Service Registry Core System

System Description

Abstract
This is the template for System Description (SysD document) according to the Eclipse Arrowehad documentation structure.

Contents

1 Overview

This document describes the Service Registry Core System, which exists to enable service discovery within an Eclipse Arrowhead Local Cloud (LC). Examples of such interactions is a provider system offering some kind of service for use by other systems in the LC. This mandatory Core System provides the data storage functionality for the information related to the currently and actively offered Services within the Local Cloud.

The rest of this document is organized as follows. In Section 1.1, we reference major prior art capabilities of the system. In Section 1.2, we the intended usage of the system. In Section 1.3, we describe fundamental properties provided by the system. In Section 1.4, we describe delimitations of capabilities of the system. In Section 2, we describe the abstract service functions operations produced by the system. In Section 3, we describe the security capabilities of the system.

1.1 Significant Prior Art

The strong development on cloud technology and various requirements for digitisation and automation has led to the concept of Local Clouds (LC). The concept takes the view that specific geographically local automation tasks should be encapsulated and protected. One of the main building blocks when realizing such Local Cloud is the capability of storing and maintaining information about the systems and services belonged to the given LC.

1.2 How This System Is Meant to Be Used

Service Registry is a mandatory core system of Eclipse Arrowhead and is responsible for the fundamental service discovery functionality. Systems and services are being discoverable for other systems by consuming the services provided by Service Registry Core System.

An application or other core system is required to register itself and its services into Service Registry if it is designed to be part of the Local Cloud and to unregister before shutdown or when it does not intend to continue to provide its services.

1.3 System functionalities and properties

1.3.1 Functional properties of the system

Service Registry solves the following needs to fulfil the requirements of service discovery.

- Enables the application and other core systems to register themselves in order to being part of the Local Cloud.
- Enables the application and other core systems to unregister themselves from the Local Cloud.
- Enables the application and other core systems to publish their services within the Local Cloud.
- Enables the application and other core systems to revoke their services from the Local Cloud.
- Makes the offered services queryable for other systems within the Local Cloud.

1.3.2 Non functional properties of the system

Beside the requirements of service discovery the Service Registry implements certain authentication of systems, meaning that Service Registry makes decision whether a given system has right to join to the Local Cloud or not.

1.3.3 Data stored by the system

In order to achieve the mentioned functionalities, Service Registry is capable to store the information set described by figure 1.

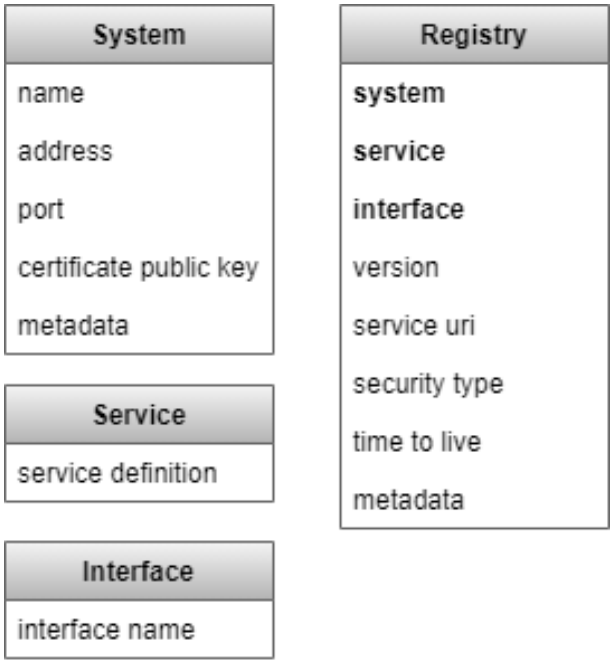

Figure 1: Overview of data stored by Service Registry Core System.

1.4 Important Delimitations

While Service Registry Core System is responsible to decide who can join to the Local Cloud, it is not responsible to decide that which system is authorized to consume which service, therefore only the so called *"public core services"* are allowed to query directly from Service Registry.

Querying *"not public"* services directly from Service Registry is primarily permitted to Orchestrator Mandatory Core System, while maintaining authorization rules between systems and services is the responsibility of Authorization Mandatory Core System.

2 Services produced

2.1 service echo

This service is offered for both application and core systems too. todo

2.2 service service-register

This service is offered for both application and core systems too. todo

2.3 service service-unregister

This service is offered for both application and core systems too. todo

2.4 service register-system

This service is offered for both application and core systems too. todo

2.5 service unregister-system

This service is offered for both application and core systems too. todo

2.6 service query

This service is offered for both application and core systems too. todo

2.7 service query-multi

This service is offered only for specified core systems. todo

2.8 service query-all

This service is offered only for specified core systems. todo

2.9 service query-by-system

This service is offered only for specified core systems. todo

2.10 service query-by-system-id

This service is offered only for specified core systems. todo

2.11 service pull-system

This service is offered only for specified core systems. todo

3 Security

The security of Eclipse Arrowhead - and therefore the security of Service Registry - is relying on X.509 certificate trust chains. The Arrowhead trust chain consists of three level:

- Master certificate: `arrowhead.eu`
- Cloud certificate: `my-cloud.my-company.arrowhead.eu`
- Client certificate: `my-client.my-cloud.my-company.arrowhead.eu`

For Arrowhead certificate profile see `https://github.com/eclipse-arrowhead/documentation`

4 References

5 Revision History

5.1 Amendments

No.	Date	Version	Subject of Amendments	Author
1	YYYY-MM-DD	4.4.0		Xxx Yyy

5.2 Quality Assurance

No.	Date	Version	Approved by
1	YYYY-MM-DD	4.4.0	