AllJoyn™ Lighting Service Framework Lamp Service 14.12 Interface Specification

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# Introduction

## Purpose

This document describes the specification of the AllJoyn™ Lighting Service Framework Lamp Service interface. An application uses this interface to control a Lamp; turn on or off, change color, etc.

## Scope

This document is targeted to the developers who build the lighting service framework or extend the provided lighting service framework.

## Release History

|  |  |
| --- | --- |
| Release Version | What changed |
| 14.02 | Interface version 1 was added |

## References

Except for supporting information, the following are reference documents found on the

AllSeen Alliance web site's Docs/Downloads section

* AllJoyn™ About Feature 14.12 Interface Specification
* AllJoyn™ Framework Tutorial
* Introduction to AllJoyn™ Thin Client
* AllJoyn™ Data Type Signature
* (https://www.allseenalliance.org/docs/api/java/org/alljoyn/bus/annotation/Signature.html)

## Acronyms and terms

Term Definition

AllJoyn device A device that supports the AllJoyn framework and can connect to a personal network.

Lamp An AllJoyn device that provides light and supports the Lamp Service Interface, by which it is controlled.

Controller An AllJoyn device that controls one or more Lamps.

# Specification Overview

The Lamp Service interface is implemented on a target device, more specifically a lamp. A typical lamp is an AllJoyn thin client device. The interface allows a controller device to control the lamp by turning it on or off, changing its color, etc.

# Error Handling

The method calls in the Lamp service interface use the AllJoyn error message handling

feature (ER\_BUS\_REPLY\_IS\_ERROR\_MESSAGE) to set the error name and error

message.

*Table 1* lists the possible errors raised by the Lamp service interface.

Table 1. Lamp Service interface errors

| Error | Description |
| --- | --- |
| LAMP\_OK | Success |
| LAMP\_ERR\_NULL | Unexpected NULL pointer |
| LAMP\_ERR\_UNEXPECTED | An operation was unexpected at this time |
| LAMP\_ERR\_INVALID | A value was invalid |
| LAMP\_ERR\_UNKNOWN | A unknown value |
| LAMP\_ERR\_FAILURE | A failure has occurred |
| LAMP\_ERR\_BUSY | An operation failed and should be retried later |
| LAMP\_ERR\_REJECTED | The connection was rejected |
| LAMP\_ERR\_RANGE | Value provided was out of range |
| LAMP\_ERR\_INVALID\_FIELD | Invalid param/state field |
| LAMP\_ERR\_MESSAGE | An invalid message was received |
| LAMP\_ERR\_INVALID\_ARGS | The arguments were invalid |
| LAMP\_ERR\_EMPTY\_NAME | The name was empty |
| LAMP\_ERR\_RESOURCES | Out of memory |

# Lamp Service Interface

## Interface name

|  |  |  |  |
| --- | --- | --- | --- |
| Interface Name | Version | Secured | Object path |
| org.allseen.LSF.LampService | 1 | No | /org/allseen/LSF/Lamp |

### Properties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property Name | Signature | List of Values | Writable | Description |
| Version | u | Positive integers | No | Interface version number |
| LampServiceVersion | u | Positive integers | No | Lamp Service version number |
| LampFaults | au | Array of positive integers | No | The lamp faults |

### Methods

The following method(s) provide control of the lamp service.

#### ClearLampFault

**Inputs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Name** | **Signature** | **List of Values** | **Description** |
| LampFaultCode | u | Positive integers | The fault to be cleared. |

**Outputs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Name** | **Signature** | **List of Values** | **Description** |
| LampResponseCode | u | Positive integers | The result code of the operation. |
| LampFaultCode | u | Positive integers | The fault code that was cleared |

**Description**

Tell the service to clear the specified fault.

