# Digital Signage

## Solutions Guide

# Contents

# Digital Signage

With the digital signage market estimated to be worth a staggering US$23.76 billion by 2020, it is clearly one of the most exciting, fastest-growing and technology-driving sectors in the industry today.

Digital signage systems deliver customized content, media playlists and live TV to one or more digital screens, enabling businesses to display targeted information and advertisements to a specific audience at a specific place and time. A digital signage system is composed of one or more displays, a content management server, different operating systems and a distribution infrastructure.

# Seamless Solutions for A/V Distribution and Control

The key to a successful digital signage installation is the seamless distribution of A/V source content to multiple displays. No matter whether the content is from media players or computers, and the displays are for information or entertainment purposes, the distribution system must enable administrators to quickly and easily control the content displayed from a convenient, central location.

With more than 30 years of experience in connectivity solutions, ATEN has leveraged its enhanced video and control capabilities and is up to the challenge of meeting the distribution and control requirements of any digital signage installation. From distributing high-quality A/V content to multiple displays for information and retail applications, through eye-grabbing video walls in promotional and commercial environments, to the complex multi-source, multi-display and control requirements of hospitality and entertainment scenarios, ATEN has a digital signage solution that is flexible, scalable, seamless, affordable and, above all, tailored to meet your needs.

# Trends in
# **Digital Signage**

## 4K Displays

As digital signage becomes increasingly sophisticated as well as affordable, the quality of content presentation becomes an increasing priority. So, with 4K being the next generation of quality for high definition video, it is no surprise that digital signage is one of the leading Pro A/V industries in 4K adoption.

With four times as much detail as 1080p Full HD resolutions, 4K can create eye-grabbing digital signage product promotions for both the video streaming market and the retail market, enabling deployments to really stand out from the crowd. The increased quality of content presentation offered by 4K-enabled solutions is especially attractive to luxury goods markets where investment in branding is paramount and companies seek to gain maximum advantage from communications investment.

And, as luxury and other retail markets begin to make the shift to 4K to meet customer expectations, 4K digital signage deployments in other markets – such as those designed to enhance visitor engagement in places such as museums, galleries and sports venues – are also likely to increase. In short, the digital signage industry is sure to drive sales of 4K technology for the foreseeable future.

# The Challenges of Video Walls

As the video wall market continues to show strong growth, suppliers are facing some unique challenges. When installing new digital signage equipment, integrators are usually working in locations that were built before digital signage even existed. So, when looking to create a vibrant, eye-catching video wall, but there isn't a load-bearing wall to place one, a robust and flexible mounting solution is required, preferably one which facilitates the mounting of any landscape or portrait video wall configuration with any number of screens.

Next, heightening the impact of visual products and messages can be achieved most effectively with the closest thing possible to a seamless digital canvas, and requires ultra-narrow bezel display units that provide viewers with a superior viewing experience with minimal distractions.

Finally, keeping up with demand for strong architectural configurations and mosaics needs a video wall scaling solution that is not just limited to matrix grid layouts – grid layouts of any configuration where the aspect ratio of the whole video wall can be entirely different from that of the individual displays, or ones where a heterogeneous mix of displays can be placed anywhere on the canvas and rotated, are the optimum solutions to provide the fullest artistic control of the video wall canvas.

# Trends in
# **Digital Signage**

## Interactivity and Content Control

Interactivity is a huge technology trend, and the ever-expanding digital signage market is a major area where interactive technology is growing in demand. Digital signage is not only attention-grabbing but it is also becoming "smart" – highly integrated systems have already begun to not only create new retail experiences but also to support big data analysis.

Multi-touch screen technology in large format digital displays means that customers can browse product recommendations or virtually try on items that are not physically in the store, while the same dynamic signage connects to back office systems, enables payment transactions and returns valuable customer data to make on-the-spot retail analytics a reality.

Furthermore, from simple proximity detection and anonymous analytics to beacon technology and truly personalized marketing that makes content even more relevant to viewers, the fact that customers are more than ready to embrace such technologies means that this kind of digital-signage-led content management is becoming a key tool for retailers, and 2017 will doubtless see increased efforts to include more and more interactive elements in digital signs.

# IoT (Internet of Things)

When an object can represent itself digitally on a network, this means that it be controlled from anywhere, and this kind of IoT (Internet of Things) connectivity can be used for many more applications than just retail digital signage. Physical objects that are networked and contain embedded technology to interact with internal data or external triggers – objects that can sense and communicate – are now also being leveraged in digital signage deployments across a wide range of environments.

