PACKET DESCRIPTIONS

Bit and byte ordering are defined by the most recent version of "Assigned Numbers" [2].

4.1. NAME FORMAT

The NetBIOS name representation in all NetBIOS packets (for NAME, SESSION, and DATAGRAM services) is defined in the Domain Name Service RFC 883[3] as "compressed" name messages. This format is called "second-level encoding" in the section entitled "Representation of NetBIOS Names" in the Concepts and Methods document.

For ease of description, the first two paragraphs from page 31, the section titled "Domain name representation and compression", of RFC 883 are replicated here:

> Domain names messages are expressed in terms of a sequence of labels. Each label is represented as a one octet length field followed by that number of octets. Since every domain name ends with the null label of the root, a compressed domain name is terminated by a length byte of zero. The high order two bits of the length field must be zero, and the remaining six bits of the length field limit the label to 63 octets or less.
>
> To simplify implementations, the total length of label octets and label length octets that make up a domain name is restricted to 255 octets or less.

The following is the uncompressed representation of the NetBIOS name "FRED ", which is the 4 ASCII characters, F, R, E, D, followed by 12 space characters (0x20). This name has the SCOPE_ID: "NETBIOS.COM"

EGFCEFEECACACACACACACACACACACACA.NETBIOS.COM

This uncompressed representation of names is called "first-level encoding" in the section entitled "Representation of NetBIOS Names" in the Concepts and Methods document.

The following is a pictographic representation of the compressed representation of the previous uncompressed Domain Name representation.

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