Interface Design Description (IDD) SystemDiscovery DNS-SD-TSIG-SPDNS

17 november 2017

1 Interface Design Description Overview

This document describes how to realize the SystemDiscovery service using DNS-SD.

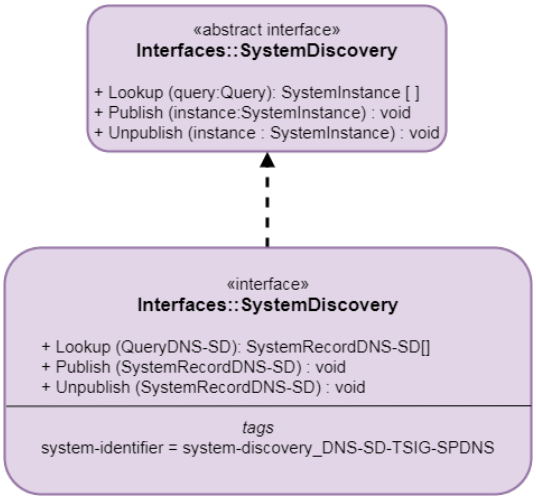

Figure 1: The SystemDiscovery interface overview

1.1 System Identifier

System type identifier: **system-discovery_DNS-SD-TSIG-SPDNS**

1.2 SD References

Table 1 provides the link to the GIT repository of the Arrowhead Framework project where can be found the SD documentation of SystemDiscovery service.

Table 1: Pointers to SD docuements

Service	SD Document Reference
SystemDiscovery	`https://forge.soa4d.org/plugins/scmgit/cgi-bin/gitweb.cgi?p=arrowhead-f/arrowhead-f.git;a=blob;f=3_Core+Systems/2_Support+Core+Systems/3_SystemRegistry+system/Documetation/SD_SystemRegistry/Arrowhead_SD_SystemDiscovery.pdf;h=ad110f4adfb336cc0bc4486eb7af03e5412699b3;hb=HEAD`

2 Interfaces

The SystemDiscovery service interface is defined according to Figure 2.

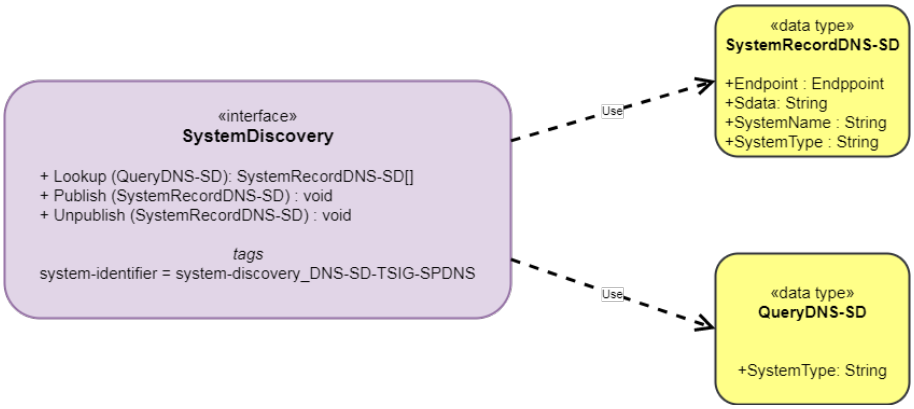

Figure 2: The SystemDiscovery interface

2.1 Functions

Lookup The lookup operation implements the Lookup method by searching for the registerd systems.

Publish The publish operation implements the Publish method using DNS-SD system registration.

Unpublish The unpublish operation implements the Unpuplish method using deregistration of service records in the DNS. The key identifier is the instance name.

2.2 Sequence Diagrams

Sequence Diagram for Lookup method Figure 3 shows the sequence diagram for the lookup method of systems registered in the SystemRegistry.

Sequence Diagram for Publish method Figure 4 shows the sequence diagram when registering systems in the SystemRegistry.

Sequence Diagram for Unpublish method Figure 5 shows the sequence diagram when unregistering systems in the SystemRegistry.

