Just Add
⊟Power

SECURITY REVIEW

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Overview

This document describes the security features of a Just Add Power system.

Concepts

Just Add Power does not require Internet access.

Just Add Power devices operating in a Standardized Configuration are part of isolated VLANs that do not leave the supported switch. No Just Add Power traffic is visible to the larger data network.

Hardware-Based Encryption

- 2G Omega and 3G Ultra products provide AES-128 hardware-based encryption for the AV signal
- MaxColor products provide AES-256 hardware-based encryption for the AV signal

Requirements

A Just Add Power system covered by this document must conform to these requirements:

- The system uses a switch from our supported switch list
- All 2G Omega, 3G Ultra, or MaxColor Just Add Power devices in the system are connected to the supported switch in ports configured for Just Add Power
- Advanced Matrix Programmer v1.0.1 or later (AMP) is used to configure a Standardized System – using the Let's Go menu.
- All Just Add Power devices are on firmware
  - B2.3.9 or later for 2G Omega and 3G Ultra devices
  - MAX v3.7.4 or later for MaxColor devices
- DNS and Time Server disabled on all devices (default)

Assumptions

- Physical security is the responsibility of the facility
- Administrators are trusted to follow all instructions
- The Just Add Power switch has **ONLY** the following types of devices connected to it:
  - Just Add Power 2G Omega, 3G Ultra, or MaxColor devices
    - connected to ports configured for Just Add Power
  - Control system processors and interfaces
  - One port connected to another switch or router to provide access to the data network (optional)

Compatible Hardware

Security features pertain to these models of hardware.

All devices in the same Series are compatible with one another.

MODEL	SERIES	DESCRIPTION
505POE	2G Omega	2GΩ/3G Omega 1080p Receiver
515POE	2G Omega	2GΩ/3G Omega 1080p Receiver with USB and stereo audio
705POE	2G Omega	2GΩ/3G Omega 1080p Transmitter
715POE	2G Omega	2GΩ/3G Omega 1080p Transmitter with USB and stereo audio
716VGA	2G Omega	2GΩ/3G Omega 1080p VGA Transmitter
725POE	2G Omega	2GΩ/3G Omega 1080p SDI Transmitter
726TVI	2G Omega	2GΩ/3G Omega 1080p TVI Transmitter
508POE	3G	3G Ultra 4K Receiver
509POE	3G	3G Ultra 4K Receiver with network loopout
518AVP	3G	3G Ultra 4K Receiver with USB and stereo audio
707POE	3G	3G Ultra 4K Transmitter
707WP2	3G	3G Ultra 4K Wallplate Transmitter
708POE	3G	3G Ultra 4K Transmitter with stereo audio
709P2P	3G	3G Ultra 4K Point-to-point Transmitter
717HIFI	3G	3G Ultra 4K Transmitter with HDMI loopout
717WP2	3G	3G Ultra 4K 2-gang Wallplate Transmitter with VGA
718AVP	3G	3G Ultra 4K Transmitter with USB, stereo audio, and DD downmixing
718KVM	3G	3G Ultra 4K Transmitter with USB and stereo audio
718WP4	3G	3G Ultra 4K 4-gang Wallplate Transmitter with VGA, USB, and stereo audio
747POE	3G	3G Ultra 4K 4-in-1 Rackmount Transmitter
749AVP	3G	3G Ultra 4K 3-in-1 Rackmount Transmitter with USB, stereo audio, and DD downmixing
749KVM	3G	3G Ultra 4K 3-in-1 Rackmount Transmitter with USB and stereo audio
759A	3G	3G Ultra 4K Tiling Transmitter
MC-RX1	MaxColor	MaxColor Series 1 4K60 Receiver
MC-RX2	MaxColor	MaxColor Series 2 4K60 Receiver with USB, shared fiber, and ARC
MC-TX1	MaxColor	MaxColor Series 1 4K60 Transmitter
MC-TX2	MaxColor	MaxColor Series 2 4K60 Transmitter with USB, shared fiber, and ARC
MC-TX3	MaxColor	MaxColor Series 3 4K60 Transmitter with AES67 and USB
MC-QX	MaxColor	MaxColor 4K60 Tiling Transmitter

Connect to a Device

There are 3 ways to connect to a device:

1. Command Line Interface via Telnet (port 23)
2. Command Line Interface via RS232 (white 3-pin molex)
3. webUI

CLI via Telnet

1. Open a telnet client to the IP address of the Just Add Power device.
2. The beginning prompt is: `/usr/local/bin#`
3. Use the text interface to change settings

