

AllJoyn™ Events and Actions Feature Interface Definition

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1 Introduction

1.1 Purpose

This document describes the specification of the AllJoyn™ Events and Actions interface. Events allow devices, AllJoyn nodes, to notify other AllJoyn nodes when something of significance occurs in the network. AllJoyn nodes may also expose Actions that can be invoked by other devices on the network. The power of Events can be fully realized when there is a corresponding Action framework and Event picker application in the network that allows end users to program actions that should be taken when an Event is sent.

1.2 Scope

This document is targeted to the developers for AllJoyn applications.

1.3 Release history

Release version	What changed
14.10	org.allseen.Introspectable interface version 1 was added

1.4 References

The following reference documents are found on the AllSeen Alliance web site's Docs and Downloads section.

- *AllJoyn™ About Feature 1.0 Interface Specification*
- *Guide to using the AllJoyn™ Events and Actions Feature*

1.5 Acronyms and terms

Acronym/Term	Definition
Action	A function performed by an AllJoyn-enabled device.
Action-receiving device	The device that performs an action.
Authoring app	Application that carries out the IFTTT rules.
Event	A message denoting that something has happened.
Event-emitting device	The device that sends the event.
Event Picker app	Application that lets end users program actions to take when an event is sent.
IFTTT	If This Then That. A logical construct that tests for a certain condition and then performs an action if it is "true".

2 Specification

2.1 Overview

The Events and Actions feature is part of the AllJoyn core, designed to enable creating If-This-Then-That (IFTTT)-based rules logic in the AllJoyn network.

- Events are used by AllJoyn devices/apps to notify other AllJoyn devices/apps when something of significance occurs in the network.
- Actions enable specific responses to AllJoyn events detected in the AllJoyn network. In this regard, Events and actions go hand-in-hand. An action is a way for making an application or device do something.

For example, an AllJoyn application can broadcast an event signifying that something has happened, such as movement that was detected by a motion detector. An AllJoyn application can receive this event and respond to it by taking a specific action, such as turning on the security camera.

Events are realized using AllJoyn sessionless signals, while actions are realized using AllJoyn methods. A description element is added to the AllJoyn introspect XML format to provide human readable text for the various events a device may emit and actions it may receive.

Figure 1 illustrates the context architecture for the Events and Actions feature. Events and actions are advertised in the Announcement signal using the `org.allseen.Introspectable` interface. Any advertised object supporting an event-emitting interface or action-receiving interface will include the `org.allseen.Introspectable` interface in the Announcement signal. The Event Picker app receives announcement signals from AllJoyn devices emitting events that can receive actions. The app introspects those devices to retrieve a human-readable description for all events and actions as part of the enhanced introspection XML data.

