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Time Zone Registry
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Abstract

This is a submission for the creation of a new IANA Time Zones registration process. This is intended to be a central repository for time zone names. The registry does not presume to be the authority for time zone information or rules. This register is simply a place where time zone names may be registered for public access. This registry only registers time zone names. The description of the time zone is not included in this memo. Vendors and services companies can elect to provide time zone servers that publish time zone information details.

Internet-Draft

Time Zone Registry

August 2005

Table of Contents

1.	Introduction	3
2.	Basic Grammar and Conventions	5
2.1	Formatting Conventions	5
2.2	Related Memos	6
2.3	International Considerations	6
3.	Security Considerations	7
4.	Interoperability Considerations	8
5.	Registry TZID Value	9
6.	Registry NAME	11
7.	Registry TZURL Value	13
7.1	Fetching a specific version of a VTIMEZONE	14
8.	Fetching the newest version of a VTIMEZONE	15
9.	iCalendar VTIMEZONE registry	16
10.	AREA parameter	17
11.	Specifying geographic area covered - POLYGON	18
12.	Initial Time Zones	21
13.	Updating Time Zones	22
14.	References	22
	Author's Address	22
	Intellectual Property and Copyright Statements	23

Internet-Draft

Time Zone Registry

August 2005

1. Introduction

Many software vendors create time zone information for their applications. This information can sometimes be inconsistent with other applications or contain insufficient information when referring to times far in the past or future. By creating an IANA registry, the time zone name information will be available to any vendor.

This memo will be discussed on the timezone@INET-Consulting.com mailing list (<http://inet-consulting.com/mailman/listinfo/timezone>).

In addition there is revision control in this memo so vendors will know if they have the latest data. This document uses the iCalendar "LAST-MODIFIED" property in the iCalendar "VTIMEZONE" calendar component to track revisions of the data. Each time zone has a unique iCalendar time zone identifier (TZID) that will be registered with IANA. Then any compliant application may then contact any time zone server to get the details of the time zone.

The initial information in the registry will be from the [TZ] database. And new iCalendar properties are defined in this memo.

When applications create information using a time zone is critical that the using applications have the same definitions of the time zone in order for the instances in time to match. For that reason the "TZID" property value will contain the revision information of the time zone name and the "TZURL" value will point to the specific revision of the time zone data.

When an iCalendar component is created, the originating software specifies the TZID, determines the revision they is being used, and include that TZID and revision information in the objects so that consumers of the objects know exactly which time zone definition and revision was used by the originator. And from that TZID a using application can find the most up to date version of a time zone

definition.

The "TZID" property values are broken down into parts; region, optional sub-regions, city, and revision. And they are separated using the slash (/) (ascii decimal value 47) character.

This example is using the fictitious America/BoiseLike time zone that was registered on January 15th, 2005 at 6:17:22 PM UTC:

Royer

Expires February 10, 2006

[Page 3]

Internet-Draft

Time Zone Registry

August 2005

```
BEGIN:VCALENDAR
PRODID:-//INTELLICAL.COM//NONSGML TZ VTIMEZONE DATABASE//EN
VERSION:2.0
METHOD:PUBLISH
BEGIN:VTIMEZONE
TZID:/IANA.ORG/TimeZone/America/BoiseLike/20050115T181722Z
TZURL:ftp://example.com/TimeZone/America/BoiseLike.ics
LAST-MODIFIED:20050115T181722Z
BEGIN:STANDARD
TZOFFSETFROM:-0600
TZOFFSETTO:-0700
TZNAME:MST
DTSTART:19701025T020000
RRULE:FREQ=YEARLY;BYMONTH=10;BYDAY=-1SU
END:STANDARD
BEGIN:DAYLIGHT
TZOFFSETFROM:-0700
TZOFFSETTO:-0600
TZNAME:MDT
DTSTART:19700405T020000
RRULE:FREQ=YEARLY;BYMONTH=4;BYDAY=1SU
END:DAYLIGHT
END:VTIMEZONE
END:VCALENDAR
```

[2.](#) Basic Grammar and Conventions

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 [\[4\]](#).

