

# ***AllJoyn™ Onboarding Service Framework 1.0 Interface Specification***

***June 30, 2014***

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# 1 Introduction

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## 1.1 Purpose

This document describes the specification of the AllJoyn™ Onboarding interface. This interface is used by an Onboarder application to provide the Wi-Fi configuration data to another device.

## 1.2 Scope

This document is targeted to the developers to build the Onboarding service framework or extend the provided Onboarding service framework codes.

## 1.3 Release history

Release version	What changed
14.02	Onboarding interface version 1 was added.
14.06	No updates.

## 1.4 References

Except for supporting information, the following are reference documents found on the AllSeen Alliance web site's Docs/Downloads section.

- 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>)

## 1.5 Acronyms and terms

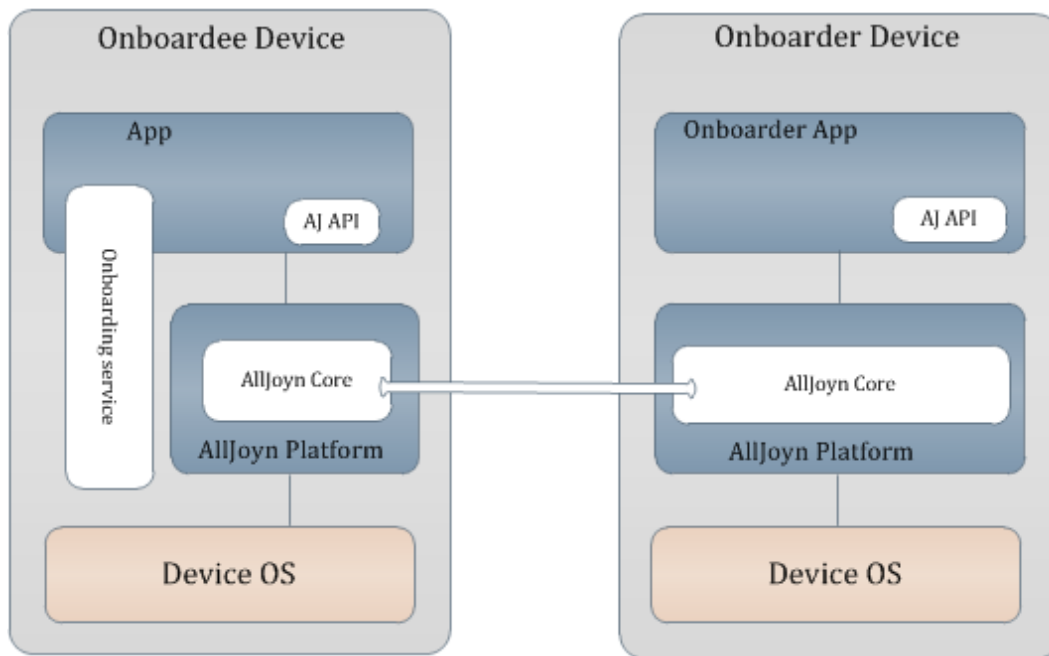
Term	Definition
AllJoyn device	A device that supports the AllJoyn framework and can connect to a personal network.
Onboarder	A device that requires credential information to join the personal Wi-Fi network.
Onboarder	An application that provides credential information to onboard other device to the personal Wi-Fi network.
Onboarding service framework	An AllJoyn service framework on the onboarder that receives Wi-Fi credentials.

Term	Definition
Personal AP	Personal or home Wi-Fi access point.
Soft AP mode	The device can provide a software-enabled access point.

