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WIRELESS PRESENTATION SYSTEM-AIRMEDIA WIRELESS PRESENTER

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بسم الله الرحمن الرحيم

"اقرأ باسم ربك الذي خلق"

صدق الله العظيم

الحمد لله أقصى مبلغ الحمد.. والشكر لله من قبل ومن بعد.. الحمد لله عن سمع وعن بصر.. الحمد لله عن عقل وعن جسد .

الوالدان هما أقرب الأشخاص إلى الأبناء، قرابة الدم والقلب والروح، وهما أحق الناس بالصحة والمحبة و الشكر و الإهداء ، فكيف لا يكون الإهداء إلى القلب الحنون، من كانت بجانبنا بكل المراحل التي مضت، من تلذذت بالمعانة وكانت شمعة تحترق لتنير دربنا، ومن كان دعائها سر نجاحنا إلى أمهاتنا الحبيبات، وإلى من علمنا أن نقف وكيف نبدأ الألف ميل بخطوة ، إلى يدنا اليمنى إلى من علمنا الصعود وعيناه تراقبنا إلى والدنا.

إلى من لهم الفضل بإرشادنا إلى طريق العلم والمعرفة إلى أساتذتنا الأفاضل،كم نحن فخورون بكم.

أصدقائنا، أخوتنا وأحببتنا ومن سهروا معنا في مسيرتنا العلمية إلى من مدوا أياديهم البيضاء في ظلام الليل وكانوا عوننا لنا وبمحببتهم وعطائهم تجاوزنا الصعاب وبلغنا الأهداف.

ولن ننسى وطننا المعبق بأريج الحب لن ننساه وسنقدم كل ما بوسعنا له وسنجعل كل ركن به يشهد بما سنقدم وسنكون كالمطر ولن نبخل بما نعلم.

شكر وتقدير

أحلى ما سجعت به بلايل الأقلام وأشهى ما نظم من لفظ وكلام والصلاة والسلام على سيد الخلق والأنام .
لا فضل علينا إلا فضله، وما من نعمةٍ نحن بها إلا من عنده، وما توفيقنا إلا به فله الحمد والشكر.
لا بد لنا ونحن نخطو خطواتنا الأخيرة في الحياة الجامعية من وقفة نعود إلى أعوام قضيناها في رحاب الجامعة
مع أساتذتنا الكرام الذين قدموا لنا الكثير بأذلين بذلك جهودا كبيرة في بناء جيل الغد.
كما ونتقدم بجزيل شكرنا، وعظيم امتناننا وتقديرنا وعرفاننا إلى كل من ساهم في إنجاز مشروعنا هذا، متحدين
كل الظروف والعقبات.
ونخص بالشكر الدكتور مراد أبو صبيح المشرف والموجه، والمهندس علي الدراويش اللذان لم يتوانا ولم
يتأخرا عن تقديم ما آتاه الله من علم لنا وبكل سعة صدر، ولم يدخرا جهدا في توجيهنا والأخذ بأيدينا إلى طريق
النجاح.
ونشكر طاقم دائرة الهندسة الكهربائية كلٌ بمكانه، فقد كرسوا وقتهم وجهدهم لمساعدتنا ومساعدة زملائنا طوال
فترة الدراسة.
ونشكر زملائنا وزميلاتنا الأعزاء الذين لولا وجودهم لما تذوقنا حلاوة العلم، ولا شعرنا بمتعة المناقشة
الإيجابية.
وختام القول مسك، فكل الشكر لأبائنا وأمهاتنا أصحاب الدور الأبرز في الوصول إلى ما وصلنا إليه.

ABSTRACT

Wireless presentation system is a system that is used to present PowerPoint®, Excel®, Word, PDF documents, photos and videos by using wireless technology.

The use of Wireless presentation system exist in various applications. It can be used in Universities, Schools, Ministries, Meeting Rooms, Auditorium, Villas, Hotels, Hospitals, and Companies... etc.

In this project, we will design and implement a practical design of a wireless presentation system. The system enables data from different devices to be displayed on screens.

The system will be based on the well-known Crestron AirMedia® wireless presentation system controller.

It allows users to walk into a room and wirelessly present PowerPoint®, Excel®, Word, Video and PDF documents, as well as photos, on the room display. Sources of data include Personal Apple® iOS® or Android™ mobile devices. MacBook® and PC laptops can be connected seamlessly as well. Further, the system allows a display of data from four sources simultaneously.

المخلص

نظام العرض اللاسلكي هو نظام يستخدم لعرض ملفات (PowerPoint، Excel، Word، PDF، صور وفيديو) باستخدام تقنية الاتصالات اللاسلكية.

يطبق نظام العرض اللاسلكي في مجالات متنوعة، حيث يمكن استخدامها في الجامعات، المدارس، الوزارات، قاعات الاجتماعات والمحاضرات، الفلل، الفنادق، المستشفيات والشركات ... الخ.

في هذا المشروع، سوف نقوم بتصميم وتنفيذ DEMO عملي لنظام العرض اللاسلكي. يمكن هذا النظام من إرسال البيانات من أجهزة مختلفة ليتم عرضها على الشاشات.

نظام العرض اللاسلكي الذي سنقوم بتطبيقه عمليا يتبع لشركة Crestron العالمية، بحيث سوف تتركز كافة عمليات التحكم عن طريق المتحكم Crestron Airmedia .

باستخدام نظام العرض اللاسلكي (AirMedia®)، يمكن لأي شخص الدخول إلى أي غرفة وعرض المستندات المذكورة أعلاه على شاشة العرض من أي جهاز يعمل بتقنية تطبيق ابل (ايفون ، ايباد ، ايبود..الخ) أو أي جهاز يعمل بتقنية الاندرويد (سامسونج، هواوي، سوني... الخ) ، أو أي جهاز يعمل بتقنية الوندوز (لابتوب، كمبيوتر مكتبي..الخ) والعرض بسلاسة وتقنية وضوح عالية، ويمكن عرض أربعة أجهزة في آن واحد.

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Chapter 1

INTRODUCTION

1.1) OVERVIEW:

In this chapter, we describe the objectives of the project, including a discussion of the related work, description and requirements:

1.2) MAIN IDEA:

The idea of this project is to design and implement a wireless presentation system that takes content from laptops, tablets and smart phones and display it on an LED.

1.3) OBJECTIVES:

- To develop a system that enables presentation of audio, photos, and files on a LED from multi technology devices (APPLE, IOS, ANDROID, LAPTOP and MacBook).
- Configure a system that supports up to 32 users.
- Quad View: Allows simultaneous display of up to four presentation sources in a quad window.
- Introduce a Moderator Mode (Layout Control) which enables a single moderator to control the presentation via a laptop web browser or apple and android applications.

1.4) MOTIVATION:

In Universities, classes, schools, and official meetings a presenter normally needs to connect his laptop to a screen in order to display content to the audience. However, in such meetings, it is difficult to provide audience the ability to contribute their content without laptops replacements. This puts a burden and considered to be a tedious process.

With current era of technological advancements and the emerging systems that facilitates learning, and meetings, it would be of great importance if audience are provided ability to present their own content from their laptops or mobile phones easily.

This is the idea of the system we intend to design and implement. Some features of the system are:

- It enables multi format inputs to be displayed on any screen (smart, non-smart), so it gives the clients flexibility to show their data whatever its kind. Also, four users data input can be displayed simultaneously in the screen.
- Whatever the clients have a device (LAPTOP, APPLE PHONE, ANDROID PHONE, MACBOOK, ETC...), the client can display the data in his device on the output screen.
- **Present Anything — Without Wires:** the user brings a device to a meeting or collaboration session and share your content through the big screen without hooking up any wires. AirMedia supports Windows® and OS X® computers, as well as Apple iOS and Android mobile devices. Presenters using a Mac® or PC can connect to AirMedia without any special software installed.
- It allows to multi users content sharing (up to 32 users).
- The applications of Crestron Airmedia system exist in various applications. It can be used in Universities, Schools, Ministries, Meeting Rooms, Auditorium, Villas, Hotels, Hospitals, and Companies...etc.

1.5) REQUIRMENT:

- AirMedia Presentation Gateway Controller.
- Wireless Access Point.
- External Speakers.
- LAN Switch
- Wires & Accessories.
- Users Devices (IPHONE, SAMSUNG, LAPTOP, ETC.)
- Output PC.

1.6) DESCRIPTION:

The project will use a wireless presenter system that has the following features:

- Enable wireless presentation of input contents using laptops, tablets and smart phones. The system will be based on AirMedia which can present Microsoft Office documents (PowerPoint, Word, Excel), as well as PDFs and photos, from a Smartphone or tablet device or laptops.
- Deliver dynamic and interactive presentations by simply paging through as you would any other application. There's no more being tied to a laptop or podium.
- It can even share your apps using the “Shot&Show” feature. Simply take a screen shot and AirMedia will show it.

Shot& Show: Shares a static image of any app by using the screen shot function.



Fig. 1.1 Shot & Show Feature

- Device mirroring can also be used to share content from a compatible Apple iOS device.

Device Mirroring: Shares the screen image and audio from an Apple iOS or Mac OS X device.

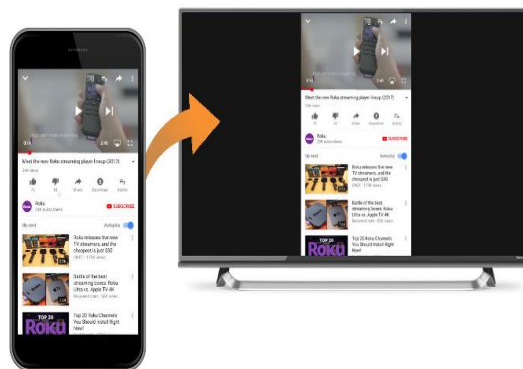


Fig. 1.2 Device Mirroring Feature

- With AirMedia anyone can walk into a room and wirelessly present PowerPoint, Excel, Word and PDF documents, as well as photos, on the room display from their personal Apple iOS or Android mobile device. MacBook and PC laptops can be connected seamlessly as well, making presentations from most any device fast and easy. There are no wires to hook up, no complicated settings to configure, and no AV or control system is required. Simply connect via the local Wi-Fi network and start sharing content from your portable device.

1.7) SYSTEM FEATURES:

- Low cost.
- Easy to use, and easy to display across any number of rooms.
- Compatible with Windows, OS X, Apple iOS, and Android.
- Displays up to four presentation sources at once in Quad View.
- Customizable welcome screen provides clear instructions for presenters.
- AirMedia can present Microsoft Office documents (PowerPoint, Word, Excel), as well as PDFs, photos and videos from a Smartphone or tablet device.
- Supports display resolutions up to Full HD 1080p and UXGA/WUXGA.
- Provides HDMI, VGA, and analog audio outputs.
- Choice of connection methods accommodates all types of users and organizations.
- Supports up to 32 simultaneous presenter connections.
- Remote View allows viewing and saving of presentation images through a web browser.
- Small size and easy installation.
- Leverages existing wired and wireless network infrastructure and security policies.
- Free downloadable app for iOS and Android mobile devices.
- Fully managed over the network using Crestron Fusion® or SNMP.
- Protects privacy with secure network communication and AV content encryption.
- Present anything without wires.
- Moderator Mode: For classrooms and other environments with many presenters, moderator mode (Layout Control) allows the instructor or meeting leader to easily control the presentation using the AirMedia web page or a Crestron touch screen. With up to 32 participants connected, the moderator can continually control whose content is being displayed, and adjust where that content is positioned in the Quad View.

1.8) RELATED WORK:

The system has been used in a large number of Institutions, Universities, etc..., for example:

- The system is applied in Saudi Arabia in all of projects, some of applied projects are:
- **Ministry of Education**, when the clients used the systems they requested to use it in all the other ministries branches.
- **Ministry of Defense**, it used in the VIP meeting room, there were 24 motorized all in one PC's, they need to show the data of PC's in Video wall output screen, the result of the system was wonderful.

- **Head Office of AL-Yamama Cement**, it used in the auditorium, there were 17 users used their Laptops, mobiles and iPads , they need to show the data of their devices in the output screen, the system was wonderful.

1.9) PROJECT PLAN:

The project plan constitutes of the following steps:

Step 1: Preparing for the project

The idea of the project is selected. The required information has been collected.

Step 2: Determine the project requirement

After determining the design scheme, we specify the entire needed requirement for the system, including software and hardware components.

Step 3: Primitive examination of the system

Testing the basic functionality of the LAN switch.

Step 4: Start writing

Writing and preparing the documentation of the project was started at the beginning of this semester, and we will continue until the end of the project.

Step 5: System measurement

Here we will build the project and make some testing.

Step 6: System configuration

Here we will configure the project design.

Step 7: Testing

Here we will test the project to conclude the system performance.

Step 8: Documentation

The documentation continued from the first phase till the end.

Table 1.1 Summary of time plan for the first semester.

Week \ Step	1	2	3	4	5	6	7	8	9	10	11	12	13
1	█	█	█										
2			█	█	█	█	█	█	█				
3								█	█				
4				█	█	█	█	█	█	█	█	█	█

Table 1.2 Summary of time plan for the Second semester.

Week \ Step	1	2	3	4	5	6	7	8	9	10	11	12	13
5		█	█										
6			█	█	█	█	█	█	█	█			
7			█	█	█	█	█	█	█	█	█	█	
8			█	█	█	█	█	█	█	█	█	█	█

1.10) BUDGET:

Table 1.3: Budget

Component	Quantity	Cost(\$)
AM-101 Controller	1	600
LAN Switch	1	University
Access Point	1	University
Accessories	Tot	100
Total		700

1.11) OUTLINE:

This report is structured as follows:

Chapter one includes the introduction, provides a general overview about the project, its main idea, objectives, motivation, requirements, description, system features, related work, plan, estimated cost at the end the report content. In chapter two, we discuss the theoretical background. It starts with general information about the project, the main system component with its function. In Chapter three presents the conceptual system diagram, general system block diagram, description of the system design component and operation. Chapter four shows the system design in detail. It includes all system hardware and software installation. Chapter five shows the result of system.

Chapter 2

THEORY & BACKGROUND

2.1) OVERVIEW:

In this chapter, we provide theoretical information about all used equipment and materials.

2.2) SYSTEM COMPONENTS WITH IT'S FUNCTION:

The system consists of the following items:

A-Input devices: the (Apple® iOS® or Android™ mobile device. MacBook® and PC laptops) devices that contain the required show data.

- **Apple devices:** there are two main types of apple devices :
 - **Apple mobile devices (iPhone , iPad , iPod)** :the operating system of these devices is iOS, The iOS user interface is based upon direct manipulation, using multi-touch gestures. Interface control elements consist of sliders, switches, and buttons. Interaction with the OS includes gestures such as swipe, tap, pinch, and reverse pinch, all of which have specific definitions within the context of the iOS operating system and its multi-touch interface. Internal accelerometers are used by some applications to respond to shaking the device (one common result is the undo command) or rotating it in three dimensions (one common result is switching between portrait and landscape mode). Apple has been significantly praised for incorporating thorough accessibility functions into iOS, enabling users with vision and hearing disabilities to properly use its products.

Major versions of iOS are released annually. The current version, iOS 12, was released on September 17, 2018. It is available for all iOS devices with 64-bit processors; the iPhone 5S and later iPhone models, the iPad (2017), the iPad Air and later iPad Air models, all iPad Pro models, the iPad Mini 2 and later iPad Mini models, and the sixth-generation iPod Touch. On all recent iOS devices, the iOS regularly checks on the availability of an update, and if one is available, will prompt the user to permit its automatic installation.



Fig.2.1 Apple Mobile Devices

- **Apple desktop &laptop computers:** the operating system of these devices is macOS . It is a series of graphical operating systems developed and marketed by Apple Inc. since 2001. It is the primary operating system for Apple's Mac family of computers. Within the market of desktop, laptop, there are 38 system languages available in macOS for the user at the moment of installation; the system language is used throughout the entire operating system environment.[7]Input methods for typing in dozens of scripts can be chosen independently of the system language.



Fig.2.2 Apple Desktop & Laptop Computers

- **Android devices:** are devices that have an android operating system, such as SAMSUNG mobile &tablets ,HUAWEI mobile, SONY mobile, etc..., Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software and designed primarily for touch screen mobile devices such as smart phones and tablets. In addition, Google has further developed Android TV for televisions, Android Auto for cars and Wear OS for wrist watches, each with a specialized user interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics. Android is also associated with a suite of proprietary software developed by Google, called Google Mobile Services (GMS) that very frequently comes pre-installed in devices, which usually includes the Google Chrome web browser and Google Search and always includes core apps for services such as Gmail, as well as the application store and digital distribution platform Google Play, and associated development platform. These apps are licensed by manufacturers of Android devices certified under standards imposed by Google, but AOSP has been used as the basis of competing Android ecosystems, such as Amazon.com's Fire OS, which use their own equivalents to GMS.