The notation used in this memo is the ABNF notation of [\[5\]](#). Readers intending on implementing this format defined in this memo should be familiar with this notation in order to properly interpret the specifications of this memo.

All numeric and hexadecimal values used in this memo are given in decimal notation.

All names of properties, property parameters, enumerated property values and property parameter values are case-insensitive. However, all other property values are case-sensitive, unless otherwise stated.

Note: All indented editorial notes, such as this one, are intended to provide the reader with additional information. The

information is not essential to the building of an implementation conformant with this memo. The information is provided to highlight a particular feature or characteristic of the memo.

The format for the iCalendar object is based on the syntax of the [7] content type. While the iCalendar object is not a profile of the [7] content type, it does reuse a number of the elements from the [7] specification.

[2.1](#) Formatting Conventions

The mechanisms defined in this memo are defined in prose. Many of the terms used to describe these have common usage that is different than the standards usage of this memo. In order to reference within this memo elements of the calendaring and scheduling model, core object [1] some formatting conventions have been used. Calendaring and scheduling roles are referred to in quoted-strings of text with the first character of each word in upper case. For example, "Organizer" refers to a role of a "Calendar User" within the protocol defined by [1]. Calendar components defined by this memo are referred to with capitalized, quoted-strings of text. For example, "VTIMEZONE" refers to the time zone calendar component. Usage of the term 'iCal' in this memo means [RFC 2445](#) .

The properties defined by this memo are referred to with capitalized, quoted-strings of text, followed by the word "property". For

example, "TZNAME" property refers to the iCalendar property used to convey the display name of the time zone. Property parameters defined by this memo are referred to with lowercase, quoted-strings of text, followed by the word "parameter". For example, "value" parameter refers to the iCalendar property parameter used to override the default data type for a property value.

[2.2](#) Related Memos

Implementers will need to be familiar with several other memos that, along with this memo. Such as iCalendar [1] specifications.

[1] - Specifies the format for the "VTIMEZONE" calendar component.

This memo does not attempt to repeat the specification of concepts or

definitions from these other memos. Where possible, references are made to the memo that provides for the specification of these concepts or definitions.

[2.3](#) International Considerations

In the rest of this document, descriptions of characters are of the form "character name (codepoint)", where "codepoint" is from the US-ASCII character set. The "character name" is the authoritative description; (codepoint) is a reference to that character in US-ASCII or US-ASCII compatible sets (for example the ISO-8859-x family, UTF-8, ISO-2022-xx, KOI8-R). If a non-US-ASCII compatible character set is used, appropriate code-point from that character set MUST be chosen instead.

[3.](#) Security Considerations

There are no known security issues with this proposal as this is a repository of information and not an over the wire protocol.

[4.](#) Interoperability Considerations

This document is intended to be compliant with the [iCAL] "VTIMEZONE" calendar component and will interoperate with any implementation that follows that specification. New properties are being registered as part of this memo.

5. Registry TZID Value

Within the time zone registry, the "TZID" property will be used as follows. This is compatible with the [iCAL] "TZID" property as here we only define the format of the value of the property.

Property Name: TZID

Purpose: This property specifies the text value that uniquely identifies the "VTIMEZONE" calendar component in the IANA registry. The value is case sensitive and is UTF-8 so it should be able to accomodate any locale.

Value Type: TEXT (in the format specified below)

Property Parameters: Non-standard property parameters can be specified on this property.

Conformance: This property MUST be specified in a "VTIMEZONE" calendar component that complies with this memo.

Description: This is the label by which a time zone calendar component is referenced by any iCalendar properties whose data type is either DATE-TIME, DATE, or TIME and not intended to specify a UTC or a "floating" time. The presence of the SOLIDUS character (US-ASCII decimal 47) as a prefix, indicates that this TZID represents an unique ID in a globally defined IANA time zone registry (this specification). Conforming applications MUST supply the 'tzrev' attribute shown below in the "TZID" property value. The "TZID" property value points to a specific version of the time zone.

All of the 'tzregion', 'tzcity', and 'tzrev' values are case sensitive.