### Signals

None

## Interface name

|  |  |  |  |
| --- | --- | --- | --- |
| Interface Name | Version | Secured | Object path |
| org.allseen.LSF.LampParameters | 1 | No | /org/allseen/LSF/Lamp |

### Properties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property Name | Signature | List of Values | Writable | Description |
| Version | u | Positive integers | No | Interface version number |
| Energy\_Usage\_Milliwatts | u | Positive integers | No | Lamp current energy usage in milliwatts |
| Brightness\_Lumens | u | Positive integers | No | Lamp current brightness in lumens |

### Methods

None

### Signals

None

## Interface name

|  |  |  |  |
| --- | --- | --- | --- |
| Interface Name | Version | Secured | Object path |
| org.allseen.LSF.LampDetails | 1 | No | /org/allseen/LSF/Lamp |

### Properties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property Name | Signature | List of Values | Writable | Description |
| Version | u | Positive integers | No | Interface version number |
| Make | u | Positive integers | No | Lamp make |
| Model | u | Positive integers | No | Lamp model |
| Type | u | Positive integers | No | Type |
| LampType | u | Positive integers | No | Lamp type |
| LampBaseType | u | Positive integers | No | Lamp base type |
| LampBeamAngle | u | Positive integers | No | Lamp beam angle |
| Dimmable | b | True or False | No | Can lamp be dimmed |
| Color | b | True or False | No | Color |
| VariableColorTemp | b | True or False | No | Color temp |
| HasEffects | b | True or False | No | Has effects |
| MinVoltage | u | Positive integers | No | Minimum voltage |
| MaxVoltage | u | Positive integers | No | Maximum voltage |
| Wattage | u | Positive integers | No | Wattage |
| IncandescentEquivalent | u | Positive integers | No | Incandescent equivalent |
| MaxLumens | u | Positive integers | No | Maximum lumens |
| MinTemperature | u | Positive integers | No | Minimum temperature |
| MaxTemperature | u | Positive integers | No | Maximum temperature |
| ColorRenderingIndex | u | Positive integers | No | Color rendering index |
| LampID | s | String | No | Lamp ID |

### Methods

None

### Signals

None

## Interface name

|  |  |  |  |
| --- | --- | --- | --- |
| Interface Name | Version | Secured | Object path |
| org.allseen.LSF.LampState | 1 | No | /org/allseen/LSF/Lamp |

### Properties

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property Name | Signature | List of Values | Writable | Description |
| Version | u | Positive integers | No | Interface version number |
| OnOff | b | True or False | Yes | On or off state of lamp |
| Hue | u | Positive integers | Yes | Hue of lamp |
| Saturation | u | Positive integers | Yes | Saturation of lamp |
| ColorTemp | u | Positive integers | Yes | Color temp of lamp |
| Brightness | u | Positive integers | Yes | Current brightness of lamp |

### Methods

The following method(s) provide control of the lamp state.

#### TransitionLampState

**Inputs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Name** | **Signature** | **List of Values** | **Description** |
| Timestamp | t | Positive integers | Timestamp (in ms) of when to start the transition |
| NewState | a{sv} | Array of variants | New state of the lamp to transition to |
| TransitionPeriod | u | Positive integers | Time period (in ms) to transition over to new state |

**Outputs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Name** | **Signature** | **List of Values** | **Description** |
| LampResponseCode | u | Positive integers | The result code of the operation. |

**Description**

Change the state of the lamp to the specified OnOff, Brightness, Hue, Saturation, and ColorTemp at the specified time.

#### ApplyPulseEffect

**Inputs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Name** | **Signature** | **List of Values** | **Description** |
| FromState | a{sv} | Array of variants | Current state of the lamp to transition from |
| ToState | a{sv} | Array of variants | New state of the lamp to transition to |
| period | u | Positive integers | Time period (in ms) to transition over to new state |
| duration | u | Positive integers | Time period (in ms) to remain in new state |
| numPulses | u | Positive integers | Number of pulses |
| timestamp | t | Positive integers | Timestamp (in ms) of when to start the pulses |

**Outputs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Name** | **Signature** | **List of Values** | **Description** |
| LampResponseCode | u | Positive integers | The result code of the operation. |

**Description**

Change the state of the lamp at the specified time, between the specified OnOff, Brightness, Hue, Saturation, and ColorTemp values. Pulse for the specified number of times, at the specified duration.