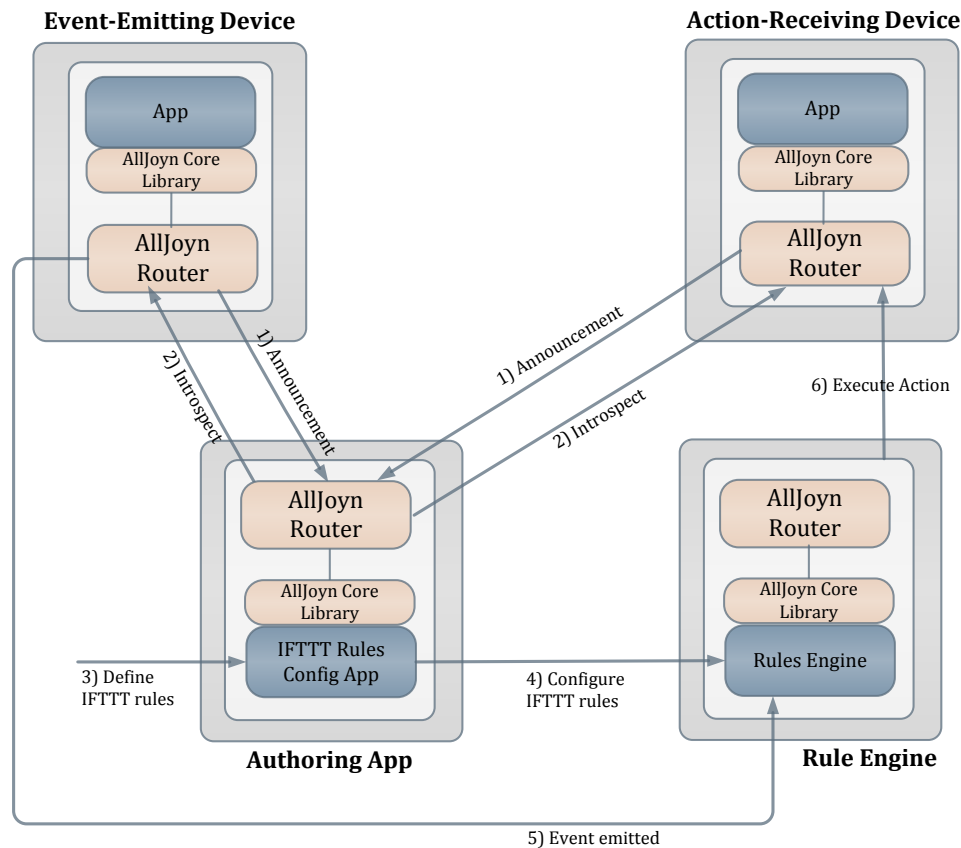


Figure 1. Events and Actions context architecture

The human-readable text description in the Event Picker app details can be presented to a user allowing the user to create IFTTT-based rules for automation in the AllJoyn network. These IFTTT rules get configured on a Rules Engine which can be on the same device or a different device than the Authoring app.

NOTE

The Rules Engine is beyond the scope of current design and its implementation is left to the ecosystem. The Rules Engine application detects when the event is emitted. Based on the configured IFTTT rules, it executes actions (method call) on the action-receiving devices.

3 Introspectable Interface

This chapter defines the Introspectable interface used by the Events and Actions feature.

3.1 Interface name

Interface name	Version	Secured	Object path
org.allseen.Introspectable	1	yes	Can be any object

3.2 Properties

Property name	Signature	List of values	Writable	Description
Version	q	Positive integers	no	Interface version number

3.3 Methods

The following methods are exposed by a BusObject that implements the org.allseen.Introspectable interface.

3.3.1 GetDescriptionLanguages

Inputs

None.

Output

Return signature	Parameter name	Mandatory	Description
as	languageTags	yes	List of the languages in which this object has descriptions.

Description

Return the aggregate of the languages for which this object has descriptions. For example, if an object implements two interfaces, X and Y - X has all of its members described in English (en) and French (fr) and Y has some descriptions in English (en) and Chinese (cn), this method will return ["en", "fr", "cn"]. The language tags will comply with IETF language tag standards.

3.3.2 IntrospectWithDescription

Inputs

Parameter name	Mandatory	Signature	List of values	Description
languageTag	yes	q		Requested language.

Output

Return signature	Parameter name	Mandatory	Description
s	data	yes	Returned introspection XML

Description

Returns the XML defined above with descriptions in the specified language (exact match only – no best match). If an element, e.g., method, does not have a description in that language, no description attribute is placed within the element.

3.4 AllJoyn Introspection XML

The following XML defines the org.allseen.Introspectable interface.

```
<node name="/com/example/LightBulb">
  <description>Your lightbulb</description>
  <interface name="com.example.LightBulb">
    <description>Provides basic lighting functionality</description>
    <method name="ToggleSwitch">
      <description>Invoke this to toggle whether the light is on or
        off</description>
      <arg name="brightness" type="i" direction="in">
        <description>A value to specify how bright the bulb should
          shine</description>
      </arg>
    </method>
    <signal name="LightOn" sessionless="true">
      <description>Emitted when the light turns on</description>
    </signal>
    <signal name="LightOff" sessionless="true">
      <description>Emitted when the light turns off</description>
    </signal>
    <property name="LightState" type="y" access="read">
      <description>The current state of this light bulb</description>
    </property>
  </interface>
  <node name="child">
    <description>Some relevant description</description>
  </node>
</node>
```