For example, digital signage can be networked with sensors, cameras and databases to change displays dynamically in locations such as factory floors, energy grids, healthcare facilities, and transportation systems. In these kinds of deployments, digital signage leverages management and data analysis capabilities from a wide range of sources to automatically tailor the content it shows for specific audiences and specific conditions. This is especially useful in environments where real-time updates on workflow and other conditions are paramount for reasons of business efficiency, but it also has great implications in terms of improving safety and security.

The expansion of IoT-related technologies – such as the flexibility offered by wireless networking – and the every-increasing reality of communication between devices and objects means that the ways in which digital signage solutions can be leveraged are growing exponentially.

# ATEN Digital Signage
# **Solutions**

ATEN provides digital signage solutions that integrate hardware and software elements seamlessly, simplifying the implementation process and combating the challenges of content management down the line. They include:

- Video wall media players
- Web interface video wall and scheduling setup
- Matrix Switches to design and manage connections
- Video Splitters to distribute content
- Extenders to increase the distance of installations
- Cables to connect sources and displays

From video source and video distribution to signal transmission and extension, ATEN offers the most reliable digital signage products, suited to your needs, to showcase the highest quality video walls and geo-distributed displays in any environment with any connector type.
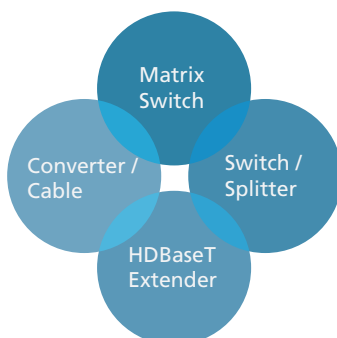
**Video Source**

PC

Blu-ray Player

Media Player

⇩

## ATEN's Three Kinds of Solution

**1** Distribution Solution

- Matrix Switch
- Converter / Cable
- Switch / Splitter
- HDBaseT Extender

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**2** Video Wall Solution

- Seamless Matrix Switch
- Converter / Cable
- Switch / Splitter
- HDBaseT Extender

⇩

**3** Control Solution

- Matrix Switch
- Controller
- Switch / Splitter
- Converter / Cable
- HDBaseT Extender

⇩
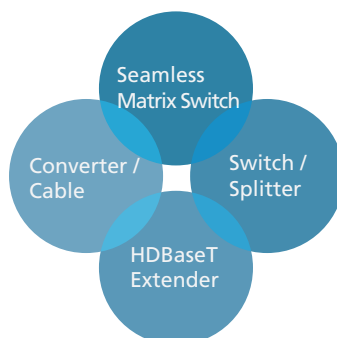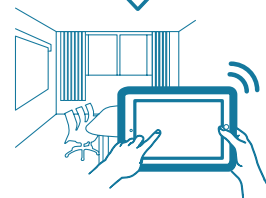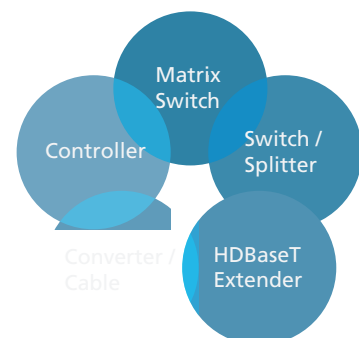
# ATEN Digital Signage Solutions –
# **Key Advantages**

### ATEN's Seamless Switch™ Technology
Deliver quick and reliable continuous video streams and instant real-time source switching without delays.

### High Resolutions, Stunning Visuals
Deliver full-featured, attractive and elegant graphics, text, and video content in resolutions up to 4K DCI (4096x2160) and UHD (3840x2160) @ 60 Hz

### Multiple Inputs, Multiple Outputs + Video Wall
ATEN solutions include not only splitters and switches but also matrix switches combined with video wall processor; our video wall solution controls up to 64 screens, and DVI, DisplayPort, HDMI, SDI and VGA formats are all supported

### HDBaseT™ Solutions
HDBaseT technology is optimized for professional A/V installations and provides a simple and cost-effective solution that combines uncompressed UHD video/audio, 100Mb Ethernet connectivity, USB 2.0, 100W of power and control signals over a single Cat6/6a cable; fiber and wireless extender solutions are also available.

### Effortless Scheduling
Deliver timely and targeted content to businesses and consumers; schedule your profiles to play in sequence for a specific amount of time, saving you time and effort.

