Callsign Timezone Specification Format

Callsign Timezone

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<author>Phillip Hallam-Baker

<surname>Hallam-Baker

<initials>P. M.

<firstname>Phillip

<email>phill@hallambaker.com

<organization>ThresholdSecrets.com

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<keyword>Time

<keyword>Timezone

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One of the hardest problems that is faced in the design of network protocols is to provide a mechanism whereby one party can unambiguously specify a time relative to local time conventions to another. This document describes a compact format for expressing times relative to a broad if not complete set of local time conventions and determining the time at which such times may be unambiguously represented in another time series by means of a timezone description assertion issued by a time authority source.

In this draft, the Mesh Callsign registry is used to provide a direct trust binding for such authorities. Other means of establishing trust in time authority sources may be used in its place.

Discussion of this draft should take place on the MathMesh mailing list (mathmesh@ietf.org), which is archived at <https://mailarchive.ietf.org/arch/browse/mathmesh/>.

# Introduction

As its name implies, the timestamp format described in <norm="rfc3339"/> was designed to meet the need to incorporate timestamps into IETF protocols. By its nature a timestamp describes a time instant that has occurred in the past.

Considerable confusion arises when attempting to use RFC3339 format timestamps to describe a time that occurs in the future taking account of local conventions regarding the interpretation of time. For example, if Alice tells Bob that she would like to set up a weekly meeting at 3pm, local time, the following ambiguities may be introduced:

* Is the meeting for 3pm local time at Alice's location, Bob's location or the place the meeting is being held?
* Should the meeting time change according to daylight savings?
* Should the meeting time change if a UTC leap second is announced?

While such issues might be considered straightforward, implementing code to address such nuances has proved to be far from simple. There are multiple parties that claim to have authority over defining the interpretation of local time and in some cases, these authorities have ambiguous or overlapping jurisdiction.

Many parties claiming such authority exercise it with little or no regard for the consequences of their decisions. Daylight savings transitions are frequently changed with no more than a year's advance notice and in some cases the advance notice is less than a month. Even the International Bureau of Weights and Measures which is responsible for announcing leap seconds in UTC gives only 180 days notice.

It is of course very gratifying to the egos of those involved in international organization that they can force the world to dance to a tune of their own devising. But they have played their tune too long. It is time to say that we are sick of it and choose to make ourselves free of their demands on our time.

This document sets out a mechanism that allows a time instant to be specified relative to a **Time Zone Specification** (**TZS**) issued by a **Time Zone Authority** (**TZA**). A TZS is an assertion signed by the issuing TZA.

Use of the Mesh Callsign Registry provides a compact means by which any party MAY obtain a compact callsign identifier (e.g. @alice) that is bound by definition to a corresponding root of trust and a means of resolving assertions issued under that identifier. Since there are no restrictions on obtaining a callsign identifier, there are no restrictions on who may operate a TZA. It is thus possible to express any local time convention in the **Callsign Time Instant** (**CTI**), provided only that the mapping to TAI (i.e. elapsed time) can be expressed in the TZS format.

Examples.

**UTC Time**

1985-04-12T23:20:50.52Z

**UTC Time with fixed offset**

1985-04-12T23:12:50.52+08:00

**Pacific Standard Time according to Internet Time Zone Authority**

1985-04-12T23:12:50.52+08:00 [pst@itza]

**Pacific Local Time according to Internet Time Zone Authority**

1985-04-12T23:12:50.52+08:00 [plt@itza]

**Deterministic leap second specification time as specified by Internet Time Zone Authority**

2025-04-12T23:20:50.52Z [dlss@itza]

# Definitions

This section presents the related specifications and standards....

## Related Specifications

Extensive use is mad of the following related drafts:

Date and Time on the Internet: Timestamps <norm="rfc3339"/>

The existing standard for date and time information.

Mesh Schema <norm="draft-hallambaker-mesh-schema"/>

Describes the assertion format used to encode time zone descriptions

Mesh Callsign <norm="draft-hallambaker-mesh-callsign"/>

Describes the operation of the Mesh Callsign registry.

These specifications in turn make use of:

Uniform Data Fingerprint <norm="draft-hallambaker-mesh-udf"/>.

Describes the UDF format used to represent cryptographic nonces, keys and content digests in the Mesh and the use of Encrypted Authenticated Resource Locators (EARLs) and Strong Internet Names (SINs) that build on the UDF platform.

Data at Rest Encryption <norm="draft-hallambaker-mesh-dare"/>.

Describes the cryptographic message and append-only sequence formats used in Mesh applications and the Mesh Service protocol.

JSON-BCD Encoding <norm="draft-hallambaker-jsonbcd"/>.

Describes extensions to the JSON serialization format to allow direct encoding of binary data (JSON-B), compressed encoding (JSON-C) and extended binary data encoding (JSON-D). Each of these encodings is a superset of the previous one so that JSON-B is a superset of JSON, JSON-C is a superset of JSON-B and JSON-D is a superset of JSON-C.

## Defined Terms

This document makes use of the terms defined in <norm="draft-hallambaker-mesh-architecture"/>.

## Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 <norm="RFC2119"/>.

## Implementation Status

The implementation status of the reference code base is described in the companion document <info="draft-hallambaker-mesh-developer"/>.

<include=..\Examples\Colophon.md>

# Timestamp Syntax

# Time zone Definition

## Freeze Time

If specified, a freeze time is a commitment that no future changes to the time zone specification will be published that alter the interpretation of any time before the specified time instant.

A Time Zone Authority MAY publish updates to its time zone specification at any time of its choosing.

A Time Zone Authority MUST NOT publish any update modifying the interpretation of any timestamp occurring before the specified freeze time.

A Time Zone Authority MUST NOT publish any update specifying a freeze time that occurs at an earlier time.

## Base Time zone

## Time Specification

### Leap Second

#### Offset

#### Smeared

## Local Time Specification

<include=..\Examples\TimezoneResolution.md>

# Schema

<include=..\Generated\Timezone.md>

# Security Considerations

## Names

### Impersonation

### Homograph attack

### Malicious Intellectual Property Claim

## Credential Loss

### Loss

### Disclosure

## Breach of Faith

### Registrar

### Registry

## Quantum Cryptanalysis

# IANA Considerations

This document requires no IANA actions.

# Acknowledgements

# Appendix A: Latin Character Page

<include=..\Examples\CharacterPageLatin.md>