Fig.2.3 Android Devices

- **Windows based devices:** are devices that have a Microsoft windows as operating system, Microsoft Windows is a group of several graphical operating system families, all of which are developed, marketed, and sold by Microsoft. Each family caters to a certain sector of the computing industry. Active Windows families include Windows NT and Windows Embedded; these may encompass subfamilies, e.g. Windows Embedded Compact (Windows CE) or Windows Server. Defunct Windows families include Windows 9x, Windows Mobile and Windows Phone.



Fig.2.4 Windows Based Device

B- Processing Unit Devices:

1-Airmedia Controller: is a wireless presentation system that allows cast content onto the in-room display directly from your personal laptop or mobile device, without needing to attach a network cable or configure display settings on your device. It enables a wireless presentation of HD input content using laptops, tablets, and smart phones. It provides HDMI®, VGA, and analog audio outputs. It has a lot of features as:

- Enables wireless presentation of HD content using laptops, tablets, and smart phones.
- Low cost, easy to use, and easy to deploy across any number of rooms.
- Compatible with Windows®, OS X®, Apple® iOS®, and Android™.
- Displays up to four presentation sources at once in Quad View.
- Customizable welcome screen provides clear instructions for presenters.
- Compatible with virtually any display device.
- Supports display resolutions up to Full HD 1080p and UXGA/WUXGA.
- Provides HDMI®, VGA, and analog audio outputs.
- Choice of connection methods accommodates all types of users and organizations.
- Supports up to 32 simultaneous presenter connections.
- Remote View allows viewing and saving of presentation images through a web browser.
- Compact form factor fits easily behind flat panels and above projectors.
- Leverages existing wired and wireless network infrastructure and security policies.
- Desktop applications for PC and Mac® can be silently deployed enterprise-wide by the IT department.
- Free downloadable app for iOS and Android mobile devices.
- Fully managed over the network using SNMP.
- Protects privacy with secure network communication and AV content encryption.



Fig.2.5 Airmedia Controller

2-Wireless Access Point: is referred to as WAPs or wireless APs, are a transmitter and receiver (transceiver) device used for wireless LAN (WLAN) radio signals. An access point is a wireless network device that acts as a portal for devices to connect to a local area network. Depending on the size of the network; one or more WAPs may be required. Additional WAPs are used to allow access to more wireless clients and to expand the range of the wireless network. Each WAP is limited by a transmissions range, the distance a client can be from a WAP and still get a useable signal. The actual distance depends on the wireless standard being used and the obstructions and environmental conditions between the client and the WAP.

- **The uses of the access point:** are used for extending the wireless coverage of an existing network and for increasing the number of users that can connect to it. An access point connects users to other users within the network and also can serve as the point of interconnection between the WLAN and a fixed wire network. Each access point can serve multiple users within a defined network area; as people move beyond the range of one access point, they are automatically handed over to the next one. A small WLAN may only require a single access point; the number required increases as a function of the number of network users and the physical size of the network.
- **Principle work for the access point:** an access point is a device that creates a wireless local area network, or WLAN, usually in an office or large building. An access point connects to a wired router, switch, or hub via an Ethernet cable, and projects a Wi-Fi signal to a designated area.
- **Difference between access point and router:** a router is a device that sends packets to destinations (routes them). And an **access point** is a device that allows wireless devices to connect to it by means of the antennas. An access point is different from a wireless router, in that it does not have firewall functions, and will not protect your local network against threats from the Internet.

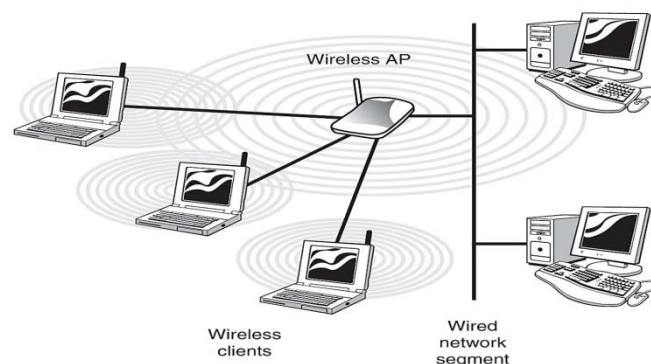


Fig.2.6 Wireless Access Point

3-LAN Switch: is a device in a computer network that connects together other devices. Multiple data cables are plugged into a switch to enable communication between different networked devices. Switches manage the flow of data across a network by transmitting a received network packet only to the one or more devices for which the packet is intended. Each networked device connected to a switch can be identified by its network address, allowing the switch to direct the flow of traffic maximizing the security and efficiency of the network.

A switch is more intelligent than an Ethernet hub, which simply retransmits packets out of every port of the hub except the port on which the packet was received, unable to distinguish different recipients, and achieving an overall lower network efficiency.

An Ethernet switch operates at the data link layer (layer 2) of the OSI model to create a separate collision domain for each switch port. Each device connected to a switch port can transfer data to any of the other ports at any time and the transmissions will not interfere.[a] Because broadcasts are still being forwarded to all connected devices by the switch, the newly formed network segment continues to be a broadcast domain. Switches may also operate at higher layers of the OSI model, including the network layer and above. A device that also operates at these higher layers is known as a multilayer switch.

Segmentation involves the use of a switch to split a larger collision domain into smaller ones in order to reduce collision probability, and to improve overall network throughput. In the extreme case (i.e. micro-segmentation), each device is located on a dedicated switch port. In contrast to an Ethernet hub, there is a separate collision domain on each of the switch ports. This allows computers to have dedicated bandwidth on point-to-point connections to the network and also to run in full-duplex mode. Full-duplex mode has only one transmitter and one receiver per collision domain, making collisions impossible.

The network switch plays an integral role in most modern Ethernet local area networks (LANs). Mid-to-large sized LANs contain a number of linked managed switches. Small office/home office (SOHO) applications typically use a single switch, or an all-purpose device such as a residential gateway to access small office/home broadband services such as DSL or cable Internet. In most of these cases, the end-user device contains a router and components that interface to the particular physical broadband technology. User devices may also include a telephone interface for Voice over IP (VoIP)



Fig.2.7 LAN Switch

C-Output Device: is a device for visual or tactile presentation of images (including text) acquired, stored, or transmitted in various forms as computer monitor and TV screen.

✓ **Monitor technologies:**

- CRT Cathode Ray Tube.
- LCD Liquid Crystal Display.
- PLASMA Technology.

✓ **PIXEL:**

- Picture Element.
- It is the smallest element forming an image.

✓ **RESOLUTION:**

- No. of pixels per unit video display.

✓ **DISPLAY SIZE:**

- Measured as distance from one corner to the diagonally opposite corner.
- Usually measured in INCHES.

✓ **VIEWING ANGLE:**

- It is angle from which the screen can be seen from side.

✓ **RESPONSE TIME:**

- The minimum time necessary to change a pixel's color or brightness.

✓ **BRIGHTNESS:**

- The amount of light emitted from the display (more specifically known as luminance).

✓ **CRT DISPLAY ADVANTAGES:**

- Offers greater resolution.
- Widest viewing angle when compared to any other technology.
- It is cheap as compared to LCD, PLASMA displays.

✓ **CRT DISPLAY DISADVANTAGES:**

- Thickness is much larger as compared to LCD, PLASMA display.
- Cannot be used for smaller displays like watches.
- View area is less than the offered monitor size.
- It is heavier.



Fig.2.8 CRT Display

✓ **LCD DEFINITION:**

- A liquid crystal display is a thin, flat display device made up of any number of pixels arrayed in front of a light source or reflector. It uses very small amounts of electric power, and is suitable for use in battery-powered electronic devices.

✓ **LCD DISPLAY ADVANTAGES:**

- Fast response time.
- Lower cost of production.
- Less noise or glitter seen on the panel surface.

✓ **TFT DISPLAY DISADVANTAGES:**

- Suffers from limited viewing angles, especially in the vertical direction.
- They are unable to display the full 16.7 million colors (24-bit TrueColor) available from modern graphics cards.



Fig.2.9LCD Display

✓ **PLASMA TECHNOLOGY:**

- A plasma display panel (PDP) is a type of flat panel display now commonly used for large TV displays (typically above 37-inch or 940mm).

✓ **PLASMA DISPLAY ADVANTAGES:**

- Supports large displays, up to 103 inches diagonally.
- Overall thickness of monitor is less than 10 cm. and can be installed on a wall.
- Faster response time.
- Greater color spectrum.
- Wider viewing angle.

✓ **PLASMA DISPLAY DISADVANTAGES:**

- They are costly as compared to CRT, LCD displays.
- Burn-in problem: Static images can leave a permanent mark on the screen. This is why a plasma TV should not be used as a computer monitor or video game display.
-



Fig.2.10 Plasma Display

Chapter 3:

Conceptual System Design

3.1) OVERVIEW:

In this chapter, we present the design concepts using diagrams and flow charts.

3.2) SYSTEM BLOCK DIAGRAM:

The system block diagram is shown in figure 3.1. Next, we provide description of each block.

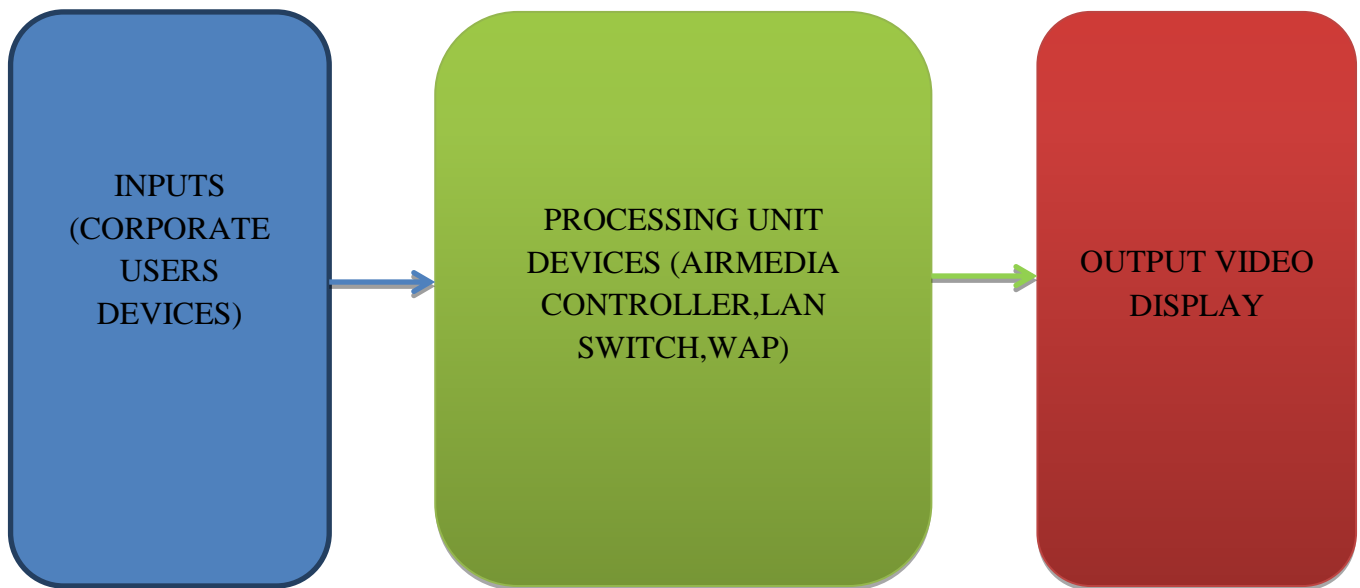


Fig.3.1 System Block Diagram

The corporate users are users in a room, present their device data wirelessly to the room video display by using the AirMedia controller. There are no wires to hook up, no complicated settings to configure, and no AV or control system is required. Simply a connection with the local Wi-Fi® network is needed to start sharing content from portable devices.

The design will be divided into two parts, the hardware and Software. The hardware includes the connections between all system components and the type of data flow among system parts. The software design includes all modules and configuration scripts that are necessary to operate the system.

- **HARDWARE BLOCK DIAGRAM:**

1-INPUTS (CORPORATE USERS DEVICES):



Fig.3.2 Multi Input Devices

Input devices may include any user device (android, apple, windows –based) that need to share their content wirelessly. User device in meeting or collaboration session is used to share content through the big screen without hooking up any wires.

2-PROCESSING UNIT DEVICES (AIRMEDIA CONTROLLER, LAN SWITCH, WAP):



Fig.3.3 Processing Devices

- The processing unit controller consists of Airmedia controller, LAN switch and the WAP.
- The function of LAN switch is to communicate between different networked devices (WAP & Airmedia controller).
- The function of WAP is to transmit and receive data used for wireless LAN.
- The use of LAN switch and WAP together is to establish wireless communication network with internet in the room, in order to make wireless communication between the Airmedia switch and the corporate user's devices.
- The function of Airmedia controller is to allow for wireless presentation of content from any corporate user device via a Wi-Fi® wireless network. It enables the presentation of any content including Full HD video in the video display.

3- OUTPUT VIDEO DISPLAY:

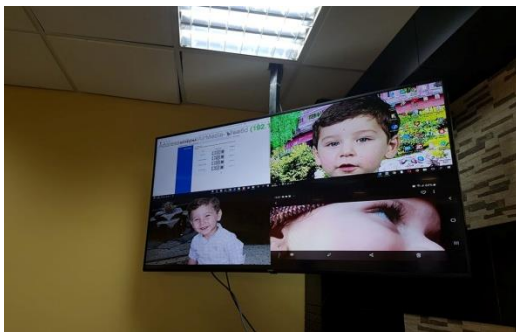


Fig.3.4 Outputs Devices

The video display will accept the data signal from any user devices (android, apple, windows –based) that need to share their content wirelessly. The size of the screen depends on the room size and the distances between users and screen.

- **SOFTWARE BLOCK DIAGRAM:**

For WINDOWS-BASED devices just open a web browser on the computer, and navigate to the web address or the IP address that is displayed on the top left of the AM-101 welcome screen. The download screen is displayed. Just use your web browser and follow the simple instructions on the room display. Alternatively, your IT group may have pre-loaded the AirMedia application on your computer. Look for "AirMedia" in your Windows Start Menu.

For android and apple devices just download the free app for your iOS or Android device and instantly connect to AirMedia. Simply select the file to present on the room display and then swipe through slides on your mobile device.



