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MIRACAST UIBC IMPLEMENTED ON EZCAST ULTRA

EZCast

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ABSTRACT

In recent years, the adoption of mobile devices has exponentially grown. The ubiquity of Wi-Fi has made itself the wireless standard in the consumer technology industry. Because of its easy accessibility, users in both personal and business environments use it for seamless access to content and entertainment. It can further amplify user experience by enabling mobile devices to stream content like online videos, movies, games, and webpages to external high-definition displays.

There are currently several wireless display solutions that allow users to stream content wirelessly to external displays. However, these solutions require users to sign up for a single system, such as Intel's WiDi or Apple's AirPlay, which represents serious compatibility issues. As a solution to these complications, the Wi-Fi Alliance developed a standard called Miracast for wireless display. Because of the large market share of Android devices, the Miracast solution by Wi-Fi Alliance outperforms other display standards. In addition, we can extend the functionality of Miracast to offer an enhanced user experience. In this context, EZCast implemented UIBC support for EZCast Ultra to enable the users to use touchback control in interactive displays. Through the following content, this article is going to introduce the infrastructure of Miracast UIBC and share the settings of Miracast UIBC on EZCast Ultra, so that users can fully understand the application.

MIRACAST DEFINITION

Figure 1. *Miracast Graph, 2022*
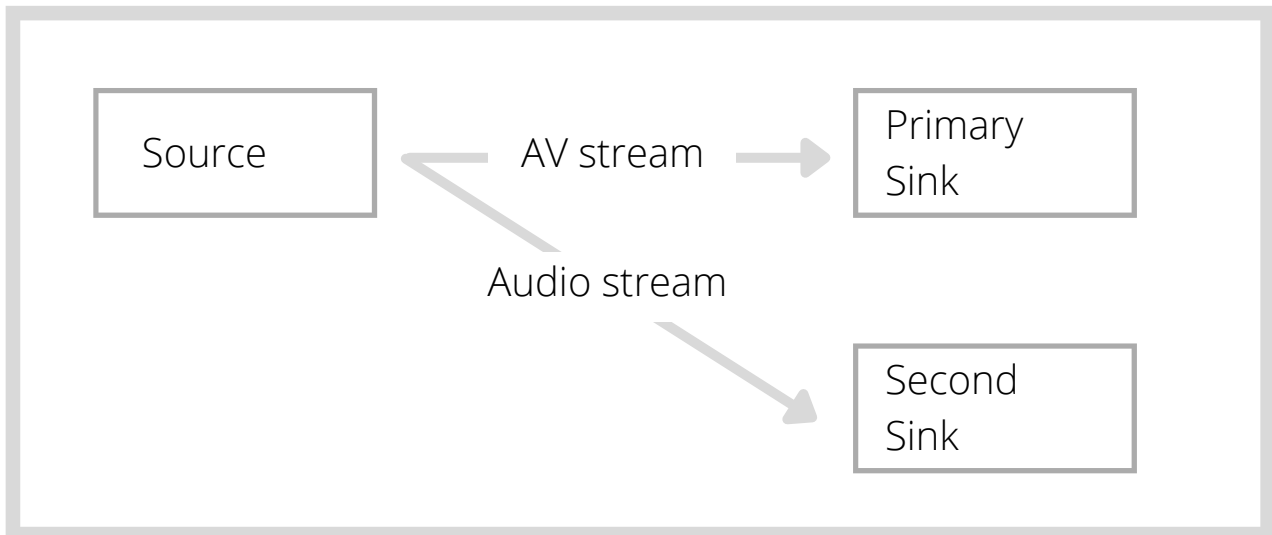
Miracast is a method of discovering, pairing, connecting, and rendering multimedia content from a Wi-Fi Display Source at a Wi-Fi Display Sink.

Primary sink: As soon as the media data is captured, the device plays the data. Most commonly, this is the TV or a display.

Secondary sink: A second device plays the captured media data. A voice box is often used as a secondary sink.

Miracast is a standard for connecting smart devices (such as laptops and smartphones) to displays. The Wi-Fi Alliance launched the standard at the end of 2012. This has been a breakthrough in the category of wireless internet access. Miracast is a screen mirroring solution that can display multimedia content and screen images of small devices (such as smartphones, tablets, or computers) on a larger display through a wireless connection. Miracast devices are certified according to the Wi-Fi display standard established by the Wi-Fi Alliance to ensure interoperability and a seamless experience.

Miracast features peer-to-peer Wi-Fi Direct. This means Miracast connection between Miracast-enabled devices can be easily established without any internet access, making it an industry-wide solution that enables seamless connectivity for almost any device and content.