### Intuitive Interface, Centralized Control
ATEN's Red Dot Design Award winning Web GUI makes video wall setup and controlling every input and output easy, users can customize their preferred layout using a simple point and click interface. Simply connect and control all ATEN devices; control everything via a mobile device.

### EDID Expert™
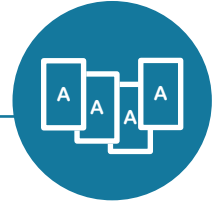Selects optimum EDID settings for smooth power-up and highest quality display

### Award-winning Innovation
ATEN's commitment to innovation is clearly recognized by multiple, prestigious awards.

# Digital Signage
## Scenarios

## 1 A/V Distribution

In commercial-use A/V distribution scenarios, the main purpose is to broadcast video content to multiple displays located in different areas. This content can be anything from promotional campaigns and advertisements to information about new products, services or schedules. Digital signage systems in transportation hubs, for example, often have displays mounted vertically or horizontally on pillars throughout the hub, while in 3C stores, installations usually require multiple displays of different brands set up in a convenient way to facilitate quality comparisons between them.

**Challenges:**
- Deliver synchronized, high quality A/V content to all displays simultaneously
- Provide higher compatibility with different brands of display (EDID)
- Support 4K video distribution
- Transmit perfect video quality and content without data loss
- Switch different source inputs seamlessly without blanking or noise
- Provide a convenient method to control A/V content to save human resources

**ATEN Suggested Solution:**

✓ **HDBaseT Splitter/Matrix with Extender**

- 4K uncompressed video quality
- ATEN EDID Expert design
- Complete HDBaseT solution with various AV in/out options
- Stable transmission with low interference

## 2 Video Walls
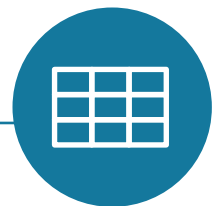
In video wall digital signage scenarios, large 4K video displays are located in prominent places, such as in the entrance lobbies of buildings or as a feature in showrooms. They need to have an attractive configuration with no gaps between individual screens in order to attract and maintain the attention of passers-by. Video walls in retail and other commercial environments are used to show advertisements, play special promotions and to deliver all kinds of information to customers. Therefore, solutions need to be able to broadcast bright, high quality video content for extended periods from a centrally controlled source.

**Challenges:**
- Centralize high quality video source content and simultaneously transmit to video wall displays
- Provide various video wall layouts and flexibility to adjust them with a user-friendly interface
- Support 4K video walls
- Support various video wall configurations (4x4, 12x4, etc.)
- Transmit perfect video quality and content without data loss
- Switch different source inputs seamlessly without blanking or noise
- Provide stable transmission

**ATEN Suggested Solution:**

### ⊘ Seamless Matrix Switch

- Seamless switching between sources @ <0.5 seconds
- Matrix functionality with video wall processor
- Matrix cascade to support larger video wall screens
- 4K video quality
- Video extension over fiber up to 20km

# 3 Complex A/V with Control

More complex digital signage scenarios are usually a combination of A/V distribution and video wall solutions. These require easy operation and control of multiple devices and equipment types, along with remote monitoring and access functionalities. These complex digital signage scenarios, such as in hospitality environments, use multiple video source players to display content on multiple screens which are located in different places. These kinds of installations need to be set up to display play news, entertainment and sports events, for example, in real time, and so require flexibility and convenience when it comes to switching input sources.

**Challenges:**

- Provide real-time delivery of high quality video content to multiple displays at the same time
- Provide high compatibility to support different displays (EDID)
- Transmit source content to the video wall and a projector simultaneously
- Support de-embedded audio from HDMI signal to audio amplifier and speaker
- Support the remote switching of various video and audio inputs and power on/off of related equipment by a handheld device with authorization protocols
- Support easy source switching by employees and customers

**ATEN Suggested Solution:**

### ⊘ Modular Matrix Switch with Control system

- Mobile control of all ATEN devices and related equipment (cameras, conferencing equipment, lighting, blinds, etc.)
- Flexibility to support multiple video interfaces and formats
- ATEN EDID Expert design
- Stable transmission of uncompressed high quality video with low interference

