



AirPlay Receiver

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Contents

I	DOCUMENTATION	1
1	Bonjour	3
1.1	Bonjour and Device Discovery	3
2	AirPlay Server	5
2.1	Overview of the AirPlay Server	5
2.2	Initialization and Parameters	5
II	APPENDICES	7

Part I

DOCUMENTATION



CHAPTER

1

Bonjour

Contents

1.1 Bonjour and Device Discovery	3
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1.1 Bonjour and Device Discovery

The purpose of this chapter is to explore the integration of the Bonjour service in Android, specifically focusing on how an Android device must present itself to be recognized as a target by an iOS device, like an iPhone, for services such as AirPlay. Bonjour, Apple’s implementation of zero-configuration networking, facilitates automatic service discovery, enabling devices within the same network to discover and connect with each other without manual configuration.

Our approach begins with the correct setup of Bonjour on the Android device, defining a JSON response containing essential parameters that describe the device and its capabilities. Initial investigation has highlighted several key parameters that must be included for successful device identification and connection initiation by an iOS device. The JSON response, typically returned when the iPhone queries the Bonjour service, needs to specify fields such as `deviceid`, `features`, `flags`, `model`, and `srcvers`. These parameters convey the device’s unique identity, the capabilities it supports (e.g., AirPlay mirroring), and the protocol versions in use. By accurately configuring these fields, we aim to ensure the Android device can mimic the characteristics of a compatible AirPlay receiver, which are generally expected by iOS. Currently, our setup includes a simulated JSON configuration that imitates an AppleTV device, utilizing `model` values like "AppleTV3,2" and feature flags that signify support for AirPlay mirroring. This configuration has enabled preliminary recognition by the iPhone, but further tests are ongoing to validate full compatibility and to understand the response from the iOS device upon attempting to initiate a mirroring session.



Figure 1.1 Representation of iPhone detecting Android device with Bonjour service.

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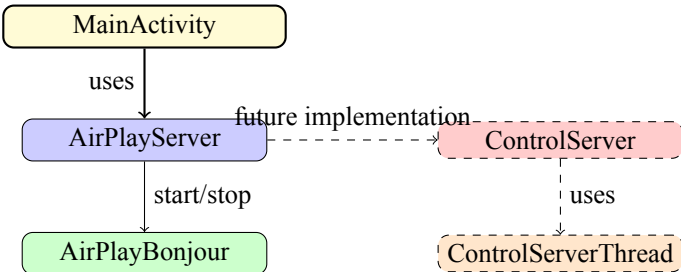
AirPlay Server

Contents

2.1	Overview of the AirPlay Server	5
2.2	Initialization and Parameters	5

2.1 Overview of the AirPlay Server

This chapter delves into the implementation of the `AirPlayServer`, a foundational class responsible for facilitating AirPlay interactions. Below is a diagram showing its structure:



Bonjour service is currently active for device discovery.

The `ControlServer` and `ControlServerThread` are commented out in the current implementation, and their functionality is reserved for future enhancements using Netty.

The diagram illustrates how the `AirPlayServer` initializes and manages the Bonjour service while leaving space for a future `ControlServer` integration. The current implementation focuses on network discovery using Bonjour, with plans to handle media streaming in subsequent iterations.

2.2 Initialization and Parameters

The `AirPlayServer` is constructed with the following parameters:

- `serverName`: The name of the server, used for network identification.

- `airPlayPort`: The port for AirPlay communications, defaulting to 7000.
- `airTunesPort`: The port for AirTunes communications, defaulting to 49152.
- `airplayDataConsumer`: An interface for handling incoming media data.

Part II

APPENDICES

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