ABOUT

N.º 01 — **About Miracast UIBC**

Implementing extensions such as UIBC support or Microsoft real-time bit rate modulation will add functionality and make Miracast more performant. A User Input Back Channel (UIBC) is a feature that sends input commands from a Miracast receiver to a Miracast sender for processing. As a result, the user can interact naturally with the peripherals from the Miracast receiver. For example, Keyboard/Mouse/Touch/Pen inputs attached to a Miracast receiver can act as input to the Miracast Source. Using Miracast, presenters can now use the touchback functionality of their interactive displays. From the interactive display, they can change slides, annotate them in One Note, and use various PowerPoint and Whiteboard applications.

N.º 02 — **About EZCast Ultra**

EZCast Ultra is the latest wireless display adapter. It functions as an HDR Streaming Device for TV and it supports casting through Miracast, Google Cast, Smart View, DLNA, Chrome Mirror, 2.4 GHz, and 5 GHz Dual-Band Wi-Fi. It is compatible with iOS, iPad OS, Android, macOS, Windows, Chrome OS. With support up to 4K 3840*2160 @60Hz signal, you can easily cast your high-quality video to your HD TV and turn your home into a luxury cinema.

N.º 03 — **Other Functions:**

1. Supports integration of voice control services such as Google Home, Amazon Echo for hands-free control
2. Ongoing firmware updates Over-the-Air
3. The proprietary EZCast app seamlessly integrates with EZCast Ultra hardware and provide features such as a real-time camera and the EZChannel

MIRACAST UIBC IMPLEMENTED ON EZCAST ULTRA

With the rise of the wireless conference call and interactive learning market, the applications of Miracast are becoming increasingly extensive. Therefore, EZCast integrates Miracast UIBC (User Input Back Channel) function into the flagship product, EZCast Ultra. As EZCast Ultra is connected to a touch screen, via Miracast UIBC, it is able to do remote access without a Presentation Remote Controller in the same space through the touch screen. It means that presenters don't have to move back and forth to operate the keyboard or mouse.

Presenters will be able to easily complete presentations by focusing on the touch screen to have a better user experience and audience service.

Beyond that, EZCast Ultra can truly show 4K resolution on the touch screen via Miracast to show clearer information and details during a presentation. Most of the products on the market only support 1080p resolution.

UIBC (User Input Back Channel) is one of the WFD (Wi-Fi Display) features. When implemented, it facilitates communication of user inputs to User Interface presenting at the WFD Sink to the WFD source.

All the packets of UIBC user inputs are transported over TCP/IP (refer to Figure1). There are 2 kinds of user inputs categories, Generic and HIDC, proceeding at the application level.

EZCast Ultra is implemented by HIDC. HIDC is used for user inputs generated by HIDs like remote control, keyboard, etc. According to the supporting HID Input Path and HID, please see Table1 and Table2, EZCast Ultra is working on the USB Path & Multi-Touch Type.

Figure 2. *Wi-Fi Display architecture/reference model, 2012 (Wi-Fi Alliance)*
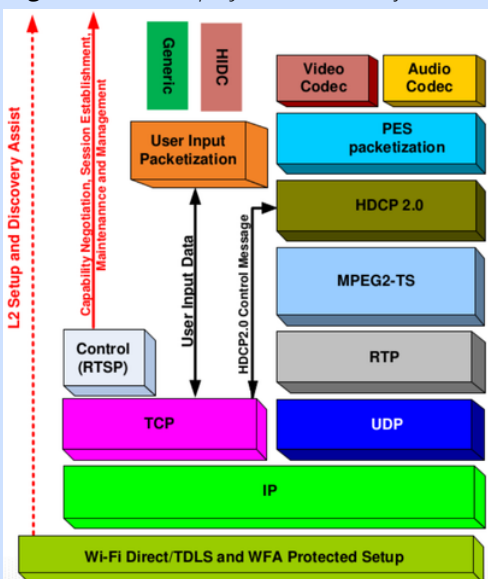
Tables

Table 1. *Wi-Fi Display architecture/reference model, 2012 (Wi-Fi Alliance)*

Value	HID Input Path
0	Infrared
1	USB
3	Zigbee
4	Wi-Fi
5-254	Reserved
255	Vendor Specific HID interface

Table 2. *HID Type, 2017 (Wi-Fi Alliance)*

Value	HID Type
0	Keyboard
1	Mouse
2	Single Touch
3	Multi Touch
4	Joystick
5	Camera
6	Gesture
7	Remote controller
8-254	Reserved
255	Vendor specific HID type