# ATEN Digital Signage
# **Solutions in Action**

## Transportation Industry

More and more public transportation facilities provide not only transportation information to travelers but also advertisements from companies who want to get information to their target audience. As a result, increasing numbers of digital signage displays are being installed inside and around transportation hubs. All information needs to be displayed in high quality while switching between sources needs to be seamless and easily managed.
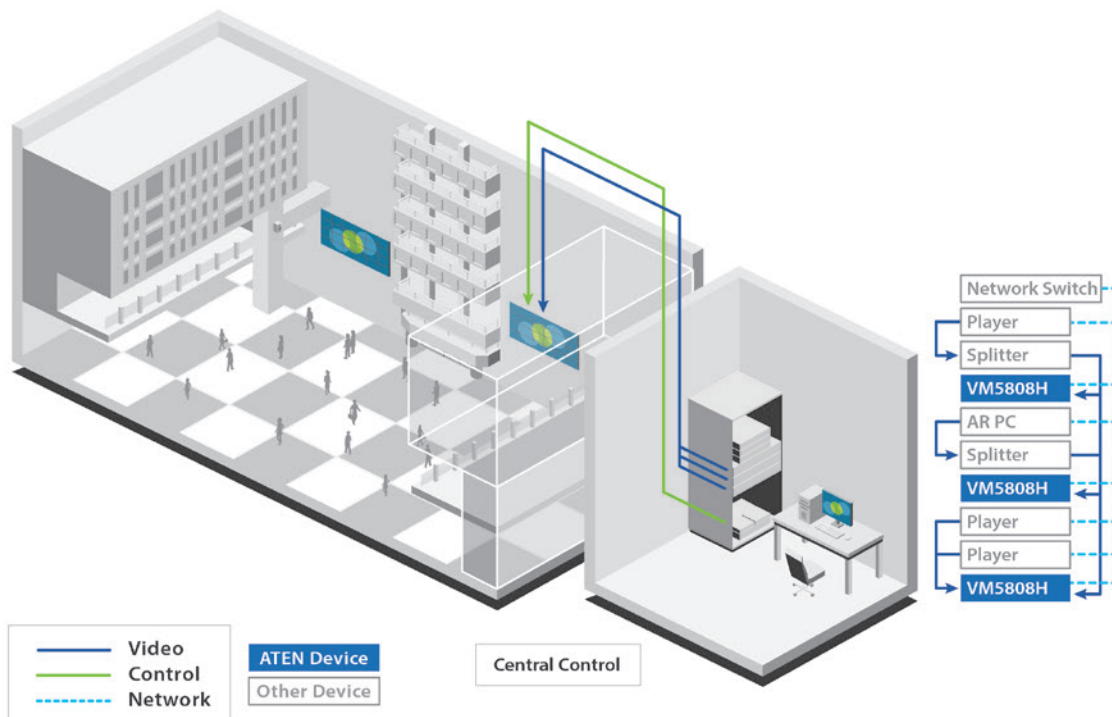
### Video Wall Solution

### **Main Train Station, Taiwan**

A large train station in Taipei was looking for a solution to build two 6x4 video walls to showcase travel information and advertising. They required the ability to display different content in different layouts seamlessly and the first-floor hall video walls needed to be able to project content from three separate OTT BOX image sources. In addition, operators needed to be able to control the advertising system remotely via their own control system to change advertising content and also to be able to schedule the advertising content displayed on the screen.

### **ATEN Solution**

**Integrated seamlessly with the existing A/V distribution architecture to provide continuous video streams, real-time control and stable signal transmissions for customized video wall layouts.**

VM5808H – 8x8 HDMI Matrix Switch



Legend:
- Video
- Control
- Network
- ATEN Device
- Other Device
- Central Control

Diagram labels: Network Switch, Player, Splitter, VM5808H, AR PC, Splitter, VM5808H, Player, Player, VM5808H