Fig.3.5 Apple Airmedia Application

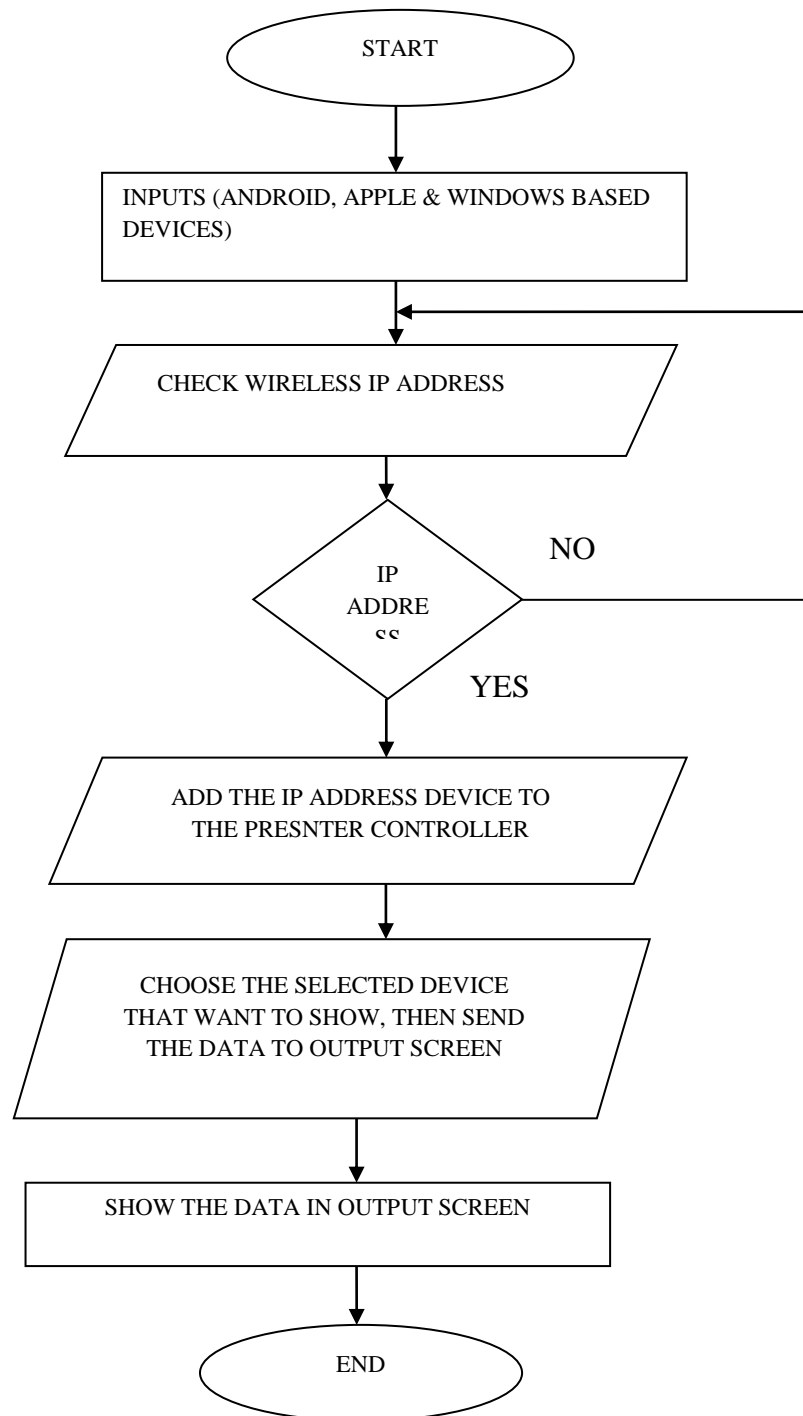


Fig.3.6 System Flow Chart

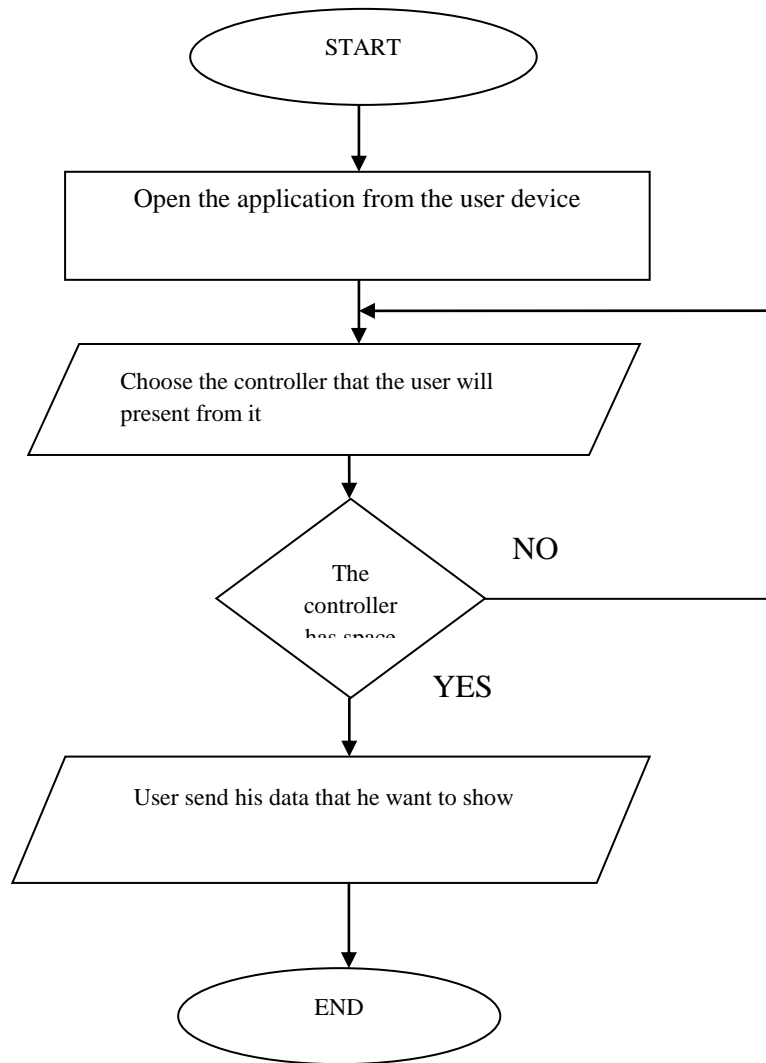


Fig.3.7 Software Flow Chart for User

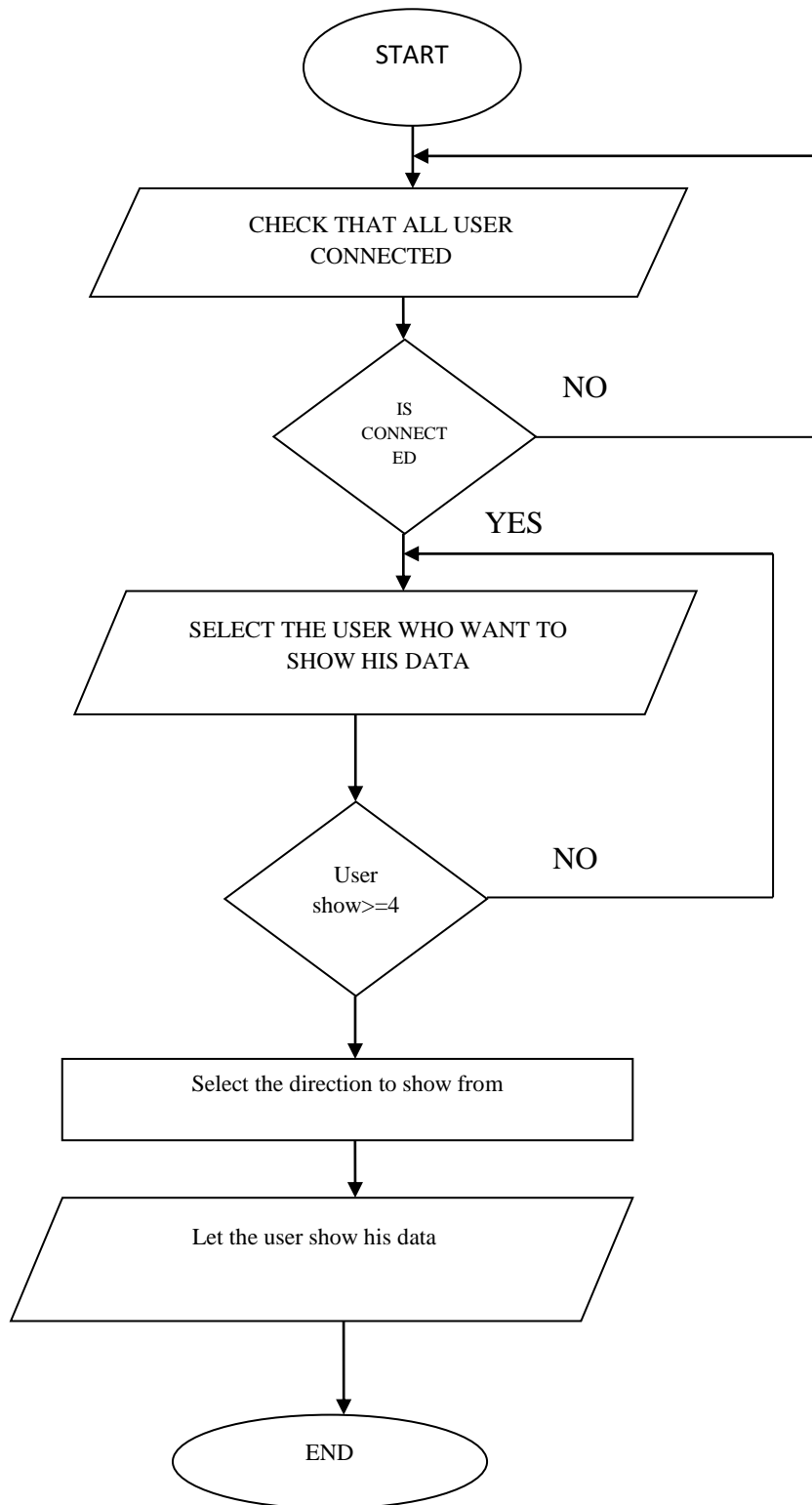


Fig.3.8 Software Flow Chart for Moderator

CHAPTER 4

Detailed System Design

4.1) OVERVIEW:

In this chapter, we provide and discuss the details of system design:

4.2) BILL OF QUANTITY (BOQ):

BOQ contains the hardware and software materials of the wireless presentation system in this project, it includes the brand, model no. , model pic. , model description and the quantity, the following table includes the BOQ of the project:







S/N	BRAND	Model No.	Model Pic.	Description	Qty
WIRELESS PRESENTATION SYSTEM					
1	CRESTON	AM-101		Air Media Wireless Presentation Gateway	1
2	NETIS	WF2780		Wireless Access Point Module	1
3	HP	J9280-60001		POE LAN Switch	1
4	SMART	SM-65E960S		Output Monitor PC	1
5	LOCAL	APPLE ,LAPTOP,ANDROID DEVICES		User Input Devices	Lot
6	ACCESSORIES	ACC		HDMI , VGA , Audio , CAT6 Cables	1

Table 4.1 BOQ

4.3) HARDWARE DESIGN:

It is the first step in preparing a critical response plan, allowing you to become thoroughly familiar with the electrical distribution and design of system layout, through one paper it can be clear for all people to know the system design. The following diagrams show the detailed design for the project:

The following schematic drawing shows the general components and operation of the wireless presentation system:

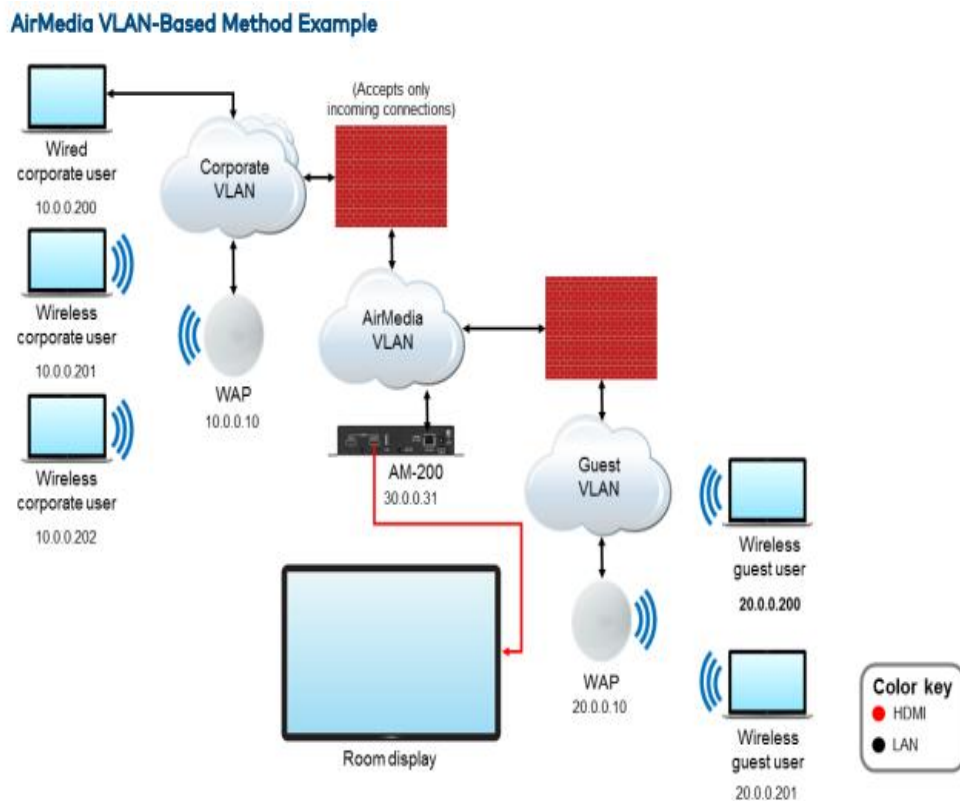


Fig. 4.1 General System Design

The following single line diagram (SLD) drawing shows exact connection and communication between the system components. The corporate user needs to show his device data to main room display in order the other users see it, in order to make this operation, the following procedures should be done:

1. Install all BOQ materials.
2. Make the cable termination between system components.
3. Power on the all devices.
4. Configure the wireless access point device.
5. Install the Airmedia software in all corporate user devices.
6. Operate the installed Airmedia software.
7. From the head of meeting device, we will assign an IP address for all corporate users as the range of Airmedia controller IP address.
8. Make resolution compatibility setup between the corporate user devices with output room display.
9. From the head of meeting device, we will choose the user device that we need to present his data.

WIRELESS ANTENNA



IPHONE USER-1

WIRELESS ANTENNA



LAPTOP USER-2

WIRELESS ANTENNA



SAMSUNG USER-3

WIRELESS ANTENNA



TABLET USER-4

WIRELESS ANTENNA



IPAD USER-32



WIRELESS ACCESS POINT



LAN SWITCH



WIRELESS PRESENTER(AM-101)



PC



MIXER AMPLIFIER

EXTERNAL CEILING SPEAKER



1

EXTERNAL CEILING SPEAKER



2

NOTES:

LEGEND:

- DATA CABLE
- HDMI CABLE
- AUDIO CABLE
- SPEAKER CABLE

رقم التغيير	التاريخ	الوصف

CLIENT NAME:
KINGDOM OF SAUDI ARABIA المملكة العربية السعودية
 MINISTRY OF DEFENSE وزارة الدفاع
 MEDICAL SERVICES GENERAL STAFF رئاسة هيئة الخدمات الطبية
 GENERAL DIRECTORATE GENERAL MAINTENANCE DEPARTMENT الإدارة العامة للصيانة

CONTRACTOR:
 شركة طويق الاعمال للمقاولات الطبية
 Taouq Al-Amaal Healthcare Contracting CO.

SUPPLIER:

PROJECT TITLE:
**RENOVATION OF AUDITORIUM AT VIP BUILDING
 MSD COMPLEX , RIYADH**

DRAWING TITLE:
**AUDITORIUM MASTER SLD
 FRONT VIEW**

Design By:	ENG ALI	Checked By:	ENG ALI	Sheet
Drawn By:	FARHAN	Approved By:	ENG KHALID	
Date:	17-04-2017	Dwg. No.	003	Rev.
Scale:	N.T.S			0

4.4) SOFTWARE DESIGN:



AM-101

AM-101 AirMedia[®] Presentation Gateway

Supplemental Guide
Crestron Electronics, Inc.

AM-101: AirMedia Presentation Gateway

Introduction

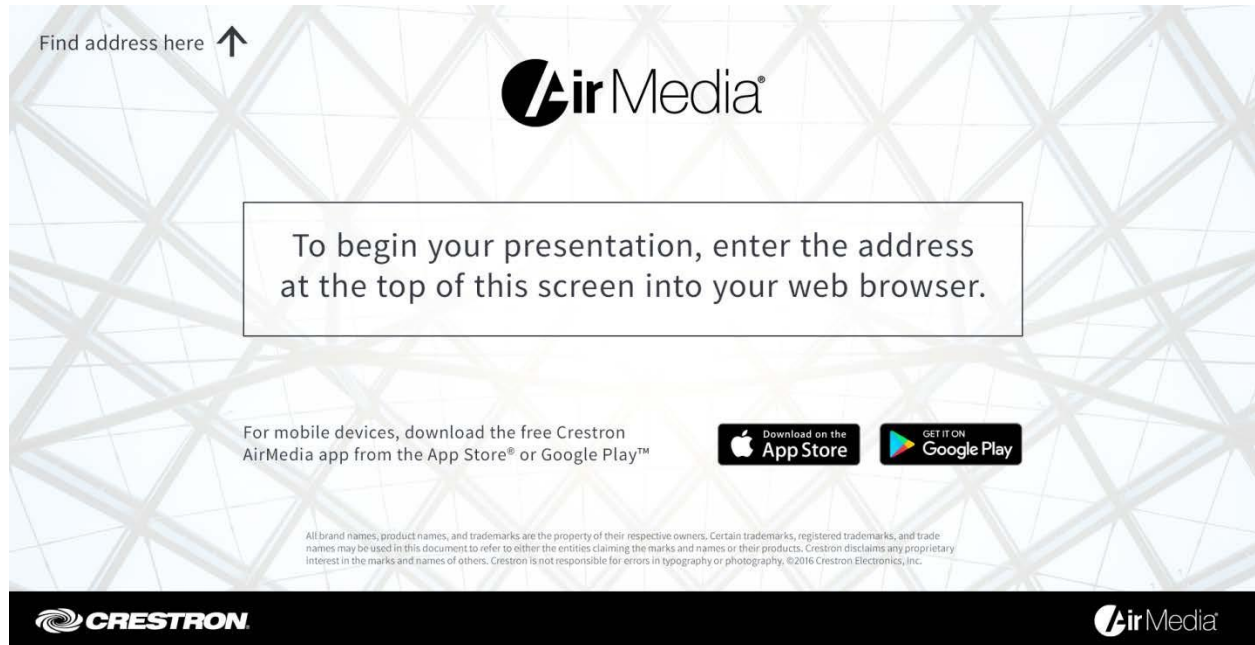
With an AirMedia® presentation gateway, a user can wirelessly present PowerPoint®, Excel®, Word, and PDF documents, as well as photos, on the room display from a personal iOS® or Android™ mobile device. MacBook® and PC laptops can be connected as well. There are no wires to hook up, no settings to configure, and no AV or control system is required. All that is required to share content from a portable device is a connection to a local Wi-Fi® network.

For information on installation and basic operation, refer to the AM-101 DO Guide (Doc. 7930) at www.crestron.com/manuals for details.

Configuration

Make all connections as described in AM-101 DO Guide (Doc. 7930) at www.crestron.com/manuals. The connected display device shows the AM-101 welcome screen.

AM-101 Welcome Screen



1. Open a web browser on the computer, and navigate to the web address or the IP address that is displayed on the top left of the AM-101 welcome screen. The download screen is displayed.