## 2 Specification Overview

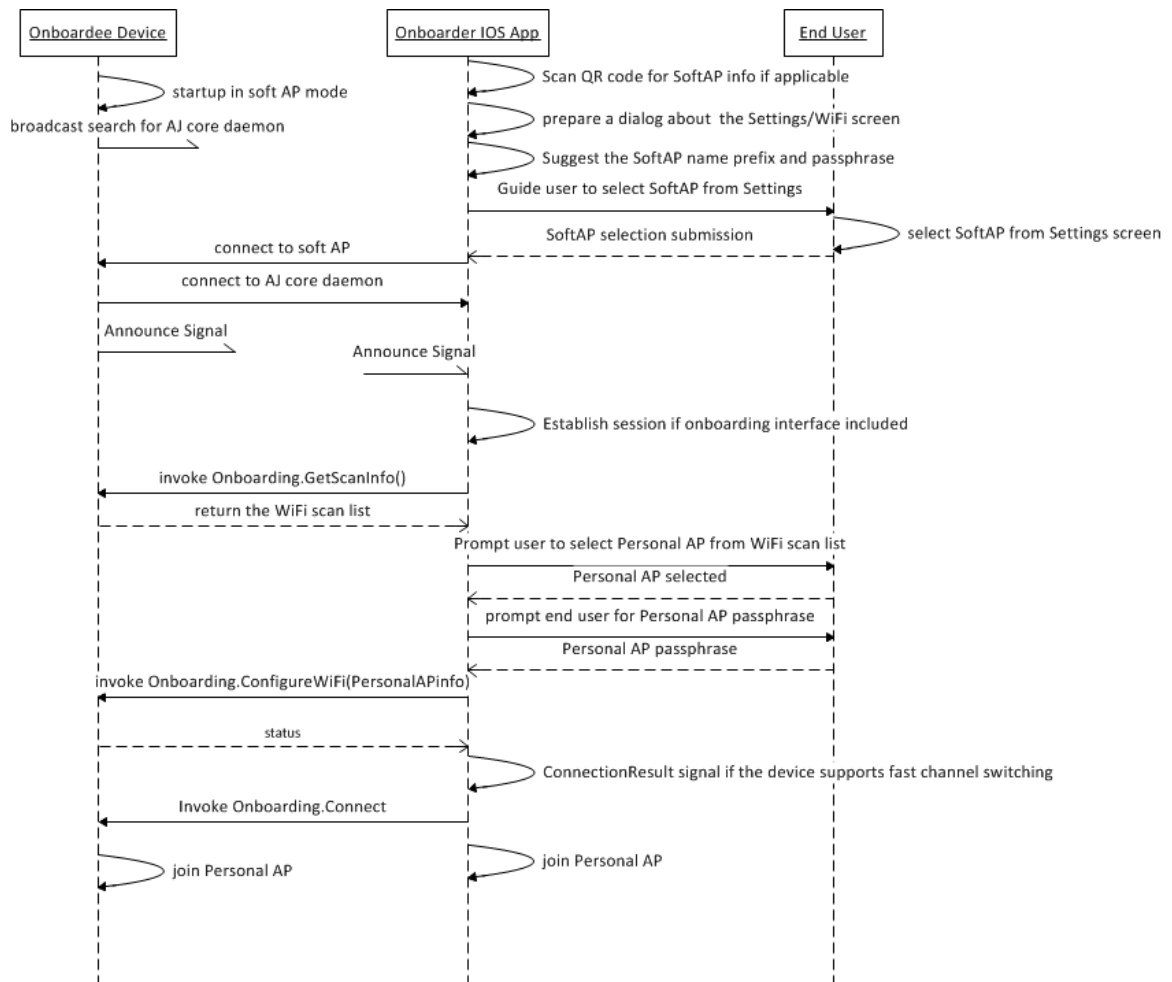
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The Onboarding interface is implemented by an application on a target device, referred to as an onboarder. A typical onboarder is an AllJoyn thin client device. This interface allows the onboarder to send the Wi-Fi credentials to the onboarder to allow it to join the personal access point. [Figure 1](#) illustrates the relationship between an onboarder and an onboarding service.



**Figure 1: Onboarding service framework architecture within the AllJoyn framework**





**Figure 3: Onboarding a device using an iOS onboarder**



## 4 Error Handling

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The method calls in the Onboarding 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 Onboarding interface.

**Table 1: Onboarding service framework interface errors**

Error name	Error message
org.alljoyn.Error.OutOfRange	Value out of range
org.alljoyn.Error.InvalidValue	Invalid value
org.alljoyn.Error.FeatureNotAvailable	Feature not available

## 5 Onboarding Interface

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### 5.1 Interface name

Interface name	Version	Secured	Object path
org.alljoyn.Onboarding	1	yes	/Onboarding

### 5.2 Properties

Property name	Signature	List of values	Writable	Description
Version	q	Positive integers	no	Interface version number
State	n	<ul style="list-style-type: none"><li>■ 0 – Personal AP Not Configured</li><li>■ 1 – Personal AP Configured/Not Validated</li><li>■ 2 – Personal AP Configured/Validating</li><li>■ 3 – Personal AP Configured/Validated</li><li>■ 4 – Personal AP Configured/Error</li><li>■ 5 – Personal AP Configured/Retry</li></ul>	no	The configuration state
LastError	ns	<ul style="list-style-type: none"><li>■ 0 – Validated</li><li>■ 1 – Unreachable</li><li>■ 2 – Unsupported_protocol</li><li>■ 3 – Unauthorized</li><li>■ 4 – Error_message</li></ul>	no	The last error code and error message.  Error_message is the error message received from the underlying Wi-Fi layer.

### 5.3 Methods

The following methods are exposed by a BusObject that implements the Onboarding interface.