Format Definition: This property is defined by the following notation:

Internet-Draft

Time Zone Registry

August 2005

```
tzid          = "TZID" tzidpropparam ":"
               ianatzidprefix
               "/" tzregion *( "/" tzregion )
               "/" tzcity
               "/" tzrev CRLF

tzidpropparam = *("; " xparam)

ianatzidprefix = "/IANA.ORG"

tzregion       = < region names as used in the [TZ] databae >
               ; Examples are "Africa", "America", "Asia"
               ; "Europe", "Indian" "Pacific"

tzcity         = <the name of a city in the tzregion>

tzrev          = date-time "Z"

date-time      = <as defined in iCalendar>
```

Example: The following are examples of globally unique time zone identifiers as defined by this specification:

```
TZID:/IANA.ORG/Indian/Reunion/20050115T112522Z
```

```
TZID:/IANA.ORG/Pacific/Pago_Pago/20050114T162291Z
```

```
TZID:/IANA.ORG//America/Indiana/Knox/20050114T162291Z
```

6. Registry NAME

One time zone definition may have more than one name or alias. And time zone names might be in a non US-ASCII locale. So this "NAME" property will be allowed multiple time zone names in a "VTIMEZONE" component. By using the iCalenar "LANG" parameter, a "TZID" value can be represented as aliases in multiple locales and multiple names or aliases.

For example "PST" could be a alias for "America/Los_Angeles". Note that many of the TZID's in use today are not unique so it is possible that multiple registered TZIDs have aliases that are the same as aliases for other registered TZIDs. This memo and the registration process is inspired by the desire to solve that problem. The registered TZID MUST BE unique in the registry. The "NAME" values do not have to be unique across registered TZID's.

Property Name: NAME

Purpose: The NAME property allows for a TZID to have many possibly locale specific names or aliases for the same definition.

Value Type: TEXT

Property Parameters: The "LANG" parameter and non-standard property parameters can be specified on this property.

Conformance: This property can be specified in a "VTIMEZONE" calendar component.

Description: Multiple NAME properties may be in a "VTIMEZONE" calendar component, each must be unique. Each "NAME" property MUST

include a "LANGUAGE" parameter specifying the locale where the "NAME" property value would be used. There may be multiple "NAME" properties with the same "LANGUAGE" parameter value as long as those "NAME" property values are unique. When in a "VTIMEZONE" calendar component then they are alias names for the "TZID" property value. Note that the "STANDARD" and "DAYLIGHT" calendar components use zero or more of the locale specific "TZNAME" property as aliases as defined in iCalendar.

Format Definition: The property is defined by the following notation:

Royer

Expires February 10, 2006

[Page 11]

Internet-Draft

Time Zone Registry

August 2005

aliasname = "NAME" nameparam ":" localeName CRLF

nameparam = langparam *(";" xparam)

langparam = < As defined in iCalendar >

localName = < Single line text used as name or alias of TZID >a

Examples.

NAME;LANGUAGE=us-EN:PST

NAME;LANGUAGE=us-EN:Us/Pacific

[7.](#) Registry TZURL Value

Within the time zone registry, the "TZURL" property will be used as follows. This is compatible with the [iCAL] "TZURL" property as here we only define the format of the value of the property.

Property Name: TZURL

Purpose: The TZURL provides a means for a VTIMEZONE component to point to a network location that can be used to retrieve an up-to-date version of itself.

Value Type: URI

Property Parameters: Non-standard property parameters can be specified on this property.

Conformance: This property can be specified in a "VTIMEZONE" calendar

component.

Description: The TZURL provides a means for a VTIMEZONE component to point to a network location that can be used to retrieve an up-to-date version of itself. This provides a hook to handle changes government bodies impose upon time zone definitions. Retrieval of this resource results in an iCalendar object containing a single VTIMEZONE component and a METHOD property set to PUBLISH. Conforming applications MUST NOT supply the 'tzrev' attribute shown in the "TZID" property value above. The "TZURL" property value points to the newest version of the time zone named in the "TZID" parameter.

All of the fetch value is case sensitive.

All of the 'tzregion' and 'tzcity' values are case sensitive. And the '.ics' is in lower case.

