TimeManager

System Description (SysD)

Abstract
This document describes a system capable of providing services for managing time and location settings for an Eclipse Arrowhead local cloud. The TimeManager system provides features for systems to fetch trusted and secure timestamps, time zones, DST information etc.

ARTEMIS Innovation Pilot Project: Arrowhead
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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 the TimeManager system of the Eclipse Arrowhead [1]. The TimeManager system provides services for time and location management to enable Eclipse Arrowhead systems to have their clocks and time-related settings managed in a centralized approach. Common use-cases for the TimeManager system are;

- Providing secure and trusted time information to other systems
- Management of location parameterers such as time zone and DST settings

All these scenarios are illustrated in Figure 1.

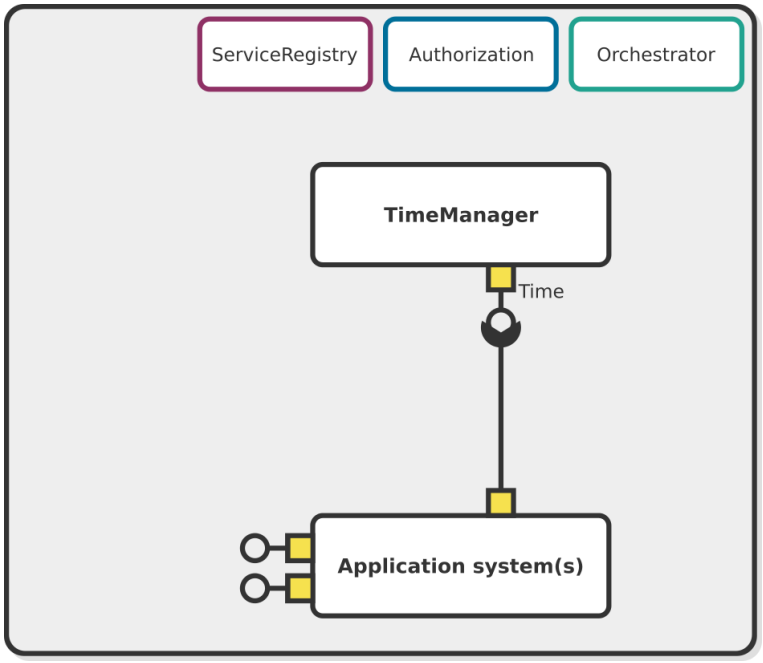

Figure 1: An example of an Arrowhead local cloud which contains the Core systems, the TimeManager system and a consumer.

The rest of this document is organized as follows. In the remainder of this section we comment on the status of this document. In Section 2, we outline the delimitations of the system, which is work-in-progress. Section 3 presents how the TimeManager system can be used in a local cloud. Finally, In Section 4, there is a description of the services that TimeManager system consumes and produces.

1.1 Status of this Document

This document presents the current state of the TimeManager. However, since Eclipse Arrowhead is an actve open source project, changes will most like happen in the future. Features will be added, modified or in other ways altered. This document will thus be updated when needed. This document, an all other such part of the same Eclipse Arrowhead Core proposal, are still to be considered early drafts and might to have to undergo several significant revisions before becoming sufficient for most kinds of industrial deployments. If the reader has any comments or suggestions regarding the design or implementations, please contact Jens Eliasson <jens.eliasson@thingwave.eu>, who the maintainer of the TimeManager system.

2 Important Delimitations

The primary purpose of the TimeManager system is to handle management of time and time-related settings for application systems.

The main purpose of the TimeManager system is to securely distribute time and location data to application systems.

3 System Role

As stated in Section 1, the TimeManager system performs two main roles. Firstly, it is responsible for distributing time information (like NTP), but using HTTPS or WSS so that clients get encrypted time information from a trusted source. Secondly; the TimeManager allows management of time related information such as time zone, DST etc to be sent to client systems in an Arrowhead local cloud.

3.1 Data models

4 Services

The TimeManager system produces and consumes the following services, as described in Figure **??**.

More details regarding the consumed and produced services are given in the following subsection.

4.1 Consumed Services

This section presents an overview of consumed services.

4.1.1 Service Registry

This service is consumed to register produced services into an Arrowhead local cloud.

4.1.2 Authorization

This service is consumed to validate access control rules when time data is being managed an Arrowhead local cloud.

4.2 Produced Services

This section presents an overview of produced services.

4.2.1 Echo

The Echo service is a simple service that can be used to determine if a system is available or not.

4.2.2 Time

This service enables a client system to fetch time stamps, time zone and DST information in a secure way . See the documents ”Time SD” and ”Time IDD” for more details.

5 References

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

6 Revision History

6.1 Amendments

No.	Date	Version	Subject of Amendments	Author
1	2021-06-30	0.5	Initial	Jens Eliasson
2	2021-07-21	1.0	Final version	Jens Eliasson

6.2 Quality Assurance

No.	Date	Version	Approved by
1			