#### 5.3.1 ConfigWiFi

##### Inputs

Parameter name	Signature	List of values	Description
SSID	s		Access point SSID
passphrase	s		Access point passphrase
authType	n	<ul style="list-style-type: none"> <li>■ -3 – WPA2_AUTO</li> <li>■ -2 – WPA_AUTO</li> <li>■ -1 – Any</li> <li>■ 0 – Open</li> <li>■ 1 – WEP</li> <li>■ 2 – WPA_TKIP</li> <li>■ 3 – WPA_CCMP</li> <li>■ 4 – WPA2_TKIP</li> <li>■ 5 – WPA2_CCMP</li> <li>■ 6 – WPS</li> </ul>	<p>Authentication type.</p> <ul style="list-style-type: none"> <li>■ When it is equal to any, the onbordee must attempt all possible authentication types it supports to connect to the AP.</li> <li>■ When it is equal to -3 or -2 (WPA2_AUTO or WPA_AUTO), the onbordee attempts to connect to the AP with TKIP cipher and then AES-CCMP cipher.</li> <li>■ WPA_TKIP indicates WPA with TKIP cipher,</li> <li>■ WPA2_CCMP indicates WPA2 with AES-CCMP cipher.</li> <li>■ If the value is invalid, the AllJoyn error code org.alljoyn.Error.OutOfRange will be returned.</li> </ul>

## Output

Return signature	Description
n	<p>The possible values for the connection result status are:</p> <ul style="list-style-type: none"> <li>■ 1 – Current SoftAP mode will be disabled upon receipt of Connect. In this case, the Onboarder application must wait for the device to connect on the personal AP and query the State and LastError properties.</li> <li>■ 2 – Concurrent step used to validate the personal AP connection. In this case, the Onboarder application must wait for the ConnectionResult signal to arrive over the AllJoyn session established over the SoftAP link.</li> </ul>

## Description

Send the personal AP information to the onbordee. When the authType is equal to -1 (any), the onbordee must try out all the possible authentication types it supports to connect to the personal AP.

If authType parameter is invalid, the AllJoyn error code org.alljoyn.Error.OutOfRange will be returned in the AllJoyn method call reply.

## 5.3.2 Connect

### Inputs

None.

**Output**

This method does not have any reply message. It's a fire-and-forget method call.

**Description**

Tell the onboardee to connect to the personal AP. It is recommended that the onboardee use the concurrency feature, if it is available.

### 5.3.3 Offboard

**Inputs**

None.

**Output**

This method does not have any reply message. It's a fire-and-forget method call.

**Description**

Tell the onboardee to disconnect from the personal AP, clear the personal AP configuration fields, and start the soft AP mode.

### 5.3.4 GetScanInfo

**Inputs**

None

**Output**

Output signature	Description
q	Age of the scan information in minutes. It reflects how long ago the scan procedure was performed by the device.
a(sn)	Scan list. It's an array of records holding SSID and authType.

**Description**

Scan all the Wi-Fi access points in the onboardee's proximity.

Some devices may not support this feature. In such a case, the AllJoyn error code `org.alljoyn.Error.FeatureNotAvailable` will be returned in the AllJoyn response.

## 5.4 Signals

### 5.4.1 ConnectionResult

**Parameters**

Data type	Description
ns	<p>Connect result code and message. The list of values for the result code is:</p> <ul style="list-style-type: none"><li>■ 0 – Validated</li><li>■ 1 – Unreachable</li><li>■ 2 – Unsupported_protocol</li><li>■ 3 – Unauthorized</li><li>■ 4 – Error_message</li></ul>

**Description**

This signal is emitted when the connection attempt against the personal AP is completed. The signal is sent over the AllJoyn session established over the SoftAP link.

This signal will be received only if the concurrency feature is supported by the onboardee.

## 6 Introspection XML

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The following XML defines the Onboarding interface.

```
<node
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

  xsi:noNamespaceSchemaLocation="http://www.allseenalliance.org/schemas/introspect.xsd">

  <interface name="org.alljoyn.Onboarding">
    <property name="Version" type="q" access="read"/>
    <property name="State" type="n" access="read"/>
    <property name="LastError" type="(ns)" access="read"/>
    <method name="ConfigureWifi">
      <arg name="SSID" type="s" direction="in"/>
      <arg name="passphrase" type="s" direction="in"/>
      <arg name="authType" type="n" direction="in"/>
      <arg name="status" type="n" direction="out"/>
    </method>
    <method name="Connect">
      <annotation name="org.freedesktop.DBus.Method.NoReply" value="true" />
    </method>
    <method name="Offboard">
      <annotation name="org.freedesktop.DBus.Method.NoReply" value="true"
/>
    </method>
    <method name="GetScanInfo">
      <arg name="age" type="q" direction="out"/>
      <arg name="scanList" type="a(sn)" direction="out"/>
    </method>
    <signal name="ConnectionResult">
      <arg type="(ns)" />
    </signal>
  </interface>
</node>
```