NOTE: By default, the AM-101 displays the IP address in parentheses to assist in the configuration of the device. The IP address can be hidden so that the end user sees only a friendly URL (i.e., <http://AirMedia-019647>). For details, refer to “OSD Setup” on page 10.

Download Screen

The screenshot shows the top navigation bar with the Crestron logo on the left and the AirMedia logo on the right. Below the logos are two tabs: "Layout Control" (with a document icon) and "Device Administration" (with a key icon). The main content area is titled "Download AirMedia Utility Software" and contains two columns. The left column is labeled "Client for Windows" and has a blue "Download" button with a Windows logo. The right column is labeled "Client for Mac" and has a blue "Download" button with an Apple logo. Below these columns is a large blue button labeled "Remote View". At the bottom of the page is a grey footer bar with the text "Copyright © 2017. All Rights Reserved".

2. Click Device Administration. The admin login screen is displayed.

NOTE: Prior to displaying the admin login screen, the web browser displays a security warning message about the security certificate. It is safe to ignore this warning as long as the user verifies that the browser's address bar indicates the correct IP address or host name.

Admin Login Screen

The screenshot shows the top navigation bar with the Crestron logo on the left and the AirMedia logo on the right. Below the logos is a grey bar with a "HOME" tab and a right-pointing arrow. The main content area is a light grey box containing a login form. The form has two fields: "User Name" with the text "admin" and "Password" with an empty text input box. Below the fields is a blue "Login" button. At the bottom of the page is a grey footer bar with the text "Copyright © 2017. All Rights Reserved".

3. Enter the admin password (the default password is "admin") and click Login. The Device Administration menu showing the System Status screen is displayed.

The screenshot shows the Crestron AirMedia web interface. At the top, there are logos for Crestron and AirMedia. Below the logos, there are two tabs: "Device Administration" and "System Status". A "Logout" button is visible in the top right corner. On the left side, there is a dark blue navigation menu with the following items: System Status, Device Setup, Network Setup, Crestron Services Setup, OSD Setup, SNMP Setup, Device Services, Change Password, Firmware Upgrade, Remote View Setup, Reset to Default, and a Reboot System button with a power icon. The main content area displays the "System Status" information in a table:

Model	
Name	Crestron AirMedia
Firmware Version	2.6.0.8
Processor	WM8750A
Network Status	
IP Address	172.30.16.75
Subnet Mask	255.255.255.0
Default Gateway	172.30.16.1
MAC Address	00:12:5F:0F:49:7F
Connection Status	
Status	Idle
Total Users	0

At the bottom of the page, there is a copyright notice: "Copyright © 2017. All Rights Reserved".

NOTE: Changes made in any section of the Device Administration menu require that the AM-101 be rebooted for the settings to take effect. For details, refer to "Reboot System" on page 18 for details.

The Device Administration menu is divided into 12 sections:

- System Status displays the operational status of the AM-101.
- Device Setup sets the AM-101's output resolution, under-scan setting, and access code.
- Network Setup sets the AM-101's parameters for operating in a network environment.
- Crestron Services Setup sets the AM-101's parameters for operating in a Crestron® network environment.
- OSD Setup configures the AM-101's on-screen display.
- SNMP Setup configures the AM-101 to use the Simple Network Management Protocol (SNMP).
- Device Services enables and disables remote viewing, SNMP, and other features.
- Change Password changes the admin password.
- Firmware Upgrade imports or exports the system configuration to match other AM-101 devices and upgrades the AM-101's firmware.

- Remote View Setup specifies the auto-refresh interval.
- Reset to Default resets the AM-101 to the default settings.
- Reboot System reboots the AM-101.

System Status

Click System Status to display the operational status of the AM-101.

Device Administration Menu Showing the System Status Screen

The screenshot shows the Crestron AirMedia web interface. At the top, there are logos for Crestron and AirMedia. Below the logos is a navigation bar with 'Device Administration' and 'System Status' tabs, and a 'Logout' button. A dark blue sidebar on the left contains a list of menu items: System Status, Device Setup, Network Setup, Crestron Services Setup, OSD Setup, SNMP Setup, Device Services, Change Password, Firmware Upgrade, Remote View Setup, Reset to Default, and Reboot System. The main content area displays the System Status information in a table format.

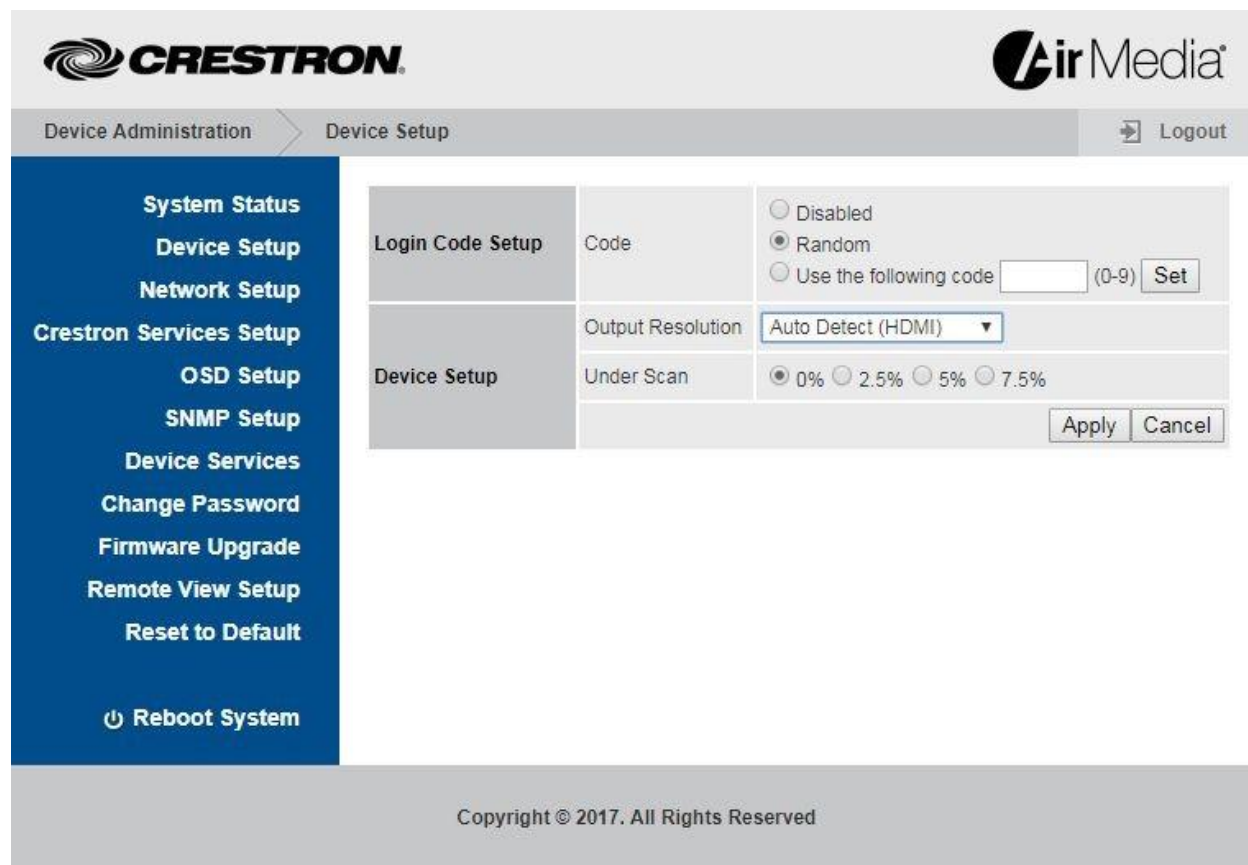
Model	
Name	Crestron AirMedia
Firmware Version	2.6.0.8
Processor	WM8750A
Network Status	
IP Address	172.30.16.75
Subnet Mask	255.255.255.0
Default Gateway	172.30.16.1
MAC Address	00:12:5F:0F:49:7F
Connection Status	
Status	Idle
Total Users	0

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The System Status screen displays the device's name (host name), firmware version, network status (IP address, subnet mask, default gateway, and MAC address), and connection status.

Device Setup

Click Device Setup to configure the output resolution, under-scan setting, and access code.



Code

A code can be used to limit access to the AM-101. The code feature can be disabled, randomly generated, or fixed to a specific value.

1. Select one of the following options from the Code section to specify how the access code is used:
 - Disabled allows any user with the AM-101's IP address or host name to open a client connection without entering an access code.
 - Random sets the AM-101 to randomly generate an access code. A new code is generated when the last connected presenter disconnects from the AM-101. The access code is displayed on the top right of the AM-101 welcome screen as shown on page 2.
 - Use the following code sets the AM-101 to display a user-specified, four-digit access code. Enter a code and click Set. The access code is displayed on the top right of the AM-101 welcome screen as shown on page 2.
2. Click Apply to apply any changes. Click Cancel to cancel.

Output Resolution

1. Select a resolution setting from the Output Resolution drop-down menu.
2. Click Apply to apply any changes. Click Cancel to cancel.

Under Scan

1. Select an amount of under scan to be applied to the displayed image.
2. Click Apply to apply any changes. Click Cancel to cancel.

Network Setup

Click Network Setup to configure the AM-101's parameters for operating in a network environment.

Device Administration Menu Showing the Network Setup Screen

The screenshot displays the Crestron AirMedia Network Setup interface. On the left is a blue sidebar menu with the following items: System Status, Device Setup, Network Setup (highlighted), Crestron Services Setup, OSD Setup, SNMP Setup, Device Services, Change Password, Firmware Upgrade, Remote View Setup, Reset to Default, and Reboot System. The main content area is titled 'Network Setup' and includes a 'Logout' button. It is divided into two sections: 'Host Name and Domain Name' and 'IP Setup'. The 'Host Name and Domain Name' section has a 'Host Name' field containing 'AirMedia-0f497f' and an empty 'Domain Name' field. A note below these fields states: 'Note: For maximum compatibility, host names 15 characters or fewer are recommended. Maximum host name length is 32 characters. Allowed characters: [0-9], [A-Z], [a-z], [-].'. The 'IP Setup' section has two radio buttons: 'Obtain an IP address automatically' (selected) and 'Use the following IP address'. Below these are four rows of IP address fields: IP Address (192, 168, 100, 10), Subnet Mask (255, 255, 255, 0), Default Gateway (192, 168, 100, 10), and DNS Server (192, 168, 100, 10). At the bottom right of the form are 'Apply' and 'Cancel' buttons. The footer of the page reads 'Copyright © 2017. All Rights Reserved'.

Host Name and Domain Name

Use a host name and domain name as an alternative to IP addressing when connecting client computers to the AM-101.

NOTE: When specifying a host name, choose one that has less than 15 characters.

NOTE: To use a host name, set the AM-101's IP Setup to Obtain an IP address automatically or, if using a static IP address, specify the domain name in the Domain Name field.

1. Enter a host name (15 characters or less) in the Host Name field and a domain name (optional) in the Domain Name field.
2. Click Apply to apply any changes. Click Cancel to cancel.

IP Setup

In the IP Setup section, the IP address, subnet mask, default gateway, and DNS server of the AM-101 can be set. The settings can be set manually or obtained from a DHCP server.

1. Select Obtain an IP address automatically to use a DHCP server to provide the IP address, subnet mask, default gateway, and DNS server. Otherwise, select Use the following IP address and enter the Ethernet parameters.
2. Click Apply to apply any changes. Click Cancel to cancel.

Crestron Services Setup

Click Crestron Services Setup to configure the AM-101 for operation in a Crestron network environment.

Device Administration Menu Showing the Crestron Services Setup Screen

System	Field	Value
Crestron Control System	IP Address or Host name	<input type="text"/>
	IP ID	05 ▼
	Port	41794
	Communication Status	Offline
Fusion Server	IP Address or Host name	<input type="text"/>
	IP ID	02 ▼
	Port	41794
	Communication Status	Offline
Crestron Connected® Device	IP Address or Host name	<input type="text"/>
	Communication Status	Offline
	Current Source	None
	Source	None ▼ <input type="button" value="Set"/>
	Automatic Power On	<input checked="" type="radio"/> Immediately <input type="radio"/> After Code Entry
	Power Off Time Out	0 <input type="text"/> minutes <input type="button" value="Set"/>
	Power Control	<input type="button" value="Power On"/> <input type="button" value="Power Off"/>
	Power Status	Unknown
	Lamp Hours	0 hours
	Device Status	No Error

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Crestron Control System

The Crestron Control System section specifies the control system that controls the AM-101.

- IP Address or Host name is the IP address or host name of the Crestron control system. Enter the IP address or host name of the Crestron control system and click Apply.
- IP ID identifies the AM-101 in the control system's program. Select the AM-101's IP ID from the drop-down menu and click Apply.
- Port is the port number used to communicate with the control system.
- Communication Status indicates the status of the communication link between the control system and the AM-101.

To apply any changes, click Apply. To cancel, click Cancel.

Fusion Server

The Fusion Server section specifies the Crestron Fusion® server communicating with the AM-101.

- IP Address or Host name is the IP address or host name of the Crestron Fusion server. Enter the IP address or host name of the Crestron Fusion server and click Apply.
- IP ID identifies the AM-101 in the Crestron Fusion server's program. Select the AM-101's IP ID from the drop-down menu and click Apply.
- Port is the port number used to communicate with the Crestron Fusion server.
- Communication Status indicates the status of the communication link between the Crestron Fusion server and the AM-101.
- Click Apply to apply any changes. Click Cancel to cancel.

Crestron Connected Device

The Crestron Connected Device section specifies the Crestron Connected® display device that is connected to the AM-101. Once the device is specified, basic status information and controls are displayed.

1. Enter the IP address or host name of the Crestron Connected device to specify the Crestron Connected device.
2. Click Set to apply changes to the Source and Power Off Time Out settings.
3. Click Apply to apply any changes. Click Cancel to cancel.

NOTE: The Apply button does not affect changes made to the Source and Power Off Time Out settings.

OSD Setup

Click OSD Setup to specify a logo image to display and to display or hide the AM-101's connection information.

The screenshot shows the OSD Setup screen in the Crestron AirMedia interface. The left sidebar contains the following menu items: System Status, Device Setup, Network Setup, Crestron Services Setup, OSD Setup (highlighted), SNMP Setup, Device Services, Change Password, Firmware Upgrade, Remote View Setup, Reset to Default, and Reboot System. The main content area is titled 'OSD Setup' and contains the following sections:

- Change Logo Image:** Logo Image: Default. Restore to default button. Customized OSD Image source: Local, HTTP, FTP. File Name: Choose File, No file chosen. Image File Upload button. Files must be in JPEG file format. Maximum file size is 510 kilobytes. Please see the manual for additional considerations.
- OSD Timeout:** DO NOT DISTURB: On, Off. When this setting is off, the connection information will be overlaid on the screen whenever a user opens the AirMedia application. When disabled, the connection settings are only displayed when AirMedia idle. 30 Seconds (Range: 0~600 seconds).
- Video Out Timeout:** 0 Minutes (Range: 0~300 minutes).
- Display Option:** Display IP address: On, Off. Display Code: On, Off. Display Host Name: On, Off. Display Domain Name: On, Off. Note: The Display Domain Name option has no effect unless the Display Host Name option is ON.

Buttons for 'Apply' and 'Cancel' are located at the bottom right of the settings area.

Change Logo Image

The Change Logo Image section is used to select the logo image on the AM-101 welcome screen.

- Logo Image displays the file name of the logo image. If the default logo image is used, "Default" is displayed.
- Restore to default reverts to the default logo image.

- Customized OSD Image source allows the user to select a static image file from the connected PC, a website, or an FTP server. To upload a custom file, perform the following procedure:
 1. Select the location of the image file (Local, HTTP, or FTP).
 - For a Local image file, click Choose File and select the local file.
 - For an image file stored on a web site, select HTTP and enter the address where the image is located.
 - For an image file stored on an FTP site, select FTP and enter the FTP address where the image is located, the FTP site's port number, user ID, and password.

When choosing a file, follow these guidelines:

Use logo images in JPEG format.

Do not exceed a file size of 510 kB.

For a given native display resolution, use the following table to create a properly sized logo.

Native Display Resolution and Logo Image Size

NATIVE DISPLAY RESOLUTION	LOGO IMAGE SIZE
800 x 600	800 x 500
1280 x 720	1280 x 600
1024 x 768	1024 x 640
1360 x 768	1360 x 640
1280 x 800	1280 x 667
1400 x 900	1400 x 750
1920 x 1080	1920 x 900
1600 x 1200	1600 x 1000

2. Click Image File Upload.

OSD Timeout

The OSD Timeout section specifies how long the connection information is displayed after a presenter connects to the AM-101. When DO NOT DISTURB is set Off, the connection information is always displayed when a user opens the AirMedia application.

Video Out Timeout

The Video Out Timeout section specifies how long the video output stays on after inactivity.

Display Option

The Display Option section controls how the connection information is displayed.