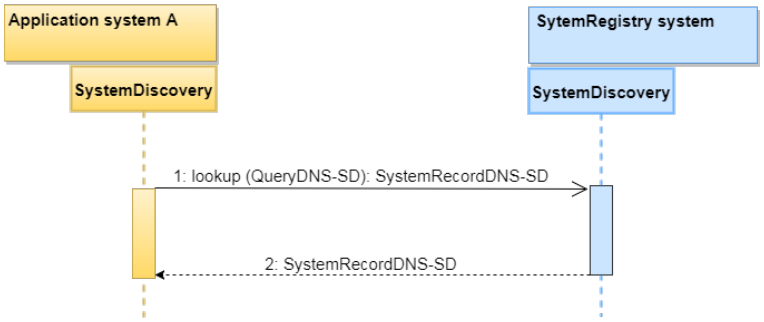

Figure 3: Sequence Diagram for the lookup method of the SystemDiscovery service

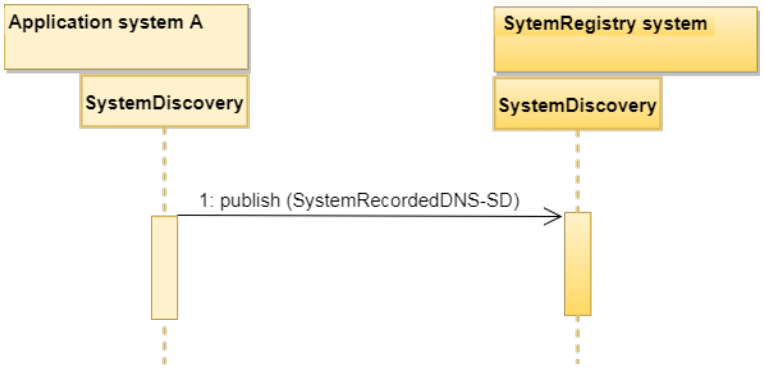

Figure 4: Sequence Diagram for the publish method of the SystemDiscovery service

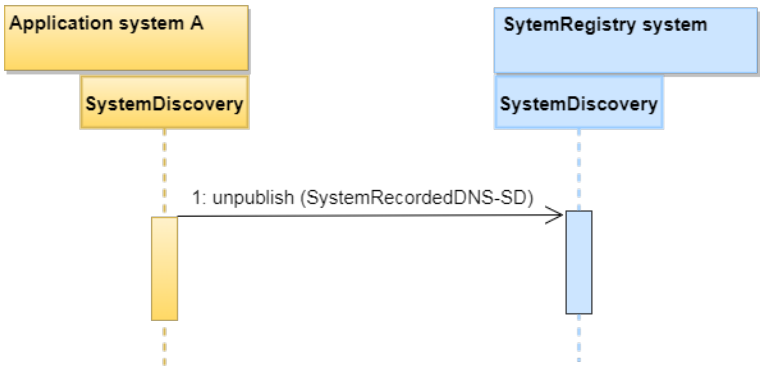

Figure 5: Sequence Diagram for the unpublish method of the SystemDiscovery service

3 Information Model

The information model shown in Figure 6 holds two data types: (i) SystemRecordDNS-SD and (ii) QueryDNS-SD, as described in Table 2.

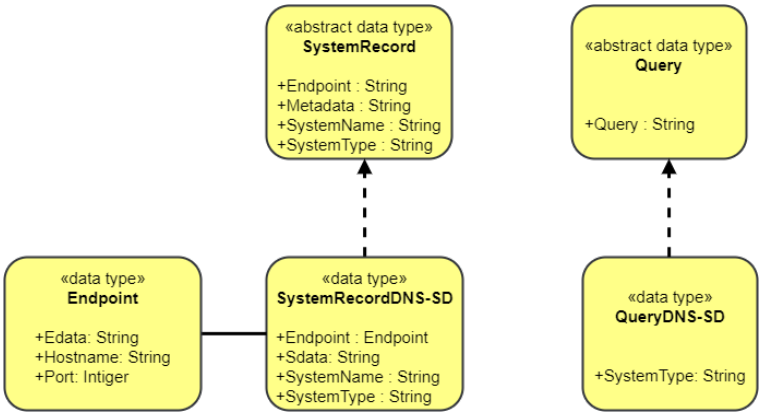

Figure 6: Information Model

4 References

Any references must be placed here.

5 Revision history

5.1 Amendments

5.2 Quality Assurance

Table 2: Data type description

Field	Description
SystemRecordDNS-SD	The SystemRecord data type contains information of a system endpoint, such as name and physical address. Metadata can also be added here. • Endpoint is a datatype holding the necessary information to establish network connection. This data type implements a representation of an endpoint using SRV record of DNS. – Hostname is a string containing the name of the host in format: name.domain.topdomain, e.g., app.arrowhead.eu – Path e.g., 192.168.1.20 – Port is an Integer containing the port number, e.g., 8070 – Edata is a String containing additional information related to the endpoint. Any additional information that is required to identify the system instance should be stored in the mandatory DNS TXT record, as defined in the DNS-SD standard specification. • Metadata - String: System metadata contains additional information describing the system instance, not related to the endpoint information. Metadata is to be provided through DNS TXT record using key pairs such as, $encode = syntax$, e.g., $encode = xml$, $compress = algorithm$, e.g., $compress = exi$, $semantix = XX$, e.g., $semantic = senml$. • SystemName is a String identifying the structured system instance name. • SystemType is a String identifying the system name. This is referred to as a system type identifier in Arrowhead.
QueryDNS-SD	The QueryDNS-SD datatype implements the Query data structure using DNS address lookup. SystemType is a String identifying the system name. This is referred to as a system type identifier in Arrowhead.

No.	Date	Version	Subject of Amendments	Author
1	2017-09-10	1.0	Initial Version	Silia Maksuti
2	2017-11-15	1.1	Updated Version	Silia Maksuti
3				

No.	Date	Version	Approved by
1			
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