Format Definition: The property is defined by the following notation:

```
tzurl      = "TZURL" tzurlparam ":" ianatzuri CRLF
```

```
tzurlparam = *(";" xparam)
```

```
ianatzuri  = ( "ftp://" | "http://" ) vendorServer "/"TimeZone"  
             "/" tzregion *( "/" tzregion )  
             "/" tzcity ".ics"
```

```
vendorServer = ; Any hostname that is reachable on the Internet  
               ; by a client application.
```

Example: The following is an example of this property that points to the newest version of the time zone definitions.

```
TZURL:ftp://example.com/TimeZone/Indian/Reunion.ics
```

```
TZURL:http://example.com/TimeZone/Pacific/Pago_Pago.ics
```

```
TZURL:ftp://example.com/TimeZone/America/Indiana/Knox.ics
```

[7.1](#) Fetching a specific version of a VTIMEZONE

An application that wishes to get a specific version of a registered "VTIMEZONE" component creates the FTP url as follows:

All of the 'tzregion', 'tzcity', and 'tzrev' values are case sensitive and '.ics' is lower case.

```
fetchuri = ( "ftp://" | "http://" ) vendorServer "/TimeZone"
           "/" tzregion *( "/" tzregion )
           "/" tzcity
           "/" tzrev ".ics"
```

For example the following are the URIs to get a specific version of these time zones.

```
ftp://example.com/TimeZone/Pacific/Pago_Pago/20050114T162291Z.ics
```

```
http://example.com/TimeZone/Indian/Reunion/20050115T112522Z.ics
```

```
ftp://example.com/TimeZone/America/Indiana/Knox/20050222T130921Z.ics
```

[8.](#) Fetching the newest version of a VTIMEZONE

An application that wishes to get the newest version of a registered "VTIMEZONE" component creates the FTP url as follows:

Both the 'tzregion' and 'tzcity' values are case sensitive and '.ics' is lower case.

```
fetchnewuri = ( "ftp://" | "http://" ) vendorServer "/TimeZone"
              "/" tzregion *( "/" tzregion )
              "/" tzcity ".ics"
```

For example the following are the URIs to get a specific version of these time zones.

```
ftp://example.com/TimeZone/Pacific/Pago_Pago.ics
```

```
ftp://example.com/TimeZone/Indian/Reunion.ics
```

9. iCalendar VTIMEZONE registry

Each time zone is an [iCAL] "VTIMEZONE" calendar component. The [iCAL] "TZID" property value will be unique in the IANA registry and will be prefixed with "/IANA.ORG/" to identify them as being part of the registry.

The TZURL property will be URL that will point to the newest version of the time zone ".ics" file in the IANA registry.

Internet-Draft

Time Zone Registry

August 2005

10. AREA parameter

The "POLYGON" property allows optional information about the area to included or excluded from a geographic area.

The "AREA" parameter specifies if the values of the "POLYGON" property are to be included or excluded from the geographic region described in the "VTIMEZONE" component.

Parameter Name: AREA

Purpose: To specify if the area is to be included or excluded from the geographic region.

Value Type: TEXT

Conformance: This property MUST BE specified in a "POLYGON" property.

Description: If the AREA value is "INCLUDE", then the area is to be added to the geographic region of area covered. If the value is "EXCLUDE" then the area is to be deleted from the geographic area covered. If the "AREA" parameter is not specified, the default is "INCLUDE".

Format Definition: This property is defined by the following notation:

```
area      = ";" "AREA" "=" ( "INCLUDE" / "EXCLUDE" )
```

Example: The following are examples of the usage of the "AREA" parameter:

```
POLYGON;AREA=INCLUDE: ...lat/long..sets..of..data  
POLYGON;AREA=EXCLUDE: ...lat/long..sets..of..data
```

11. Specifying geographic area covered - POLYGON

The "POLYGON" property allows optional information about the area to include or exclude from a geographic area.

Property Name: POLYGON

Purpose: This property specifies the geographic area covered by a time zone.

Value Type: TEXT (Comma separated latitude/longitude values)

Property Parameters: The "AREA" parameter and "VALUE" parameter are the only parameter allowed in this memo.