- Display IP address sets the AM-101 to display the IP address after the host name. Select On and click Apply to display the IP address, or select Off and click Apply to hide the IP address.

- Display Code sets the AM-101 to display the access code on the AM-101 welcome screen. Select On and click Apply to display the access code, or select Off and click Apply to hide the access code.
- Display Host Name sets the AM-101 to display the host name. Select On and click Apply to display the host name after the presenter connects to the AM-101, or select Off and click Apply to hide connection information after the presenter connects to the AM-101.
- Display Domain Name sets the AM-101 to display the domain name to which the AM-101 is attached when a host name is used to connect with the AM-101 instead of an IP address. To display the domain name when the AM-101's host name is used for connection, select On and click Apply. To hide the domain name, select Off and click Apply.

Click Apply to apply any changes. Click Cancel to cancel.

SNMP Setup

Click SNMP Setup to configure the AM-101 to use SNMP.

Device Administration Menu Showing the SNMP Setup Screen

The screenshot shows the Crestron AirMedia web interface. At the top, there are logos for Crestron and AirMedia. Below the logos, there is a navigation bar with 'Device Administration' and 'SNMP Setup' (the current page). A 'Logout' button is also visible. On the left side, there is a blue navigation menu with the following items: System Status, Device Setup, Network Setup, Crestron Services Setup, OSD Setup, **SNMP Setup** (highlighted), Device Services, Change Password, Firmware Upgrade, Remote View Setup, Reset to Default, and Reboot System. The main content area is titled 'SNMP' and contains a form with the following fields:

Version	2c ▼
Manager IP	<input type="text"/>
Public Community	public
Private Community	private
Username	user
Authentication Protocol	MD5 ▼
Authentication Password <input checked="" type="checkbox"/> Hide characters
Privacy Protocol	DES ▼
Privacy Password <input checked="" type="checkbox"/> Hide characters

At the bottom right of the form, there are 'Apply' and 'Cancel' buttons. At the bottom of the page, there is a copyright notice: 'Copyright © 2017. All Rights Reserved'.

- The AM-101 supports SNMP versions 1, 2c, and 3. Select the version from the Version drop-down menu.
- The AM-101 uses an IP filter for SNMP connections. When an IP address is specified in the Manager IP field, the device accepts an SNMP request only from

that IP address. If the field is blank, the SNMP request is honored from any IP address.

- If using SNMP version 3, specify a user name, authentication protocol, authentication password, privacy protocol, and privacy password.

The default settings are as follows: Version is set to 2c, Public Community is set to public, and Private Community is set to private.

Click Apply to apply any changes. Click Cancel to cancel.

Device Services

Click Device Services to enable and disable remote viewing, SNMP, and other features.

Device Administration Menu Showing the Device Services Screen

The screenshot displays the Crestron AirMedia Device Administration interface. At the top, the Crestron and AirMedia logos are visible. Below the logos, there are navigation tabs for 'Device Administration' and 'Device Services', along with a 'Logout' button. A left-hand navigation menu lists various system settings. The main area is titled 'Server Setup' and contains a table of services with radio buttons to toggle them on or off.

Service	Enable	Disabled
Web Server	<input checked="" type="radio"/>	<input type="radio"/>
Remote View	<input checked="" type="radio"/>	<input type="radio"/>
SNMP	<input checked="" type="radio"/>	<input type="radio"/>
Crestron Services	<input checked="" type="radio"/>	<input type="radio"/>
Layout Control	<input checked="" type="radio"/>	<input type="radio"/>
Device Mirroring	<input checked="" type="radio"/>	<input type="radio"/>
Administration Pages	<input checked="" type="radio"/>	<input type="radio"/>
USB Control	<input checked="" type="radio"/>	<input type="radio"/>

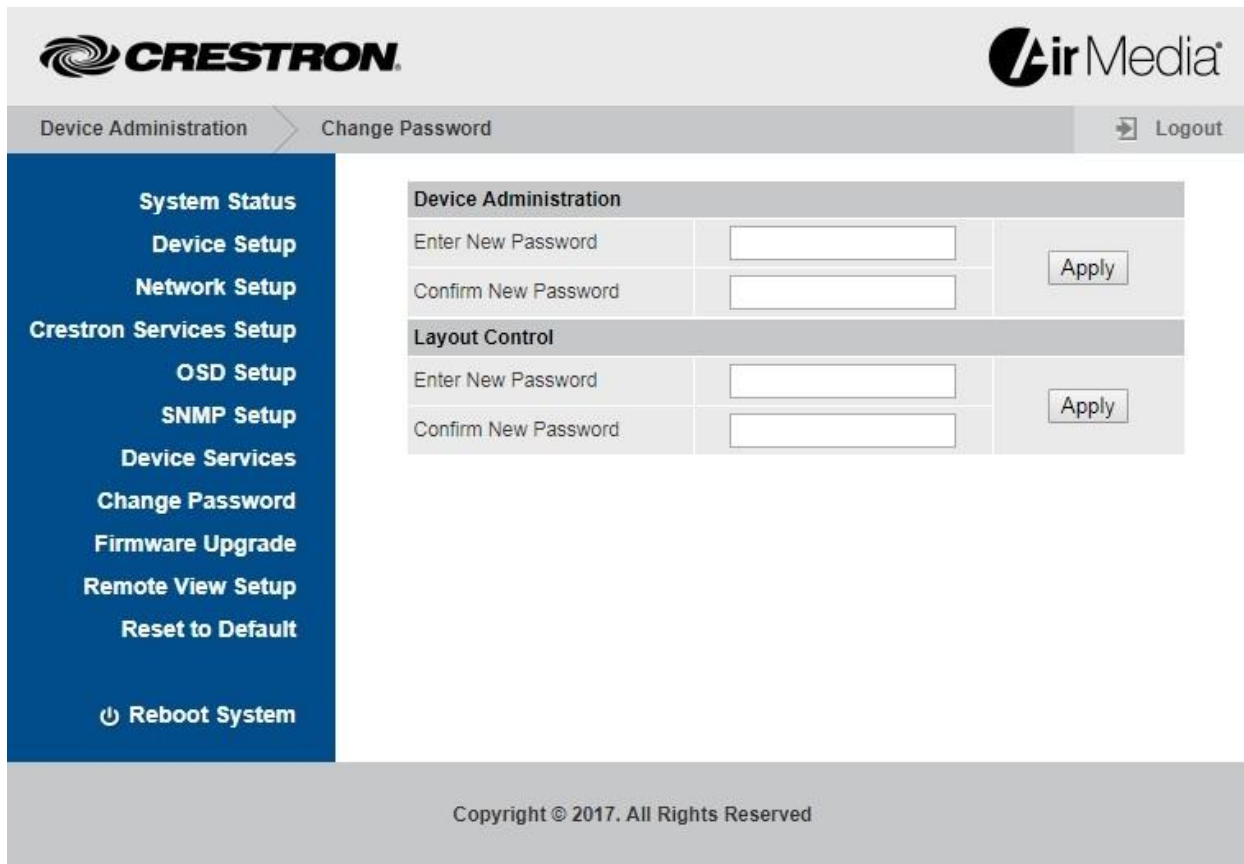
At the bottom right of the table, there are 'Apply' and 'Cancel' buttons. The footer of the page reads 'Copyright © 2017. All Rights Reserved'.

Select Enable or Disabled for each service listed in Server Setup.

NOTE: Disabling the administration pages prevents access to the AM-101's configuration screens. These pages can still be enabled by SNMP or the control system connection. However, if SNMP and Crestron Services are disabled as well, the AM-101 must be restored to the original factory settings to gain access to the configuration screens. For details, refer to "Hardware Reset" on page 29.

Change Password

Click Change Password to set a new admin password or layout control password.



Device Administration

Perform the following procedure to change the admin password:

1. Enter a new password in the Enter New Password field.
2. Enter the new password in the Confirm New Password field and click Apply.

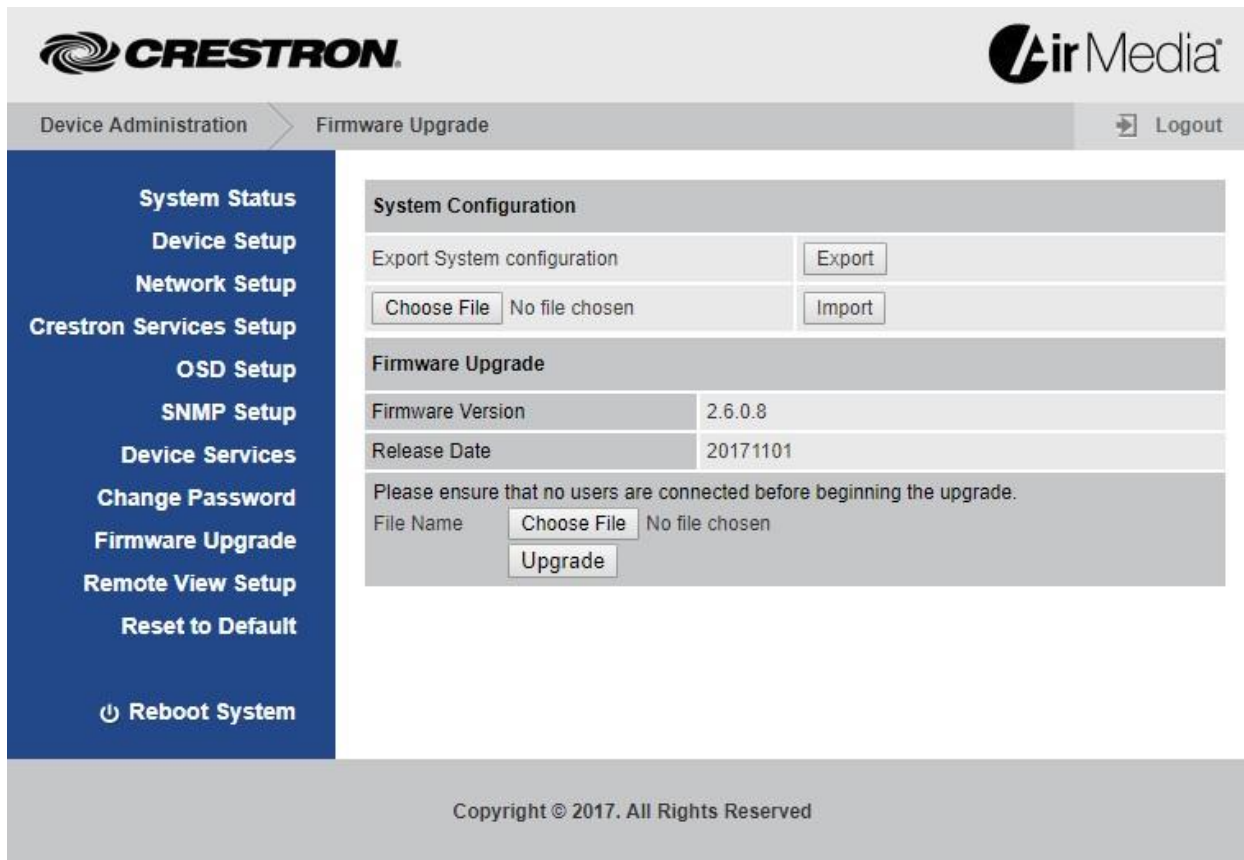
Layout Control

Perform the following procedure to change the layout control password:

1. Enter a new password in the Enter New Password field.
2. Enter the new password in the Confirm New Password field and click Apply.

Firmware Upgrade

Click Firmware Upgrade to import or export device configuration settings or upload new firmware.



Device settings can be imported from another device or exported to a file for use on another device.

Export and Import System Configuration Settings

Click Export to export the system configuration file.

Perform the following procedure to import a system configuration file:

1. Click Choose File to select a file to import. The file has the .conf extension.
2. Click Import to import the configuration file and change the AM-101's settings.

Upgrade Firmware

Perform the following procedure to update the AM-101's firmware:

1. Click Choose File to select the desired firmware file. The file has the .img extension.
2. Click Upgrade to update the AM-101's firmware.

NOTE: Firmware upgrades may take up to 30 minutes.

NOTE: Ensure that all users are disconnected from the AM-101 before upgrading the firmware.

NOTE: Use the AirMedia Firmware Update Utility (which is available for download from www.crestron.com/airmedia) to update multiple AM-101s across an enterprise.

Remote View Setup

Click Remote View Setup to configure remote view operations.

Device Administration Menu Showing the Remote View Setup Screen

The screenshot displays the Crestron AirMedia web interface for Remote View Setup. The top navigation bar includes the Crestron and AirMedia logos, and a breadcrumb trail showing 'Device Administration' > 'Remote View Setup'. A 'Logout' button is located in the top right corner. The left sidebar contains a menu with the following items: System Status, Device Setup, Network Setup, Crestron Services Setup, OSD Setup, SNMP Setup, Device Services, Change Password, Firmware Upgrade, Remote View Setup (highlighted), Reset to Default, and Reboot System. The main content area is titled 'Remote View Setup' and contains three configuration sections:

- Remote View Control:** Two radio button options: 'Remote view always active' (unselected) and 'User controls remote view setting' (selected).
- Access Password Control:** Two radio button options: 'Disabled' (selected) and 'Use the same password as "Code"' (unselected).
- Auto Refresh Interval (second):** A list of radio button options: 'Manual Refresh' (selected), '5 *recommended maximum concurrent users. (5)', '10 *recommended maximum concurrent users. (10)', '20 *recommended maximum concurrent users. (15)', '30 *recommended maximum concurrent users. (20)', '45 *recommended maximum concurrent users. (25)', '60 *recommended maximum concurrent users. (30)', and '90 *recommended maximum concurrent users. (35)'. Below this list are 'Apply' and 'Cancel' buttons.

At the bottom of the page, a copyright notice reads: 'Copyright © 2017. All Rights Reserved'.

Remote View Control

The Remote View Control section specifies whether remote viewing is available to connected viewers when a presenter connects to the AM-101.

Select Remote view always active to automatically allow remote viewing when the presenter connects to the AM-101. Select User controls remote view setting to require the presenter to allow remote viewing.

Access Password Control

The Access Password Control section allows the code that is displayed on the screen to control access to the device when remote view is used. Select Disabled or Use the same password as "Code."

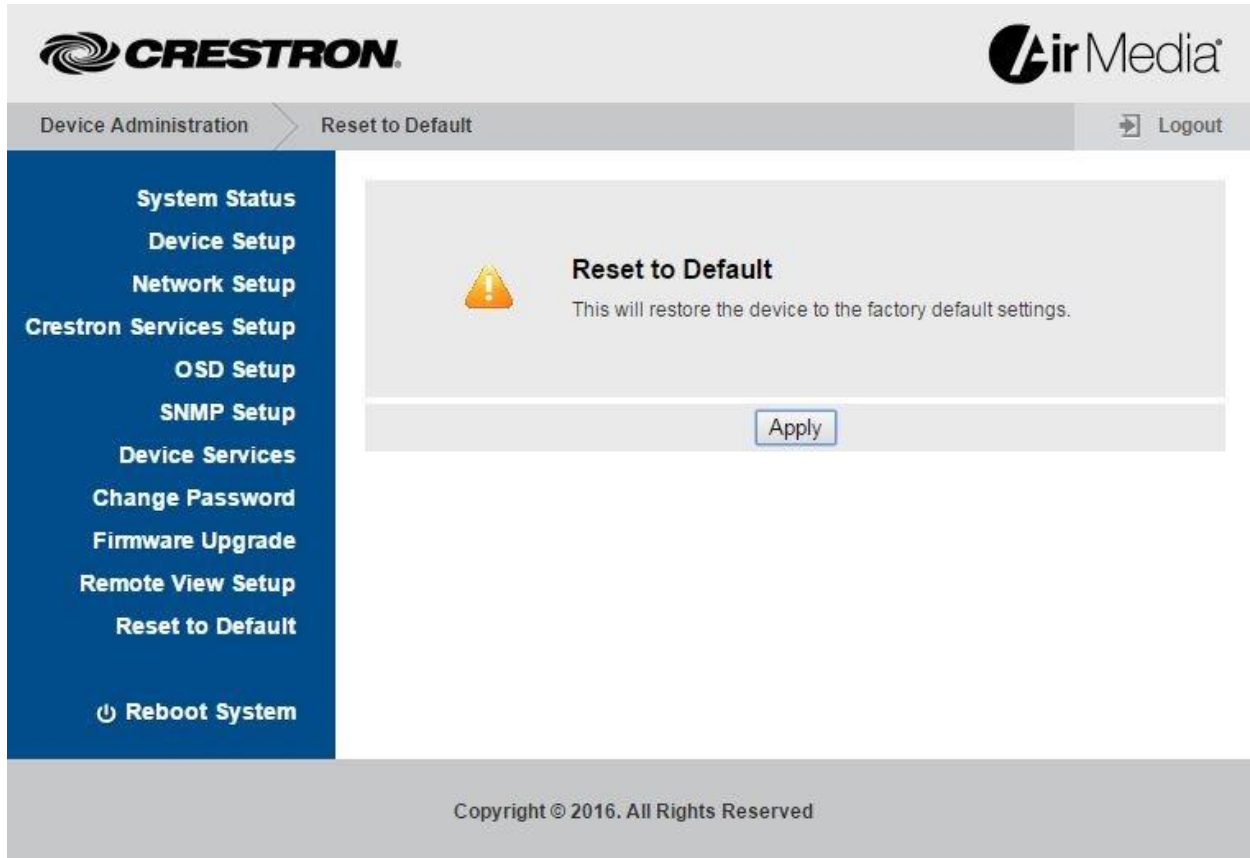
Auto Refresh Interval

The Auto Refresh Interval section specifies how often the presented content should be refreshed. Using the recommended maximum amount of concurrent users shown, select a refresh interval (in seconds) from the list and click Apply. To cancel, click Cancel.

