AllJoyn™ Lighting Service Framework Lamp Service 14.06 Interface Definition

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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 |
| 14.06 | The following interfaces were added:   * org.allseen.LSF.LampService interface version 1 * org.allseen.LSF.LampParameters interface version 1 * org.allseen.LSF.LampDetails interface version 1 * org.allseen.LSF.LampState interface version 1 |

## 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

* AllJoyn™ Framework Tutorial
* Introduction to AllJoyn™ Thin Library
* [AllJoyn Data Type Signature](https://www.allseenalliance.org/docs/api/java/org/alljoyn/bus/annotation/Signature.html)

## Acronyms and terms

| Acronym/Term | Definition |
| --- | --- |
| AllJoyn device | A device that supports the AllJoyn framework and can connect to a personal network. |
| Controller | An AllJoyn device that controls one or more Lamps. |
| Lamp | An AllJoyn device that provides light and supports the Lamp Service Interface, by which it is controlled. |

# 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 . Lamp service 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 |

# LampService Interface

This chapter defines the LampService interface used by the Lighting service framework.

## 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 methods are exposed by a BusObject that implements the org.allseen.LampService interface.

### ClearLampFault

Inputs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter name | Mandatory | Signature | List of values | Description |
| LampFaultCode | Yes | u | Positive integers | The fault to be cleared. |

Output

| Return signature | Parameter name | Mandatory | Description |
| --- | --- | --- | --- |
| u | LampResponseCode | Yes | The result code of the operation. |
| u | LampFaultCode | Yes | The fault code that was cleared |

Description

Tell the service to clear the specified fault.

# LampParameters Interface

This chapter defines the LampParameters interface used by the Lighting service framework.

## 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.

# LampDetails Interface

This chapter defines the LampDetails interface used by the Lighting service framework.

## 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 * false | No | Can lamp be dimmed |
| Color | b | * true * false | No | Color |
| VariableColorTemp | b | * true * false | No | Color temp |
| HasEffects | b | * true * 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 |
| MaxTermperature | u | Positive integers | No | Maximum temperature |
| ColorRenderingIndex | u | Positive integers | No | Color rendering index |
| LampID | s | String | No | Lamp ID |

## Methods

None.

# LampState Interface

## 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 methods are exposed by a BusObject that implements the org.allseen.LampState interface.

### TransitionLampState

Inputs

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

Output

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

Output

| Return signature | Parameter name | Mandatory | Description |
| --- | --- | --- | --- |
| u | LampResponseCode | Yes | 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

| Signal name | Parameter name | | | Sessionless | Description |
| --- | --- | --- | --- | --- | --- |
| LampStateChanged | Name | Signature | Mandatory | Yes | A way to notify a listener (e.g. lamp controller) that the lamp state has changed. |
| LampID | s | Yes |

# AllJoyn Introspection XML

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>