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EDNS X-Proxied-For
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Abstract

It is becoming more commonplace to install front end proxy devices in front of DNS servers to provide (for example) load balancing or to perform transport layer conversions.

This document defines an option within the EDNS(0) Extension Mechanism for DNS that allows a DNS server to receive the original client source IP address when supplied by trusted proxies.

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[1.](#) Introduction

It is becoming more commonplace to install front end proxy devices in front of DNS servers [[RFC1035](#)] to provide load balancing or to perform transport layer conversions (e.g. to add DNS over TLS [[RFC7858](#)] to a DNS server that lacks native support).

This has the unfortunate side effect of hiding the clients' source IP addresses from the server, making it harder to employ server-side technologies that rely on knowing those address (e.g. ACLs, DNS Response Rate Limiting, etc).

This document defines an option within the EDNS(0) Extension Mechanism for DNS [[RFC6891](#)] that allows a DNS server to receive the original client source IP address when supplied by trusted proxies.

Whilst in some circumstances it would be possible to re-use the Client Subnet EDNS Option [[RFC7871](#)] to carry this information, a new option is defined to allow both this option and the Client Subnet option to co-exist in the same packet.

[2.](#) Terminology

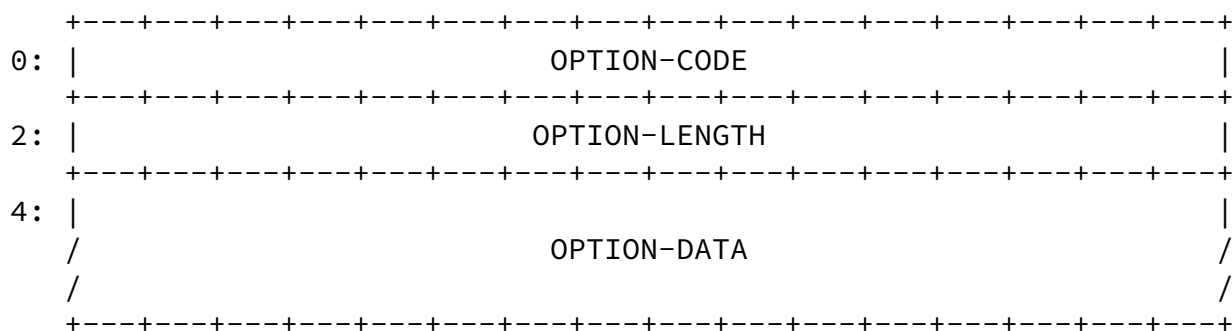
The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in "Key words for use in RFCs to Indicate Requirement Levels" [[RFC2119](#)].

The word "proxy" in this document means a network component that sits on the inbound query path in front of a recursive or authoritative DNS server, receiving DNS queries from clients and dispatching them to local servers. This is to distinguish these from a "forwarder" since that term is usually understood to describe a network component that sits on the outbound query path of a client.

[3.](#) Description

[3.1.](#) EDNS Option Format

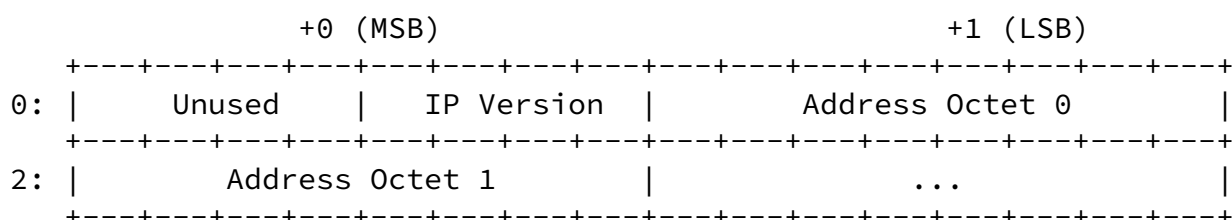
The overall format of an EDNS option is shown for reference below, per [[RFC6891](#)], followed by the option specific data:



OPTION-CODE: TBD, with mnemonic "XPF".

OPTION-LENGTH: Size (in octets) of OPTION-DATA.

OPTION-DATA: Option specific, as below:



is not consistent with that expected for the given IP version then the server MUST return a FORMERR response.

Servers MUST NOT send this option in DNS responses.

[3.4.](#) Secret Key Transaction Authentication for DNS (TSIG)

The considerations for TSIG [[RFC2845](#)] from [Section 4.5](#) of "DNS Proxy Implementation Guidelines" [[RFC5625](#)] apply here.

A TSIG-signed request MUST either:

1. be forwarded according to [RFC 5625](#) without addition of this option, or
2. be verified using a secret shared between client and proxy, updated with this option, and then re-signed with a (potentially different) shared secret before sending to the server.

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In the case of option 1, the server might still be able to uniquely identify and authenticate the client through its shared key, but not by its IP address.

If option 2 is used, there is an operational trade-off to be considered as to whether the two secrets (between client and proxy, and between proxy and server) are actually the same secret. A potential advantage of three-way sharing of the secret is that if the server response requires no modifications it may be returned directly to the client without any further TSIG operations.

Author's note: A third alternative exists, which is to append an additional TSIG signature to the packet based on a secret shared only between the proxy and server. If end-to-end TSIG validation is required alongside TSIG validation between proxy and server, the server would have to 1) validate that second signature, 2) strip it, and then 3) perform further validation on the original signature. Feedback is sought on whether this is worth pursuing.

[4.](#) Security Considerations

If the white-list of trusted proxies is implemented as a list of IP

addresses, the server administrator MUST have the ability to selectively disable this feature for any transport where there is a possibility of the proxy's source address being spoofed.

This does not mean to imply that use over UDP is impossible - if for example the network architecture keeps all proxy-to-server traffic on a dedicated network and clients have no direct access to the servers then the proxies' source addresses can be considered unspoofable.

[5.](#) Privacy Considerations

Used incorrectly, this option could expose internal network information, however it is not intended for use on proxy / forwarder devices that sit on the client-side of a DNS request.

This specification is only intended for use on server-side proxy devices that are under the same administrative control as the DNS servers themselves. As such there is no change in the scope within which any private information might be shared.

[6.](#) IANA Considerations

IANA are directed to assign the value TBD for the XPF option in the DNS EDNS0 Option Codes Registry.

[7.](#) Acknowledgements

[8.](#) References

[8.1.](#) Normative References

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[8.2](#). Informative References

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