Reset to Default

Click Reset to Default and then click Apply to reset the AM-101 to the factory settings.

Device Administration Menu Showing the Reset to Default Screen



The screenshot displays the Crestron AirMedia web interface. At the top left is the Crestron logo, and at the top right is the AirMedia logo. Below the logos is a navigation bar with 'Device Administration' and 'Reset to Default' tabs, and a 'Logout' button. A left-hand navigation menu lists various system settings, with 'Reset to Default' highlighted. The main content area shows a warning icon and the text 'Reset to Default' followed by 'This will restore the device to the factory default settings.' and an 'Apply' button. At the bottom, a footer contains the text 'Copyright © 2016. All Rights Reserved'.

Reboot System

Click Reboot System and click Apply to reboot the AM-101.

Operation

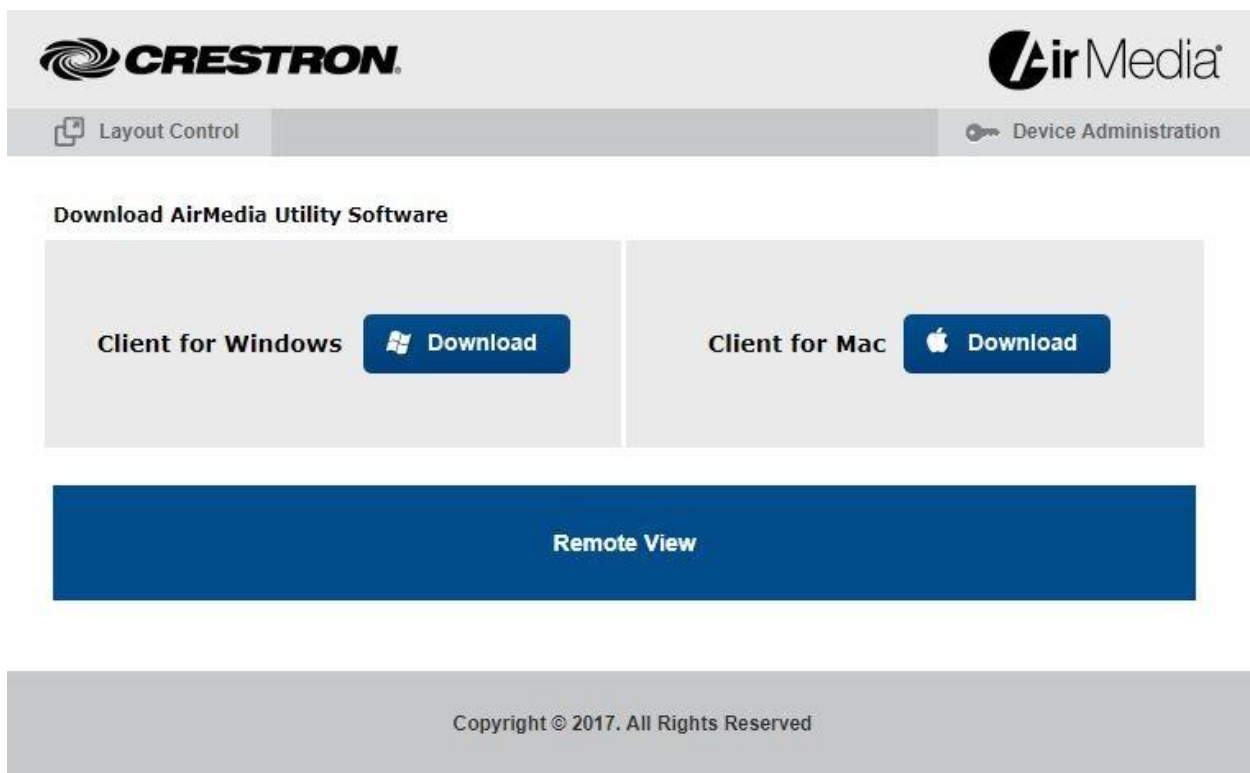
The AM-101 uses a client application to share a PC or Mac® (hereafter referred to as “computer”) desktop. The computer should be able to access the AM-101 over the network.

NOTE: Crestron offers a stand-alone application for enterprise deployments. This application features additional connection methods and device management. For details, visit present.crestron.com.

NOTE: Mobile devices can share their content using the Crestron AirMedia app or the Crestron PinPoint™ mobile app, which are available for iOS® and Android™ devices. Both apps may be used for full screen sharing on devices running Android 5.0 Lollipop and above. Download the latest version of these apps from the App Store® app in iTunes® software or Google Play™ store.

1. Open a web browser on the computer, and navigate to the web address or the IP address that is displayed on the top left of the AM-101 welcome screen as shown on page 2. The download screen is displayed.

Download Screen



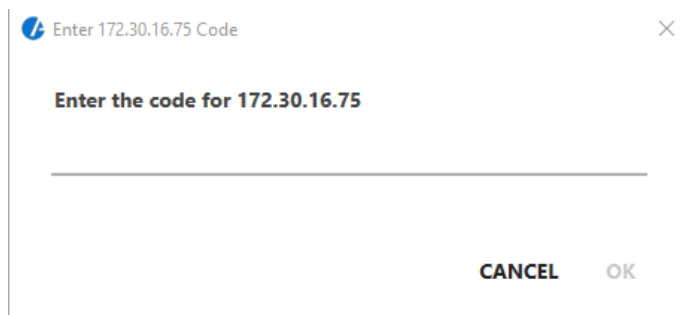
2. Click on the Download icon for the computer’s operating system and follow the instructions for running the client application.

NOTE: When used on a Mac, the AirMedia application must be run from within the disk image file. Do not drag the application out of the disk image file.

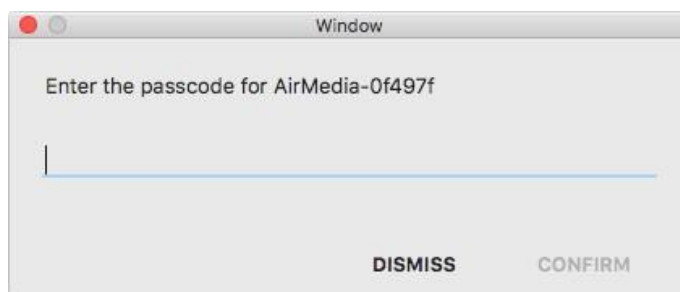
Run the AM-101 Client

1. Run the client application. The Enter Code (Enter Passcode on Mac) screen is displayed.

Enter Code Screen (Windows)

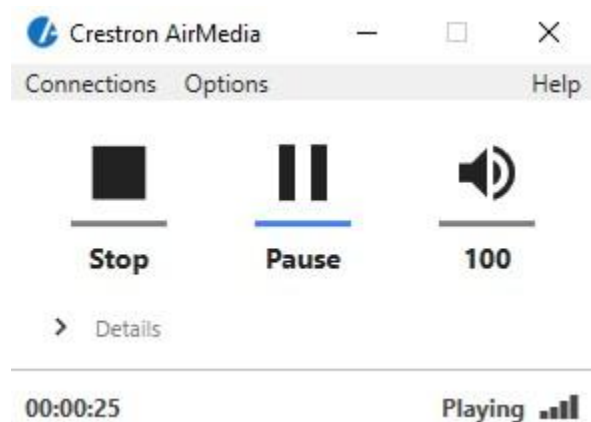


Enter Passcode Screen (Mac)



2. Enter the code displayed on the AM-101 welcome screen and click OK (CONFIRM on Mac). The client establishes a connection between the computer and the AM-101 while displaying the Crestron AirMedia controls on the computer.






Crestron AirMedia Controls (L-R, Windows and Mac)



NOTE: The application mutes the PC's local audio, since the audio is transmitted to the device and played through the display's speakers.

Control the Presentation

Direct the presentation with the following controls:

- Click **A** to stop showing the computer's screen.
- Click **H** to start showing the computer's screen.
- Click **b** to freeze the computer's screen.
- Hover over  to show a volume slider control and drag the slider to raise or lower the volume.
- Click  to mute the audio output.
- Click  to unmute the audio output.
- Click **X** to close the client application and the connection between the computer and the AM-101. On a Mac, click  to close the client application and the connection between the computer and the AM-101.
- Click **—** to minimize the presentation control screen. On a Mac, click  to minimize the presentation control screen.

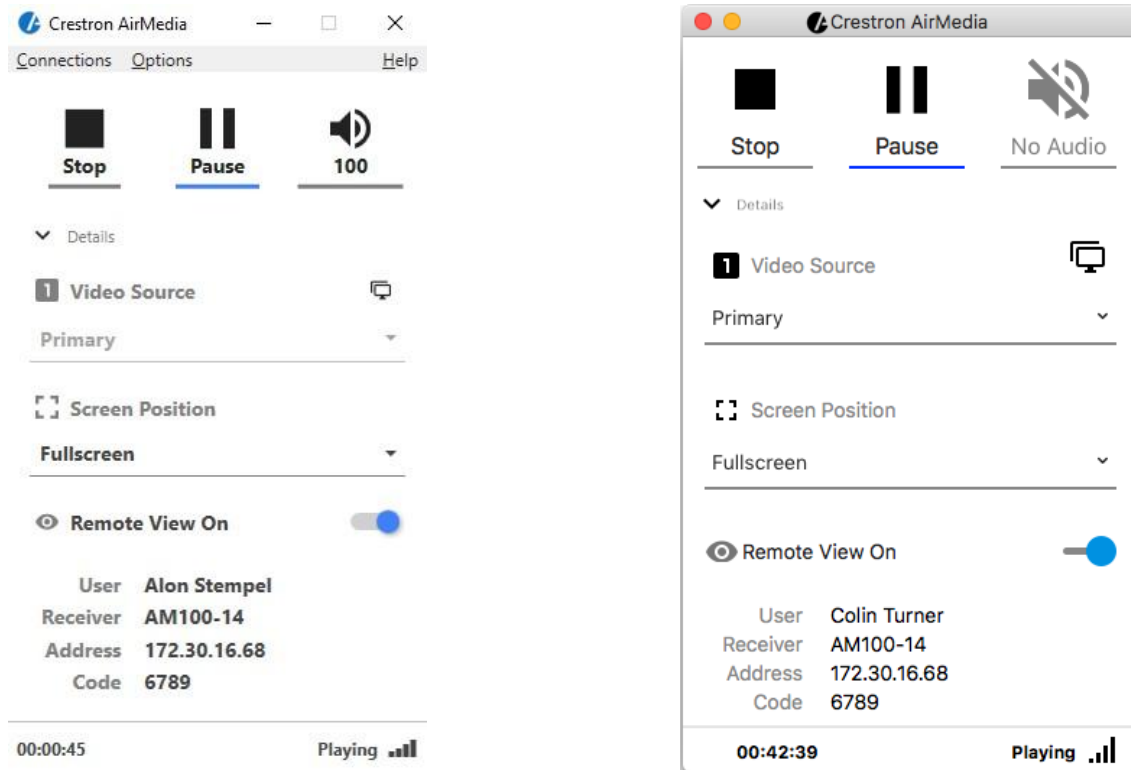
Configure Basic Presentation Settings

Once a link between the computer and the AM-101 has been established, the AM-101 can be configured for custom operation.

Perform the following to configure the AM-101:

1. On the presentation control screen, click Details. The screen expands to show additional controls and information.

Presentation Control Screen Details (L-R, Windows and Mac)



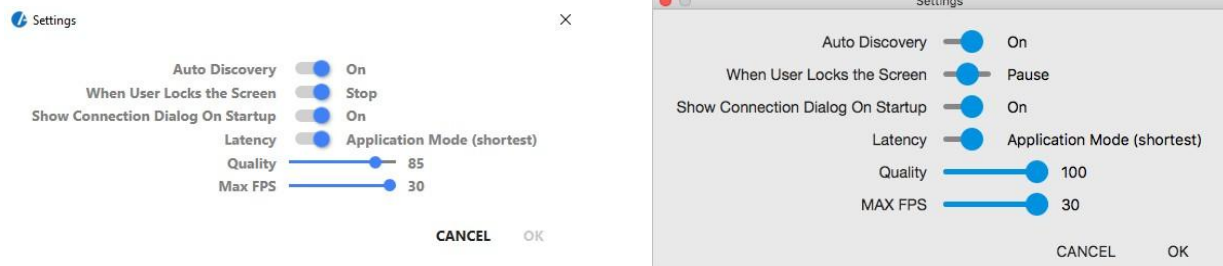
2. Configure the following options:

- Video Source: On a Windows® computer, the user can share a secondary desktop. This is similar to the Extend mode in Windows for multiple displays. On a Mac, a secondary connected display can be shared.
- Screen Position sets the position of displayed content on a remote viewer's display. For details, refer to "Quad View" on page 23.
- Remote View allows the device to serve images of the desktop to remote viewers via the built-in web server.

3. Configure the operation and the image quality settings:

- Click Options | Settings (on a Mac, click Crestron AirMedia | Preferences). The Settings screen is displayed.

Settings Screen (L-R, Windows and Mac)



- Customize the settings.

- Auto Discovery should be set to On.

- When User Locks the Screen sets the behavior of the client software when the connected computer is locked. Choose from Stop (the client stops sharing), Pause (the client pauses sharing), or Nothing (nothing happens).
 - Show Connection Dialog on Startup selects whether connection information is displayed when the client starts.
 - Latency selects the amount of latency in transmitting the signal from the computer to the AM-101. Select Application Mode (shortest) for the least amount of latency or Video Mode (PreBuffer) for a longer amount of latency that is best suited for buffering shared video.
 - Set the Quality of the projected signal (0 to 100 percent).
 - Set the Max FPS (frames per second) refresh rate (1 to 30)
- c. Click OK to confirm the settings or click Cancel to cancel.

Quad View

Up to four computers can simultaneously share their desktops with the AM-101. Shared desktops are arranged with each computer using one quarter of the projected image.

NOTE: If moderator controls are enabled, the screen position can be set by the moderator only. For details, refer to “Moderator Controls” on page 25.

NOTE: Although the AM-101 can support up to 32 connected computers for sharing, only four desktops can be displayed simultaneously.

Perform the following to share multiple desktops simultaneously:

1. Connect the computer to the AM-101 as described in “Run the AM-101 Client” on page 20.
2. Connect up to three other computers as described in “Run the AM-101 Client” on page 20.
3. Click Details.
4. Select the shared desktop's quadrant on the display device from the Screen Position drop-down menu.

NOTE: If another computer is already sharing the selected position, the position is replaced by the newly shared desktop. Desktop playback ceases on the “booted” computer.

NOTE: If Fullscreen is chosen, any other shared desktops are replaced by the newly shared desktop. Desktop playback ceases on the “booted” computers.

View a Presentation Remotely

If Remote View is enabled, users can view desktop images via the AM-101's built-in web server. Perform the following to remotely view images:







1. Open a web browser on a remote computer, and navigate to the web address or IP address supplied by the user or users that are sharing their desktops. The download screen as shown on page 19 is displayed.

2. Click Remote View. The shared desktop is displayed in the web browser as a web page.

Remote View Web Page



3. Use the following buttons when viewing the AM-101's output in a web browser.

-  Exit remote viewing and return to the download screen.
-  Pause the currently displayed image.
-  Save the currently displayed image.
-  View the currently displayed image at actual size.
-  View the currently displayed image at full-screen size.
-  Refresh the image.

