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Timezone Specifier Option for DHCPv6
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Abstract

This document describes a new DHCPv6 option for passing the client's timezone information.

1. Introduction

This document describes a new option called Timezone option for passing the client's timezone information in DHCPv6 [[1](#)].

2. Requirements

The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL, when they appear in this document, are to be interpreted as described in [RFC 2119](#) [[2](#)]

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3. Terminology

This document uses terminology specific to IPv6 and DHCPv6 as defined in "Terminology" section of the DHCPv6 specification.

4. Timezone option

The Timezone option is used by the server to convey the timezone in which the client resides. The client is expected to set the timezone in its system on receiving this option from the server.

The format of the Timezone option is:

```

      0               1               2               3
      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|           OPTION_TIME_ZONE           |           option-len         |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|                                     time-zone                            |
|                                     ...                                  |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

option-code: OPTION_TIME_ZONE (tbd)

option-len: Length of the 'time-zone' field in octets

time-zone: Time zone of the client in the NVT-ASCII string format.
The format of this string is explained below:

Std[Offset[Dst[Offset],[Start[/Time],End[/Time]]]]

where '[' and ']' enclose optional fields, '|' indicates choice of exactly one of the alternatives, ',' and '/' represent literal characters present in the string.

If "Offset" is specified, then the time-zone is represented in the IEEE 1003.1 POSIX timezone format [3].

Std Three or more octets for the standard timezone (Std). Any character (or case) except a leading colon, digits, comma, minus or plus sign is allowed. If there is no Offset followed by the Std, then the timezone is not represented in IEEE 1003.1 format. In this case, the Std is treated as the index to the timezone database, for example, a file name, from where additional information about the timezone may be obtained.

Offset Indicates the value one must add to local time to arrive at UTC, of the form: [+|-]hh[:mm[:ss]]. Offset following Std is required, if the timezone is represented

in IEEE 1003.1 POSIX timezone format. Digits are always interpreted as decimal number. If preceded by a '-', the timezone is east of the Prime Meridian, otherwise it is west ('+' is optional) The permissible values for hh[:mm[:ss]] are as follows:

hh	0 <= hh <= 23
mm	0 <= mm <= 60
ss	0 <= ss <= 60
Dst	Three or more octets for the daylight savings timezone. If Dst is missing, then daylight savings time does not apply in this locale. If no Offset follows Dst, then Dst is assumed to be one hour ahead of standard time. Any character (or case) except a leading colon, digits, comma, minus or plus sign is allowed.
Start	Indicates the day of the year, in one of the formats indicated below, when to change to daylight savings time. The ``Time'' field (which follows immediately after a ``/' character, if present) indicates when the change is made, in local time.
End	Indicates the day of the year, in one of the formats indicated below, when to change back from daylight savings time. The ``Time'' field (which follows immediately after a ``/' character, if present) indicates when the change is made, in local time.
Time	Time has the same format as Offset, except that no leading ``-' or ``+' is permitted. The default is 02:00:00.

The day of the year needs to be given in any of the following formats:

Jn	The julian day n, (1 <= n <= 365). Leap days are not counted.
n	Zero-based julian day, (0 <= n <= 365). Leap days are counted so it is possible to refer to Feb 29.
Mm.n.d	The ``d''th day, (0 <= d <= 6) of week ``n'' of month ``m'' of the year (1 <= n <= 5, 1 <= m <= 12, where week 5 means last ``d'' day in month ``m'' which may occur in either the fourth or the fifth week. Week ``1'' is the first week in which the ``d'' day occurs. Day ``0'' refers Sunday, day ``1'' refers Monday and so on.

Examples:

i) Indian Standard Time zone is represented as:

IST-5:30

Here, ``IST'' refers the standard timezone and ``-5:30'' is the offset. '-' sign in the offset says that the timezone is 5 hours and 30 minutes ahead of UTC. Absence of ``Dst'' says that daylight savings doesn't apply to this locale.

ii) For Eastern USA time zone, 1986, the timezone string is as shown below:

```
EST5EDT4,116/02:00:00,298/02:00:00
```

It says:

The standard time zone is in 5 hours behind UTC. The Daylight Savings Timezone is 4 hours behind UTC. Day light savings starts at 116 day, i.e., April 27 02:00 AM standard time and ends at 298th day, i.e., October 26 02:00 AM daylight time.

It can also be represented as:

```
EST5EDT,116/02:00:00,298/02:00:00
```

Since no offset follows the ``Dst'', daylight savings time is 1 hour ahead of standard time, thus, it is 4 hours behind UTC.

iii) Representing ii) in the non POSIX standard way is:

```
America/New-York
```

It says that the locale belongs to New-York timezone in America, which will be used as the index in to a timezone database to get more information of the timezone.

5. Usage of Timezone option

The Timezone option has the flexibility of providing timezone information in formats other than POSIX timezone, because some vendor specific databases can provide more information than POSIX Timezone string. The server SHOULD be configurable to send any of the format specified in [Section 5](#).

The timezone option can be used along with the Vendor Class Option [\[1\]](#) to make sure that the client and server agree upon the meaning of the string. For example, the clients running in different OS expect the string in different formats. Here, the Vendor Class Option [\[1\]](#) sent by clients can be used by the server to distinguish between the clients to return the proper timezone string.

If the client is not able to interpret the timezone option sent by the server, then it SHOULD ignore the option. It MAY contact alternative DHCPv6 servers to obtain the timezone information.

6. Appearance of these options

The Timezone option MUST NOT appear in other than the following the following messages: Solicit, Advertise, Request, Renew, Rebind,

Information-Request and Reply.

The option number for these options MAY appear in the Option Request Option [\[1\]](#) in the following messages: Solicit, Request, Renew, Rebind, Information-Request and Reconfigure.

7. Security Considerations

The Timezone option may be used by an intruder DHCPv6 server to assign invalid time zones, leading to timing issues for the applications running on the client machine. For example, because of wrongly configured timezone, there is a possibility that some critical applications, which are supposed to start at a particular time don't get started at that time. A delayed start of OS security update will leave the client's machine vulnerable to security attacks.

To avoid attacks through these options, the DHCPv6 client SHOULD use authenticated DHCPv6 (see "Authentication of DHCP messages" section in the DHCPv6 specification [[1](#)]).

8. IANA Considerations

IANA is requested to assign an option code to the following options from the option-code space defined in "DHCPv6 Options" section of the DHCPv6 specification [[1](#)].

Option Name	Value	Described in
OPTION_TIME_ZONE	tbd	Section 4 .

9. Normative References

- [1] Bound, J., Carney, M., Perkins, C., Lemon, T., Volz, B. and R. Droms (ed.), "Dynamic Host Configuration Protocol for IPv6 (DHCPv6)", [RFC 3315](#), July 2003.
- [2] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

10. Informative References

- [3] IEEE, "1003.1 POSIX Timezone Specification", 1988.

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