Conformance: This property MAY be specified in a "VTIMEZONE" calendar component.

Description: The values are a comma separated set of longitude and latitude values to six decimal places. There must be at least three sets and will be as many as needed to specify the area covered by the polygon. Using the required "AREA" parameter an area can be included or exclude from the time zone area covered. A time zone may have one or more non-overlapping areas. And a time zone might have holes in it.

The value type is TEXT and can be overwritten to be a "URI" value type, so that the definition can point to a separate file that describes the geographic region that is covered. The URI MUST point to a file that only contains a list of at least three comma separated 'geopoint' entries as shown in this section. And the URI MUST point to a publicly available file.

The values start at one geographic point and continue in a counter clockwise direction. The first point MUST NOT be repeated as the last point. If drawn on paper, a line would start at the first point, continue to the second point, and to each next point. Then a line would be drawn from the last point to the first point.

Format Definition: This property is defined by the following notation:

Royer

Expires February 10, 2006

[Page 18]

Internet-Draft

Time Zone Registry

August 2005

```

polygon      = "POLYGON" polytzparam ":"
                geopoint "," geopoint "," geopoint *("," geopoint)
                CRLF

polytzparam  = area *( ";" "VALUE" "=" "URI" )

geopoint     = lat "," lon

lat          = <latitude with six digits to right of the decimal>

lon          = <longitude with six digits to the right of the decimal>
```

Example: The following is an example of a geographic region included, and a section excludes on the second entry (if done correctly, the time zone area in this example would be like a donut with a hole in the center).

```

POLYGON;AREA=INCLUDE:43.336600,116.370000,
40.475000,111.586700,
37.276702,122.069020,
33.260654,122.006900
```

```

POLYGON;AREA=EXCLUDE:43.00,116.13000000,
40.30000,111.500000,
```

37.20000,122.069000,
33.20000,122.006000

Now assume you have two text files with at least three comma separated 'geopoint' entries:

`ftp://example.com/TimeZone/America/New_Yrk.geo`

and

`ftp://example.com/TimeZone/America/Indiana/Knox.geo`

By using a "URI" value type, these can be in the "VTIMEZONE" component and point to a files that really contain the time zone geographic region. So the "Americla/New_York.ics" file might contain this if the "America/New_York" time zone is not valid in the "America/Indiana/Knox" time zone.

Royer

Expires February 10, 2006

[Page 19]

Internet-Draft

Time Zone Registry

August 2005

POLYGON;AREA=INCLUDE;VALUE=URI:ftp://example.com/TimeZone/America/New_Yor
POLYGON;AREA=EXCLUDE;VALUE=URI:ftp://example.com/TimeZone/America/Indiana

And the "Americia/Indiana/Knox.ics" file might contain this:

POLYGON;AREA=INCLUDE:VALUE=URI:ftp://example.com/TimeZone/America/Indiana

Royer

Expires February 10, 2006

[Page 20]

Internet-Draft

Time Zone Registry

August 2005

[12.](#) Initial Time Zones

The initial time zones submitted will be from the latest [TZ] database.

[13.](#) Updating Time Zones

This process is TBD and will be developed by consulting with IANA.

[14.](#) References

- [1] Dawson, F. and D. Stenerson, "Internet Calendaring and Scheduling Core Object specification (iCalendar)", November 1998.
- [2] "ISO 8601, Data elements and interchange formats-Information interchange--Representation of dates and times International Organization for Standardization", June 1988.
- [3] "ISO/IEC 9070, Information Technology_SGML Support Facilities--Registration Procedures for Public Text Owner Identifiers Second Edition, International Organization for Standardization", April 1991.
- [4] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", March 1997.
- [5] Crocker, D. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", November 1997.
- [6] Yergeau, F., "UTF-8, a transformation format of ISO 10646", January 1998.
- [7] Howes, T., Smith, M., and F. Dawson, "A MIME Content-Type for Directory Information", September 1998.
- [8] Olson, A., "Time zone code and data, <ftp://elsie.nci.nih.gov/pub/>, updated periodically", [<ftp://elsie.nci.nih.gov/pub/>](ftp://elsie.nci.nih.gov/pub/).

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