MIRACAST UIBC SETUP FOR EZCAST ULTRA

Figure 3. *Miracast UIBC Setup for EZCast Ultra*
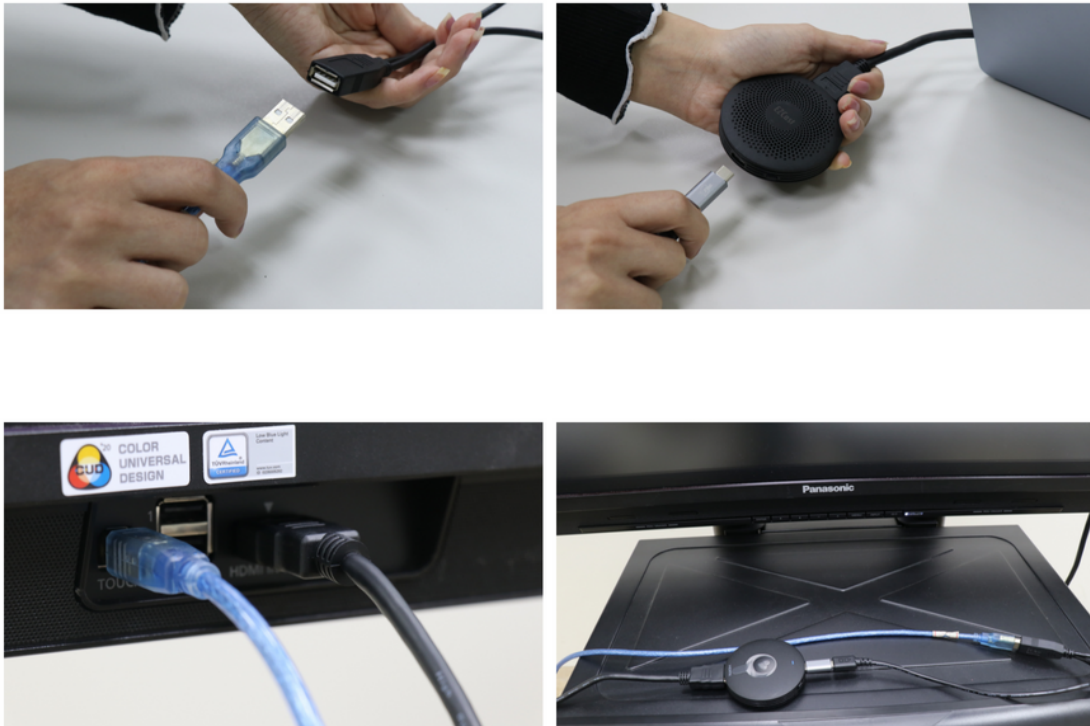

REQUIREMENTS

Requirements

EZCast Ultra, Type-c to micro USB adapter, power plug, Y cable [type A female, to A male/ micro 50TG], Type B cable, Type A cable

Cable Selection

You can use different types of cables depending of the interactive panel brand.

Before casting to EZCast Ultra and connecting the HDMI cable to the TV, it is required to have a USB Y cable to connect the EZCast Ultra and touch screen. The USB Y cable's type is described as below:

- Near End: USB C Plug
- Far End (there are 2 ways): one way is USB self-power connecting to a wall charger, and the other way is USB A connection to the touch screen.

As the connection is ready between EZCast Ultra and the touch screen, users can start casting through Miracast Receiver.
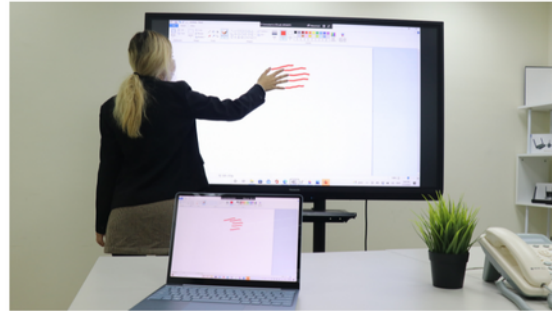
Afterwards, users have to operate the operating system (OS), like Win 10/ 11 & Android Desktop Mode, to accept the HID device over Miracast.

Screen Extension
Display a presentation while having other content in your laptop.

Draw Demostrations
You can use all the fingers in the interactive panel.

Swipe Slides
Use your hand to quickly and easily swipe slides of the presentation

Highlight Content
Use your fingers to make emphais and highlight content on the slides.

CONCLUSION

Integrating Miracast UIBC into EZCast Ultra Miracast architecture brings several benefits including:

Enrichment in Features: Beyond just mirroring content the EZCast Ultra optimized Miracast UIBC solution will provide an increased level of performance. Additionally, it supports wireless casting, 4K video playback, and voice control applications.

Increase in Operability: The user can experience seamless casting and touchback control in interactive displays. This enables effectiveness while giving presentations. Instead of going back and forth to press their laptop to change slides, the user can now directly press the touch screen.

Higher Performance: When Miracast UIBC is implemented, it facilitates communication of user inputs to the user interface presenting at the WFD Sink to the WFD source.

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About EZCast

EZCast is a leading innovator of wireless display technologies and has more than 10M users around the world. Established in 2006, EZCast started as a system on a chip (SoC) design company. Today, EZCast has expanded into a broad scope of solutions, including hardware & software technology, to complement our wide range of wireless display solutions.

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