Moderator Controls

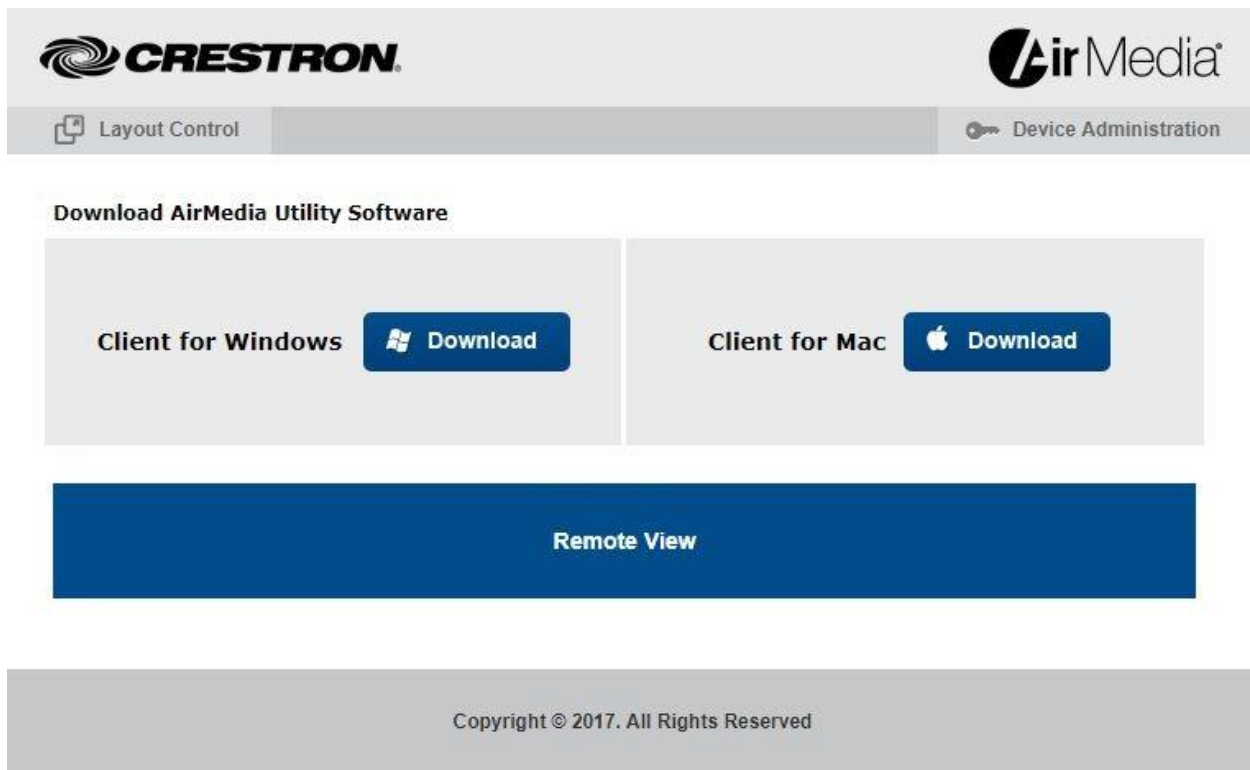
Moderator controls are used to determine which users can present to the display device and where their presented content is located on the display.

Log In

1. Open a web browser on a remote computer, and navigate to the web address or the IP address that is displayed on the top left of the AM-101 welcome screen. The download screen is displayed.

NOTE: By default, the AM-101 displays the IP address in parentheses to assist in the configuration of the device. The IP address can be hidden so that the end user sees only a friendly URL (i.e., <http://AirMedia-019647>). For details, refer to “OSD Setup” on page 10.

Download Screen



2. Click Layout Control. The moderator login screen is displayed.

Moderator Login Screen

CRESTRON

AirMedia

HOME

User Name moderator

Password

Login

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3. Enter the moderator password (the default password is “moderator”) and click Login. The Layout Control screen is displayed showing a list of connected presenters.

CRESTRON AirMedia

Crestron AirMedia > Layout Control Logout

Layout Control

Moderator
When checked, changes to the layout can only be made by this browser session.

Name	Play Control	IP Address
Alon Stempel	  	172.30.16.96

Device Mirroring

Name	Play Control	IP Address
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Control the Display Layout

1. Click the Moderator check box to enable layout control.

NOTE: If Moderator is enabled, the play control can be changed only by the user who is logged in as the moderator.

2. Up to four connected users can share content on the display at a time. Select the display capability of each connected user. Use the following controls for each connected presenter.



Sets the selected presenter to display in full screen.



Sets the selected presenter to display in a specific quadrant of the display. Click on the quadrant where the presenter's content is to be displayed.



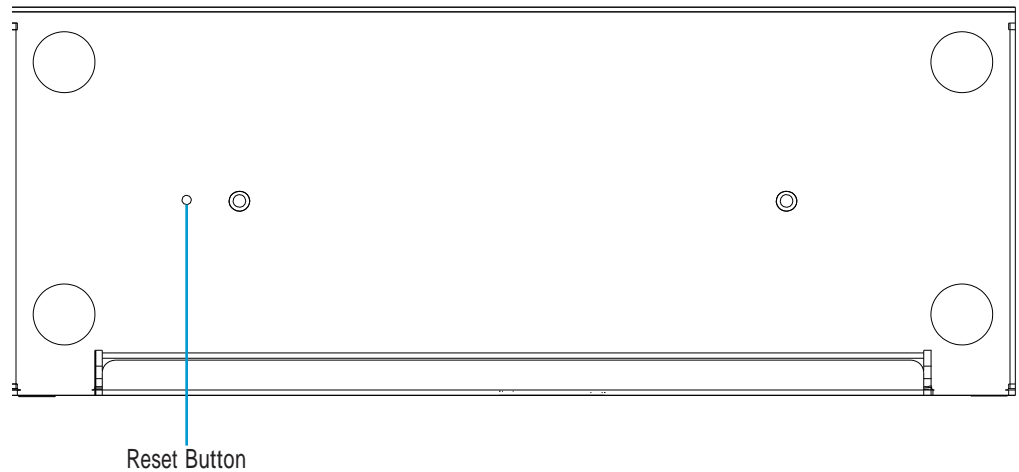
Disconnects the selected presenter from the display.

Hardware Reset

In the event the AM-101's configuration screen cannot be accessed, the AM-101 must be reset to the factory settings. Access issues may be due to the administration pages being disabled or the device may be configured with a static IP address that is on a different subnet. Perform the following to restore the factory settings:

1. Turn the AM-101 upside down as shown in the following diagram.

Underside of the AM-101



2. Unplug the AM-101
3. Press and hold the reset button.
4. Plug in the AM-101 with the button still pressed.
5. Wait approximately 30 seconds or until the front LED turns green.
6. Release the reset button.
7. Unplug the AM-101.
8. Plug in the AM-101.

CHAPTER 5

Results and Outputs

5.1) OVERVIEW:

In this chapter we will review the outputs that we found while we are working in this project.

5.2) RESULT:

We use multiple types of the input device (Apple mobile, Android mobile and PC laptops) to present from it to the output screen with different views by assign the following IP addresses for test our program:

- Access point (192.168.1.1): in order to configure the wireless access point device , we need to assign an IP address for it , then to write an IP address of it in the web browser, as we see in the following figure, the access point take a 192.168.1.1 IP address:

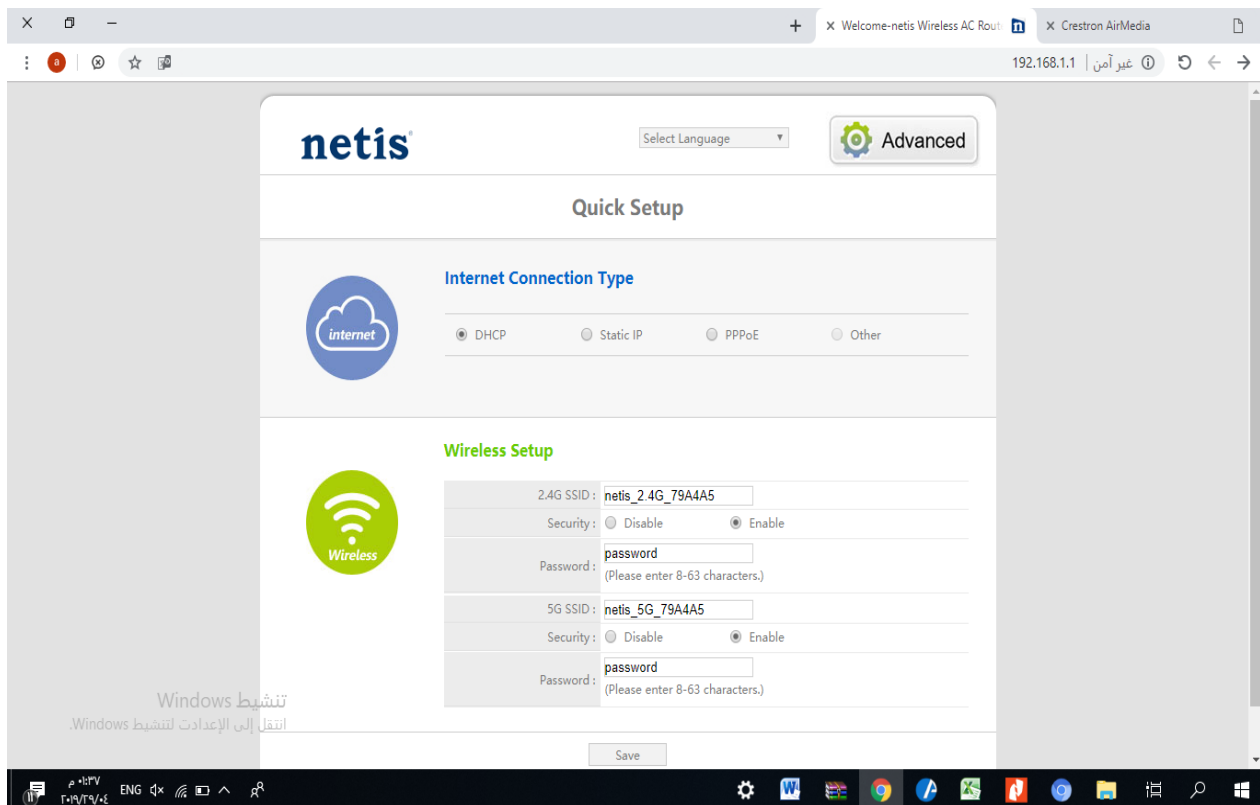


Fig.5.1 Access Point IP Address

- Laptop1 (192.168.1.2): the first user in our system have a laptop device, that means windows based format type device ,we configure the IP address for it (192.168.1.2) in order to be in the same domain of the virtual network as the following figure:



Fig.5.2 Laptop-1 IP Address

- Airmedia controller (192.168.1.3): we assign 192.168.1.3 IP address for the Airmedia controller, this device is the brain of our system, we assign this IP address for this device to be able to communicate with the other devices in our system:

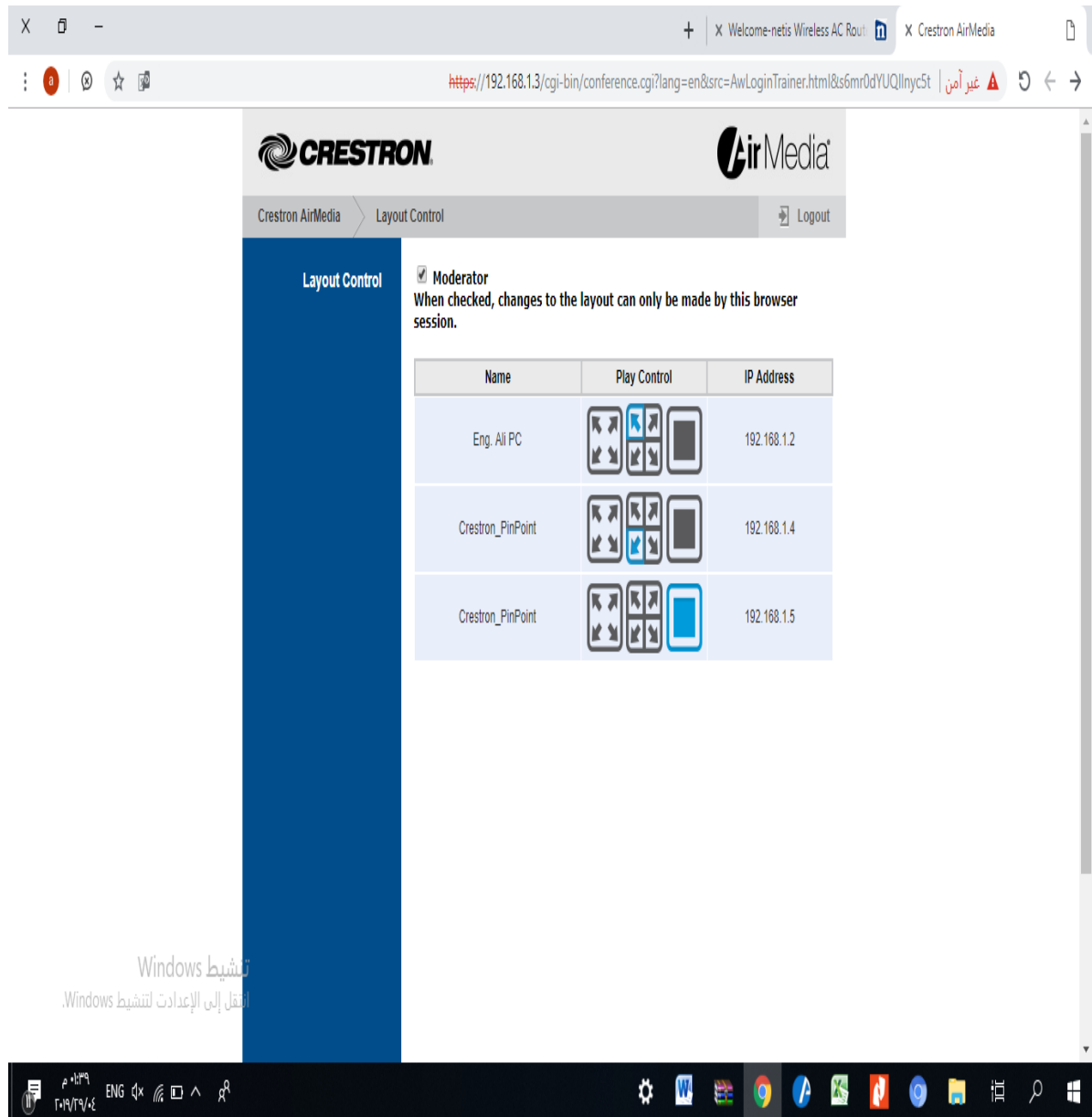


Fig.5.3 Airmedia Controller IP Address

- Android mobile (192.168.1.4): the second user in our system have a Samsung mobile phone device, that means android based format type device ,we configure the IP address for it (192.168.1.4) in order to be in the same domain of the virtual network .
- Apple mobile (192.168.1.5): the third user in our system have a Iphone mobile phone device, that means apple based format type device ,we configure the IP address for it (192.168.1.5) in order to be in the same domain of the virtual network .
- Laptop 2 (192.168.1.6): the fourth user in our system have a laptop device, that means windows based format type device ,we configure the IP address for it (192.168.1.6) in order to be in the same domain of the virtual network as the following figure:

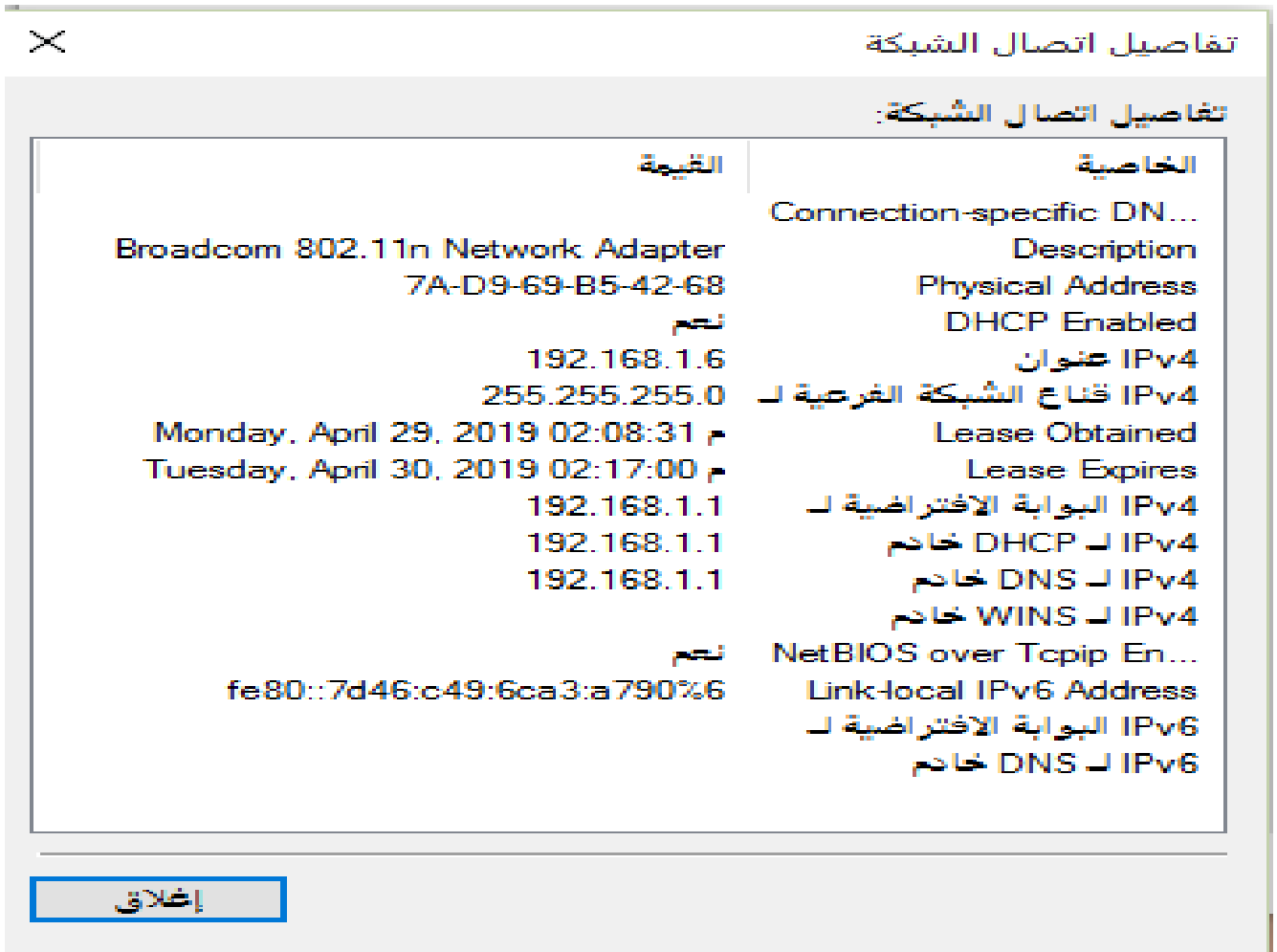


Fig.5.4 Laptop-2 IP Address

If we need to present, we can control the viewing by the web browser moderator software, we make an experiment for the following