### Signals

#### LampStateChanged

|  |  |
| --- | --- |
| Parameter Name | Parameter Signature |
| LampID | s |

**Description**

A way to notify a listener (e.g. lamp controller) that the lamp state has changed.

# AllJoyn IntrospectionXML

The following XML defines the lamp service interfaces.

<node name="/org/allseen/LSF/Lamp" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="https://allseenalliance.org/schemas/introspect.xsd">

<interface name="org.freedesktop.DBus.Properties">

<method name="Get">

<arg type="s" direction="in"/>

<arg type="s" direction="in"/>

<arg type="v" direction="out"/>

</method>

<method name="Set">

<arg type="s" direction="in"/>

<arg type="s" direction="in"/>

<arg type="v" direction="in"/>

</method>

<method name="GetAll">

<arg type="s" direction="in"/>

<arg type="a{sv}" direction="out"/>

</method>

</interface>

<interface name="org.allseen.LSF.LampService">

<property name="Version" type="u" access="read"/>

<property name="LampServiceVersion" type="u" access="read"/>

<method name="ClearLampFault">

<arg name="LampFaultCode" type="u" direction="in"/>

<arg name="LampResponseCode" type="u" direction="out"/>

<arg name="LampFaultCode" type="u" direction="out"/>

</method>

<property name="LampFaults" type="au" access="read"/>

</interface>

<interface name="org.allseen.LSF.LampParameters">

<property name="Version" type="u" access="read"/>

<property name="Energy\_Usage\_Milliwatts" type="u" access="read"/>

<property name="Brightness\_Lumens" type="u" access="read"/>

</interface>

<interface name="org.allseen.LSF.LampDetails">

<property name="Version" type="u" access="read"/>

<property name="Make" type="u" access="read"/>

<property name="Model" type="u" access="read"/>

<property name="Type" type="u" access="read"/>

<property name="LampType" type="u" access="read"/>

<property name="LampBaseType" type="u" access="read"/>

<property name="LampBeamAngle" type="u" access="read"/>

<property name="Dimmable" type="b" access="read"/>

<property name="Color" type="b" access="read"/>

<property name="VariableColorTemp" type="b" access="read"/>

<property name="HasEffects" type="b" access="read"/>

<property name="MinVoltage" type="u" access="read"/>

<property name="MaxVoltage" type="u" access="read"/>

<property name="Wattage" type="u" access="read"/>

<property name="IncandescentEquivalent" type="u" access="read"/>

<property name="MaxLumens" type="u" access="read"/>

<property name="MinTemperature" type="u" access="read"/>

<property name="MaxTemperature" type="u" access="read"/>

<property name="ColorRenderingIndex" type="u" access="read"/>

<property name="LampID" type="s" access="read"/>

</interface>

<interface name="org.allseen.LSF.LampState">

<property name="Version" type="u" access="read"/>

<method name="TransitionLampState">

<arg name="Timestamp" type="t" direction="in"/>

<arg name="NewState" type="a{sv}" direction="in"/>

<arg name="TransitionPeriod" type="u" direction="in"/>

<arg name="LampResponseCode" type="u" direction="out"/>

</method>

<method name="ApplyPulseEffect">

<arg name="FromState" type="a{sv}" direction="in"/>

<arg name="ToState" type="a{sv}" direction="in"/>

<arg name="period" type="u" direction="in"/>

<arg name="duration" type="u" direction="in"/>

<arg name="numPulses" type="u" direction="in"/>

<arg name="timestamp" type="t" direction="in"/>

<arg name="LampResponseCode" type="u" direction="out"/>

</method>

<signal name="LampStateChanged">

<arg name="LampID" type="s"/>

</signal>

<property name="OnOff" type="b" access="readwrite"/>

<property name="Hue" type="u" access="readwrite"/>

<property name="Saturation" type="u" access="readwrite"/>

<property name="ColorTemp" type="u" access="readwrite"/>

<property name="Brightness" type="u" access="readwrite"/>

</interface>

</node>