Time

Service Description

Service ID: *"time"*

Abstract
This document describes an abstract service that provides functions and features to securely manage time, location, etc to an Arrowhead local cloud.

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[Production and Energy System Automation Intelligent-Built environment and urban infrastructure for sustainable and friendly cities]

Contents

1 Overview

This document describes an abstract Eclipse Arrowhead service that is designed to manage secure time data, location and other time related information. The Time service can provide trusted timestamps, time zone and information about Daylist Savings (DST) for HMI systems and devices.

The rest of this document is organized as follows. In the remainder of this section we consider significant prior work, describe how this service is meant to be used and comment on the status of this document. In Section 2, we describe the abstract interface, in terms of functions invoked by messages, provided by this service. Finally, in Section 3, we present the data types used by those functions.

1.1 Introduction

This Arrowhead [1] service is a vital part for securly managing time-related data . The Time service provides features to manage time, location, etc in a centralized manner.

1.2 Status of this Document

This document represents the current version of the Config service. Eclipse Arrowhead, being part of an academic and R&D community is constantly evolving to provide more features and increased performance and stability.

2 Service Interface

This section lists the *functions* that must be exposed by a Time service. Each function represents one operation the Time service can *perform*. In particular, each following subsection names an abstract function, an input type and an output type, in that order. The input type is named inside parentheses, while the output type is preceded by a colon. Input and output types are only denoted when accepted or returned, respectively, by the function in question.

All abstract data types named in this section are defined in Section 3.

2.1 function getTime () : TimeResponse

Fetches a time and location data object. The response message contains two timestamps with second and millisecond resolution, a time zone string, DST state and a tag telling the client if the time is trusted or not. Only time data that has been obtained from one or more trusted sources will be tagged as secure.

3 Information Model

Here, the main data object models that are used by the Time service are listed.

3.1 struct TimeResponse

Below is a description of a the response to fetch a configuration for a local cloud system.

Field	Type	Description
epoch	UNIXTs	UNIX timestamp in seconds
epoch_ms	UNIXTsMs	UNIX timestamp in milliseconds
tz	TimeZone	Name of the time zone
dst	Boolean	If true, location is in Daylight Savings (DST)
trusted	Boolean	if true, the time information has been obtained and validated and can be be trusted

3.2 Primitives

Types and structures mentioned throughout this document that are assumed to be available to implementations of this service. The concrete interpretations of each of these types and structures must be provided by any IDD document claiming to implement this service.

Type	Description
UNIXTs	An unsigned integer represents the UNIX time, i.e. number of seconds since 00:00:00, Jan 1st, 1970
UNIXTsMs	An unsigned integer represents the UNIX millisecond time, i.e. number of milliseconds since 00:00:00, Jan 1st, 1970
TimeZone	String that represents a time zone, e.g. ”Europe/Stockholm”.

4 References

[1] J. Delsing, “IoT Automation : Arrowhead Framework,” 2017.

5 Revision History

5.1 Amendments

No.	Date	Version	Subject of Amendments	Author
1	2021-02-03	0.1	Initial	Jens Eliasson
2	2021-02-04	0.5	Updated datamodels	Jens Eliasson
3	2021-02-05	0.9	Updated primitives and functions	Jens Eliasson
4	2021-03-29	1.0	Final version	Jens Eliasson

5.2 Quality Assurance

No.	Date	Version	Approved by
1			