CLI via RS232

1. Connect a Just Add Power Debug cable to the PC
2. Open a serial emulation program – like PuTTY – and set a baudrate of 115200-8n1
3. The beginning prompt is: `/ #`
4. Use the text interface to change settings

webUI

1. Open a web browser to the IP address of the Just Add Power device
2. Navigate the webUI to change settings

Ports and Protocols

These ports and protocols are in-use by Just Add Power:

| Function	Destination Port	From (Sender)	To (Listener)	Notes
SAP/SDP	9875	Any	293.255.255.255	AES67 audio streaming announcements
Custom RTSP	8080	Device	Any	Preview video stream MaxColor only
Audio/Video	59200 59300	Transmitter 239.92.0.0 – 239.97.99.99	Receiver	59200 Video data 59300 Audio data
USB over IP	59700	Any	Any	KVM services
mDNS	5353	Any	Any	Network discovery
SSH	22	Any	Any	
Telnet	23	Any	Any	
HTTP	80	Any	Any	webUI
DHCP	67	Device	Server	
DHCP	68	Server	Device	
EZLogger	41984	Device	Server	
Serial over IP	6752	239.92.0.0 – 239.97.99.99	Device	RS232 port
IR over IP	4998	239.92.0.0 – 239.97.99.99	Device	IR port or RS232 port
Name Service	3333 3334	225.1.0.0	225.1.0.0	Query Reply
TFTP	69	Any	Device	Trivial File Transfer
DNS	53	Device	Server	Not enabled by default

Required Configuration

Static IP Address

Devices are set to AutoIP by default (169.254.x.x/16). To deploy a device in a system, it should be assigned a static IP address.

AMP will assign static IP addresses as part of configuring the system. However, if a device must be configured after system deployment, it can be done through the webUI or CLI.

Configure through webUI

The Network tab allows setting a static IP. Set desired value, then Apply → Save → Reboot.
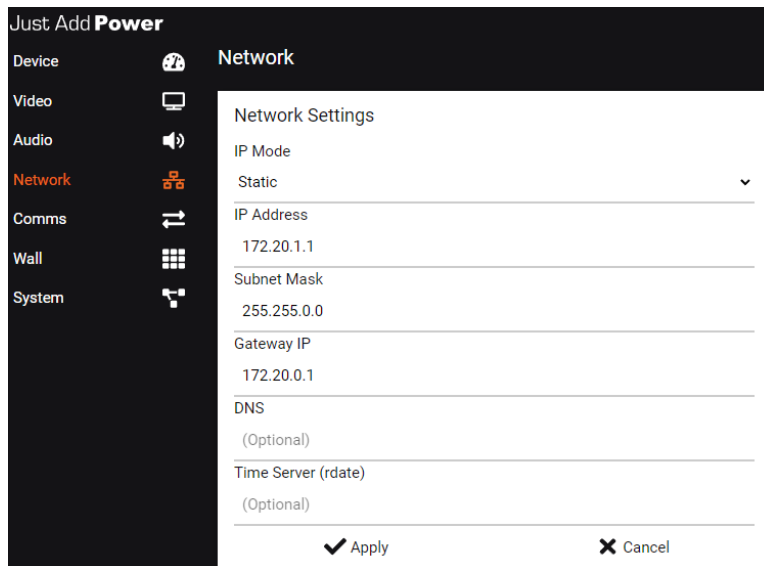
WARNING: **DO NOT** enable DNS or Time Server options. Enabling either will violate requirements for a secure system.

Configure through CLI

SETTING	COMMAND	VARIABLE	EXAMPLE
IP Address	astparam s ipaddr $A.$B.$C.$D	$A.$B.$C.$D IPv4 address of the device	astparam s ipaddr 172.27.1.1
Subnet Mask	astparam s netmask $A.$B.$C.$D	$A.$B.$C.$D Subnet mask of the device	astparam s netmask 255.255.0.0
Default Gateway	astparam s gatewayip $A.$B.$C.$D	$A.$B.$C.$D Default gateway of the device	astparam s gatewayip 172.27.0.1
Save Settings	astparam save	None	astparam save

mJPEG Configuration

MaxColor Transmitters and Receivers provide an RTSP video stream viewable by devices on the same network.

This stream is always enabled and is accessible at:

https://[deviceIP]:8080/?action=stream

Reset to Default

To return a device to default settings, connect to RS232 or telnet and send the command:

```
reset_to_default.sh
```

Reboot the unit and it will be at factory default.

Alternatively, you can connect to the webUI of the device and select the Full Reset button.
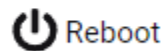
Features Not Available

These features are not available on standard Just Add Power firmware:

- 802.1X Authentication
- User accounts and Group management
    - Username/password login
    - Active Directory
- OCSP
- SNMP