

# Miracast Sink SDK

## High performance Miracast Sink Stack for automotive and consumer electronics markets

### INTRODUCTION

Miracast is a technical standard for mirroring the display screen of one device (source) to the display screen of another device (sink). It serves as an essential part of an OEM's screen sharing and connectivity solution to enable support for the widest range of source devices. With several key differentiating features, Miracast is an increasingly relevant alternative to popular solutions.

### SUMMARY

#### PRODUCT

- ▶ Miracast Primary Sink SDK
- ▶ Data and control planes
- ▶ HDCP 2.2 for secure content
- ▶ Audio codecs
- ▶ Optional SW video codecs

#### HIGHLIGHTS

- ▶ Ultra low latency for faster response & superior user experience
- ▶ High performance video with 1080p support for best viewing quality
- ▶ Optimized RTSP procedures
- ▶ Optimized audio codecs for low processing overhead
- ▶ Comprehensive HDCP with highly optimized crypto modules for uncompromised content security
- ▶ Advanced diagnostics for efficient system integration
- ▶ Comprehensive platform coverage for automotive & consumer electronics
- ▶ Extensively validated across Android (4.2+) & Windows 10 devices
- ▶ Devoid of open source to facilitate proprietary code

#### AVAILABILITY

- ▶ Proven across multiple deployments for consumer & automotive segments
- ▶ Smart TV platforms
- ▶ Automotive Head Units

Validated for interoperability with Android (4.2 onwards) & Windows 10 devices

Ittiam's Miracast Sink Stack is a Wi-Fi Display primary sink solution that enables Miracast support in Automotive Infotainment and Consumer Electronics devices. It can be used in devices such as car head units, projectors, monitors, STBs or TVs to mirror the screen of a smartphone, tablet or laptop.

### OVERVIEW OF FEATURES

#### Connection Establishment (Control Plane)

- ▶ WFD Device Discovery along with paired mode of operation
- ▶ Optimized RTSP procedures based connection mechanism
- ▶ WFD Connection Establishment using Wi-Fi P2P mode at 2.4GHz/5GHz
- ▶ All negotiation features to be advertised are configurable

#### Multimedia Pipeline (Data Plane)

- ▶ Primary Sink supporting both audio and video playback
- ▶ Robust Audio-Video synchronization
- ▶ Ultra Low latency (<100 ms) datapath framework on select platforms
- ▶ Optimized multichannel AAC-LC decoder - optional Neon optimization
- ▶ Integrated with hardware decoders on target platform for 1080p video decoding
- ▶ Optimized software video decoders for platforms without hardware video support

#### Control of Source Device from Sink Device Display

- ▶ User Input Back Channel (UIBC) support for generic input

#### Secure Content Viewing (No-Copy)

- ▶ Supports High-Bandwidth Digital Content Protection (HDCP) v2.2
- ▶ Optimized cryptographic IP for HDCP to be used in platforms without H/W support:
  - AES-128, SHA-256 & HMAC-SHA256
  - Random Number Generator (AES CTRDRBG)
  - PKCS#1 v2.1, RSA-OAEP Decryption
  - Optimized big number library

Highly portable solution with comprehensive platform coverage

## STANDARD PACKAGE

- ▶ Miracast control and data planes
- ▶ HW accelerated H.264 support for HD video
- ▶ AAC/PCM Audio
- ▶ UIBC client for source device control

Note: Miracast requires source side stack on the transmitting device

## OPTIONAL ADD-ONS

- ▶ Software based H.264 decoder
- ▶ Dolby AC3 Audio
- ▶ HDCP 2.x support for content security (HDCP device keys have to be procured by the IVI vendor from DCP LLC)

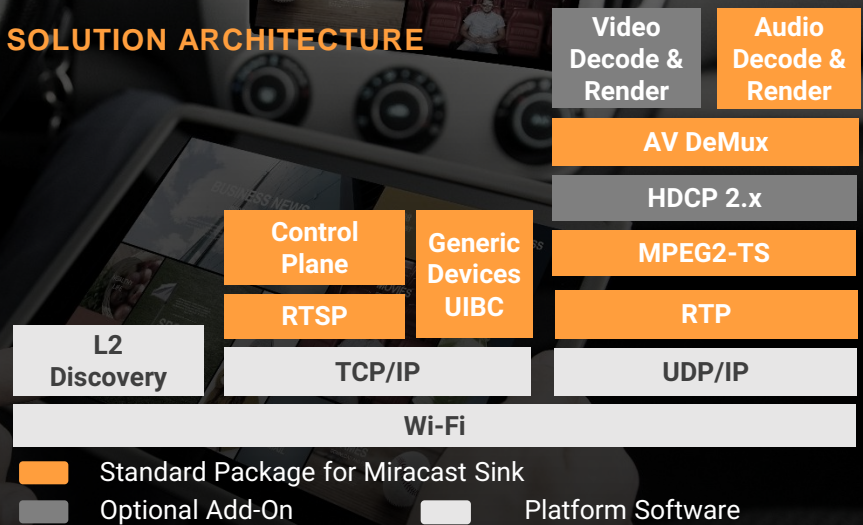
## PACKAGE CONTENTS

- ▶ Miracast Sink SDK (inclusive of HDCP stack)
- ▶ Offline HDCP key encryption tool for Windows/ Linux
- ▶ Documentation (user guide & API document)
- ▶ Interoperability test report
- ▶ Performance & memory report
- ▶ Sample application for Miracast Sink SDK

## STANDARDS

- ▶ Wi-Fi Display Technical Specification v1.1
- ▶ HDCP Interface Independent Adaptation v2.2
- ▶ Wi-Fi P2P Technical Specification v1.4
- ▶ ISO/IEC 14496-10,3: H.264 AVC, AAC-LC

## SOLUTION ARCHITECTURE



## COMPREHENSIVE FEATURE COVERAGE

Ittiam's Miracast SDK supports all mandatory and optional features of Wi-Fi display specifications to deliver a single solution for a complete Miracast user experience.

Wi-Fi Display Feature	Mandatory/Optional	Ittiam Support
WFD Device Discovery	Mandatory	✓
WFD Capability Negotiation	Mandatory	✓
WFD Connection Setup	Mandatory	✓
WFD Session Establishment	Mandatory	✓
Session Termination	Mandatory	✓
AV Stream Control using RTSP	Mandatory	✓
User Input Back Channel	Optional	✓
De-mux, De-packetize, Decode Audio & Video	Mandatory	✓
Rendering Decoded Video	Mandatory	✓
Rendering Decoded Audio	Mandatory	✓
Only Video, No Audio	Mandatory	✓
Only Audio, No Video	Optional	✓
Multiplexed Audio and Video	Mandatory	✓
Link Content Protection	Optional	✓

For more information, explore our [Automotive Infotainment Solutions](#) or contact us at [mkt@ittiam.com](mailto:mkt@ittiam.com)

## ABOUT ITTIAM

Ittiam Systems is a trusted solutions provider to world leaders in multimedia, enabling next generation video experiences through its complete suite of intelligent video technologies, systems and solutions. Backed by its proven video expertise and insights, Ittiam's products deliver real intelligence to solve its customers' most complex technology challenges, empowering them to deliver high performance, efficient and reliable video products in rapid time. Ittiam's solutions are at the heart of millions of lifestyle products that drive mobility, content access, networking and sharing.