- Single view from Laptop2 the result is: as we see in the following figure, from moderator we permit for user laptop-2 to show his data in out put screen:



Fig.5.5 Single view from Laptop2

- Single view from Apple mobile the result is : as we see in the following figure, from moderator we permit for Iphone user to show his data in out put screen:

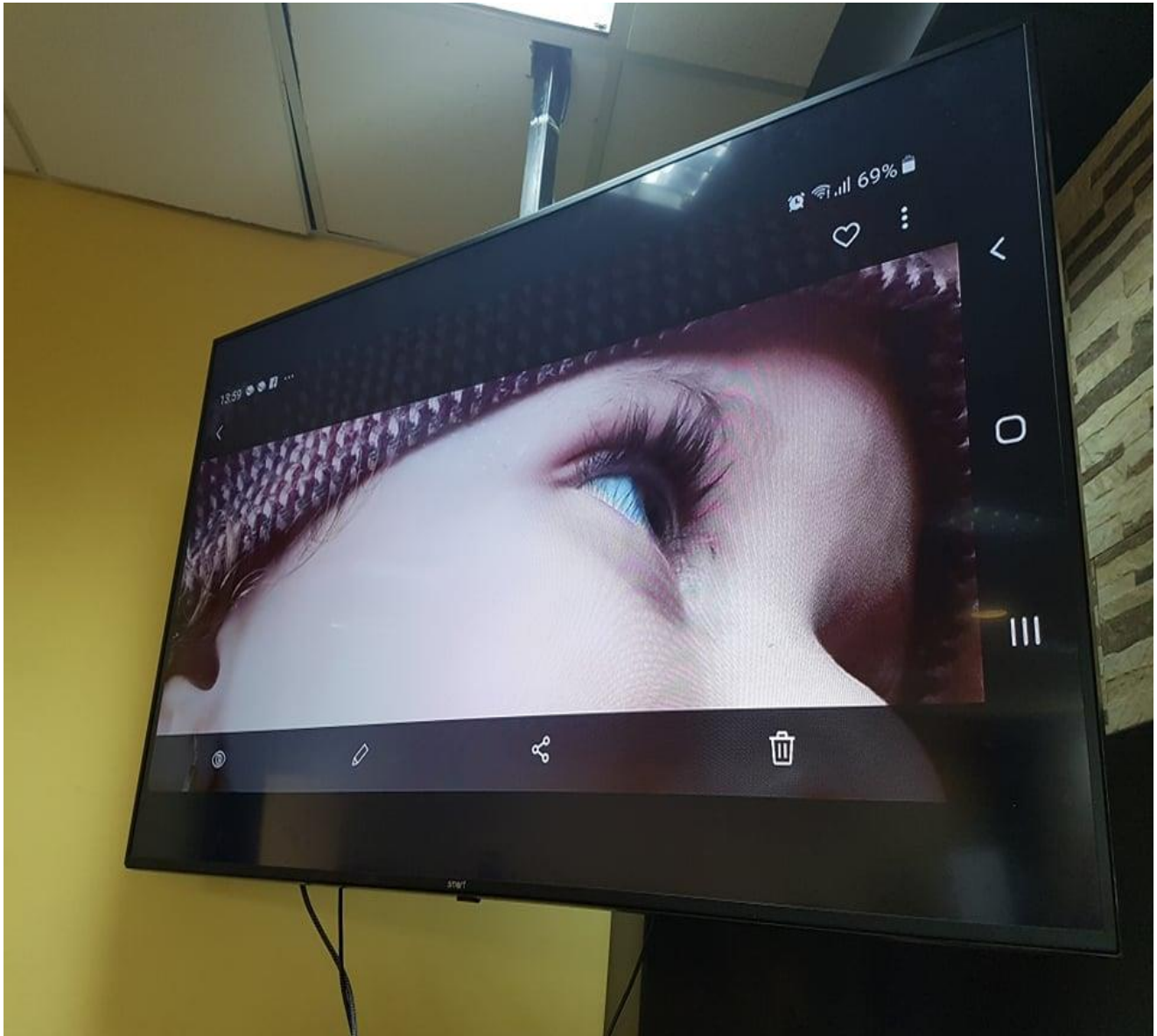


Fig.5.6 Single view from Apple mobile

- Dual view from two input devices (Apple mobile & Android mobile) the result is: as we see in the following figure, from moderator we permit for both Iphone and Samsung users to show their data in out put screen in the same time :



Fig.5.7 Dual View

- Triple view from three devices(Apple mobile , Android mobile & laptop1) the result is: as we see in the following figure, from moderator we permit for three users (Apple mobile , Android mobile & laptop1) to show their data in out put screen in the same time :

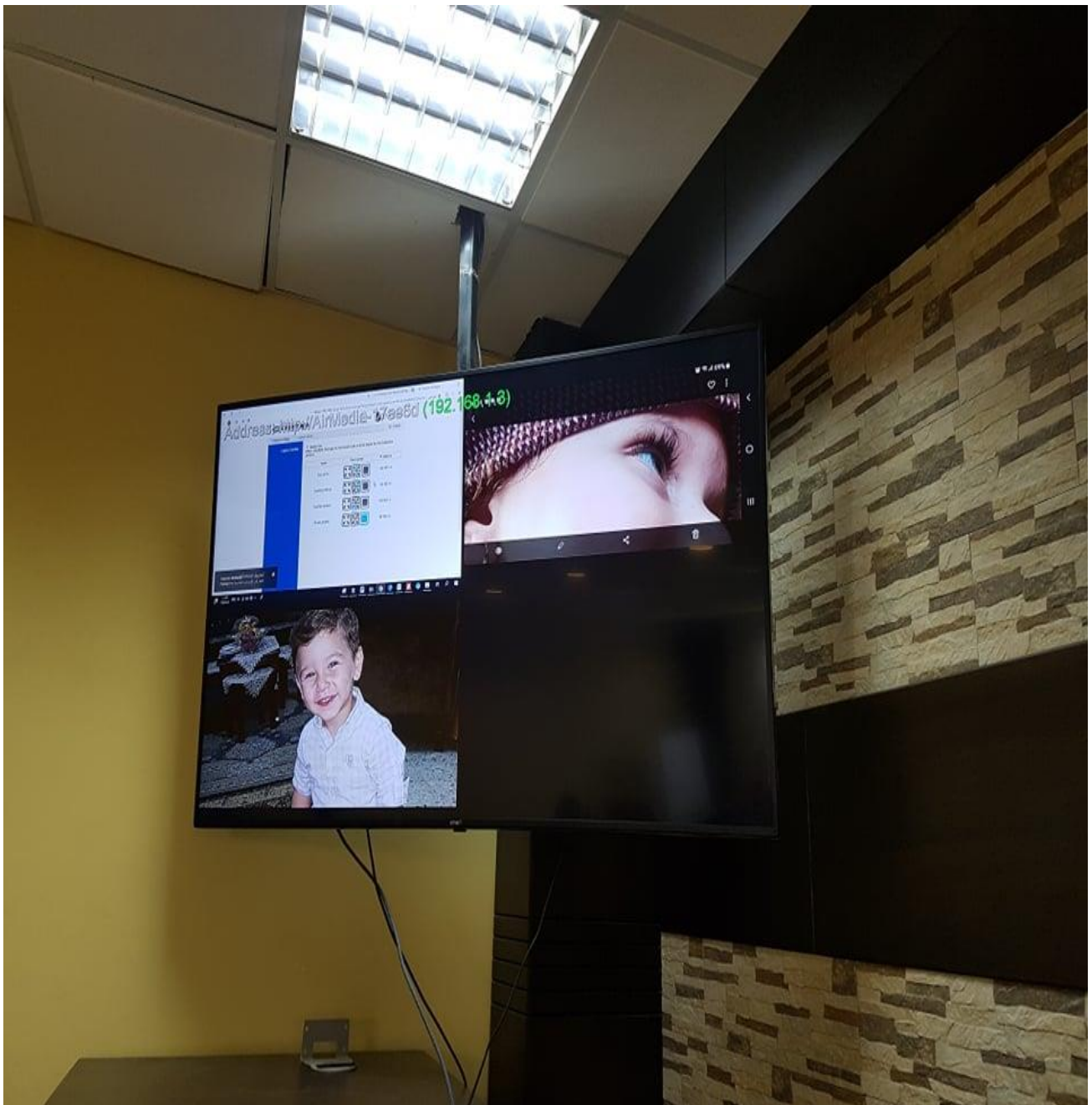


Fig.5.8 Triple View

- Quad view from four devices (Apple mobile , Android mobile , laptop1& laptop2) the result is: as we see in the following figure, from moderator we permit for four users (Apple mobile , Android mobile , laptop1& laptop2) to show their data in out put screen in the same time :

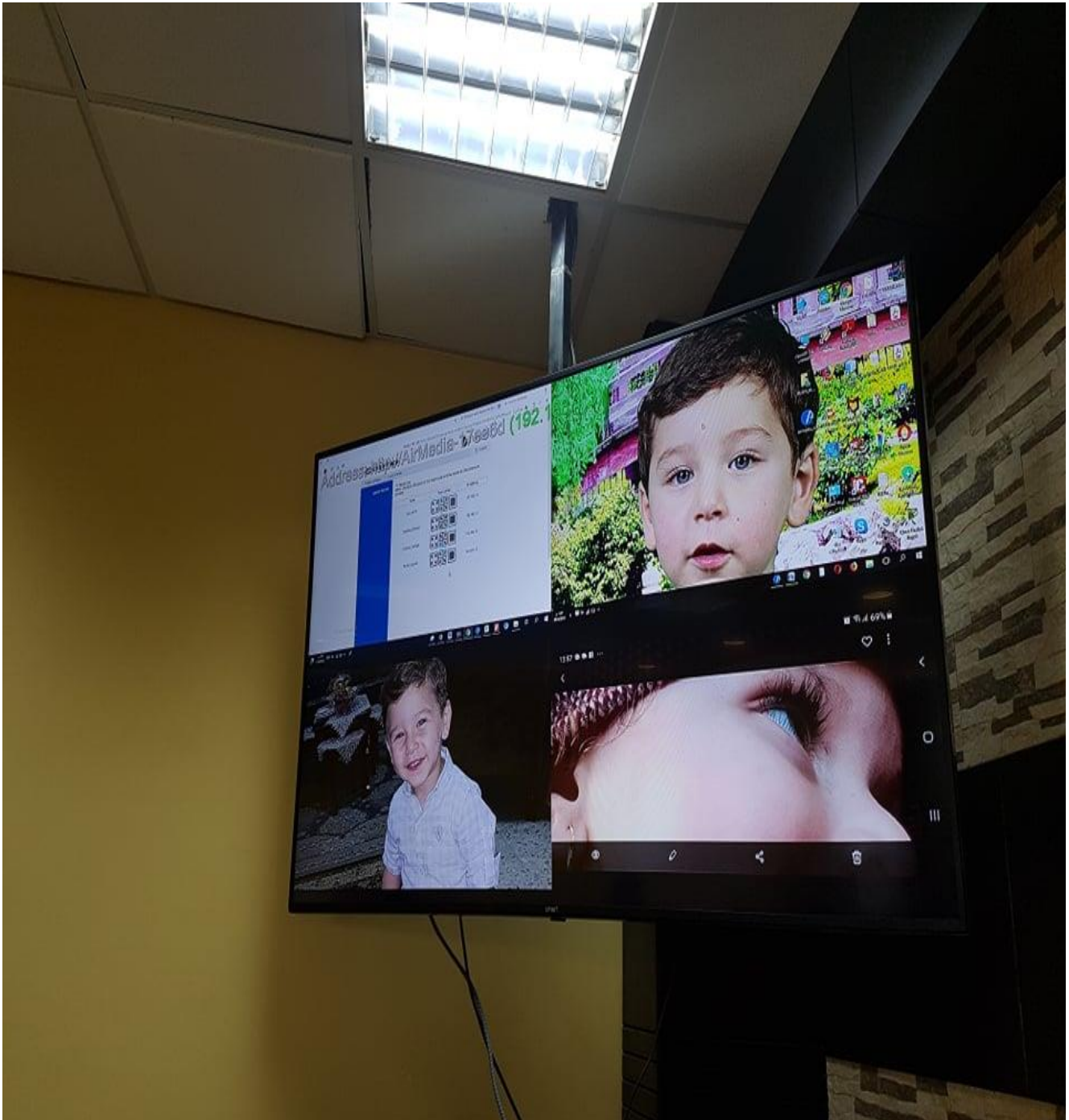


Fig.5.9 Quad View

We can configure our system as moderator mode for one device, some of devices or for all devices. Any device has moderator mode feature can control the viewing in the system.



Fig.5.10 Moderator Mode

The software application on the Apple mobile, Android mobile and PC laptops:

- application on the Apple mobile

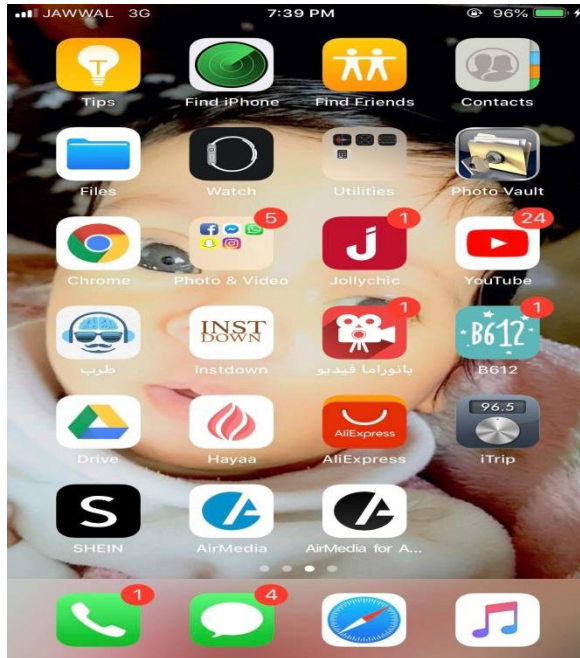


Fig.5.11 Airmedia Apple Application

- application on the Android mobile

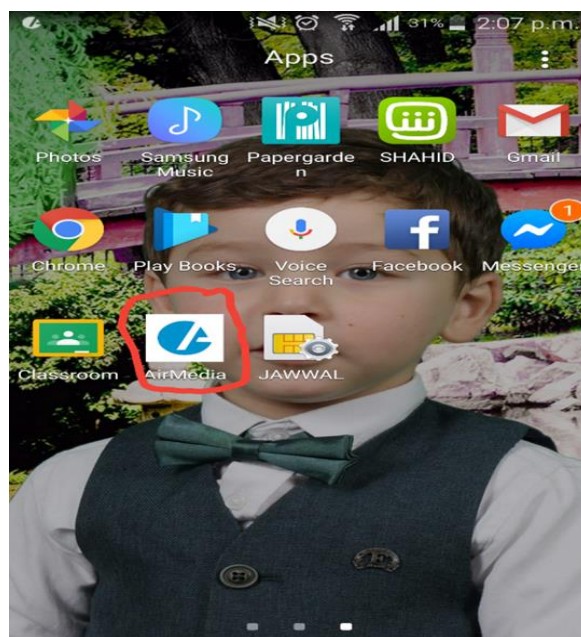


Fig.5.12 Airmedia Android Application

- application on the PC laptops



Fig.5.13 Airmidia Windows Application

REFERENCES

- 1- <https://www.crestron.com/>
- 2- <https://www.samsung.com/us/>
- 3- <https://www.apple.com/lae/iphone/>
- 4- <https://www.wikipedia.org/>
- 5- Alidaraweesh909@gmail.com
- 6- <https://www.extron.com/>
- 7- <https://www.amx.com/us/>
- 8- <https://www.ftcgroup.net>
- 9- <https://www.sharp.org/>