## Distribution Solution
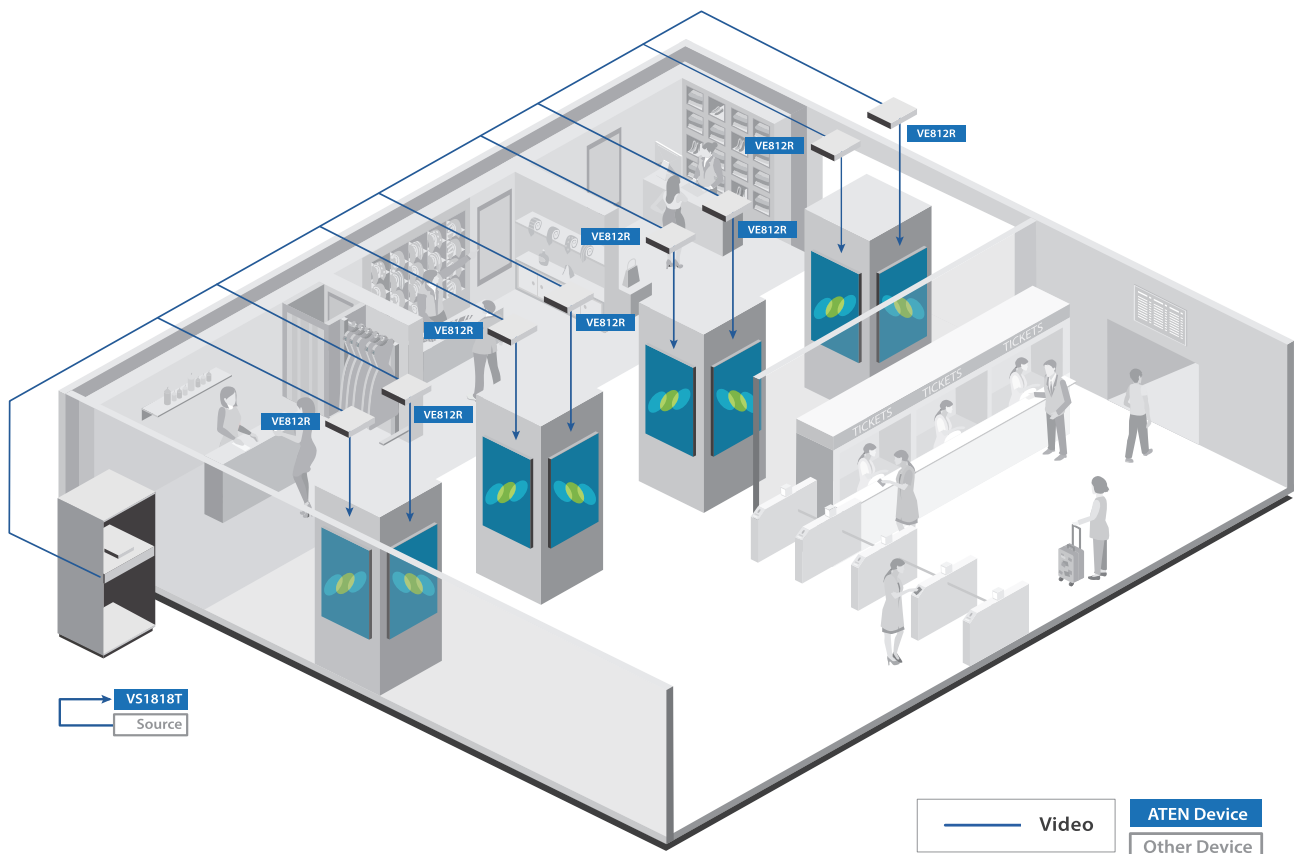
### Train Station, Japan

One of the biggest transportation hubs in the city of Osaka, Japan wanted to distribute eye-catching advertisement and important scheduling information to as many passengers as possible. To achieve this effectively they required 4K content broadcasted to multiple displays mounted vertically on pillars throughout the station, with transmission cloned simultaneously to more than 30 screens that are up to 100 meters apart. The solution needed to be centrally managed.

### ATEN Solution

**Reduced the number of signage players required by broadcasting one input source to multiple destinations simultaneously.**

VS1818T – 4K 8-port HDMI HDBaseT Splitter
VE812R – 4K HDMI HDBaseT Receiver

VE812R

VE812R

VE812R

VE812R

VE812R

VE812R

VE812R

VS1818T

Source

—— Video

ATEN Device

Other Device

# Retail Industry

Retailers were one of the first industries to recognize the benefits of using digital and interactive displays in their branding, and this is now expanding into the actual customer shopping experience itself. Customers can interact with promotion campaigns while still in the store where purchasing decisions are being made. The technology is also being leveraged for interactive kiosks, self-service applications, employee training, guided selling, and in-store directions.

## 4K Distribution Solution

### 3C Chain Store, India

One of the leading consumer electronics retail chain stores in India wanted an in-store 4K and Full HD TV display installation to deliver promotional information and announcements to create an alluring shopping atmosphere for customers. This needed to be compatible with multiple displays of 4K and 1080p resolutions, various sizes, brands and specification and to support a diverse array of source devices for playback, with the capability to play video through specific software and Apps. The distance between displays and source averaged around 50 meters.
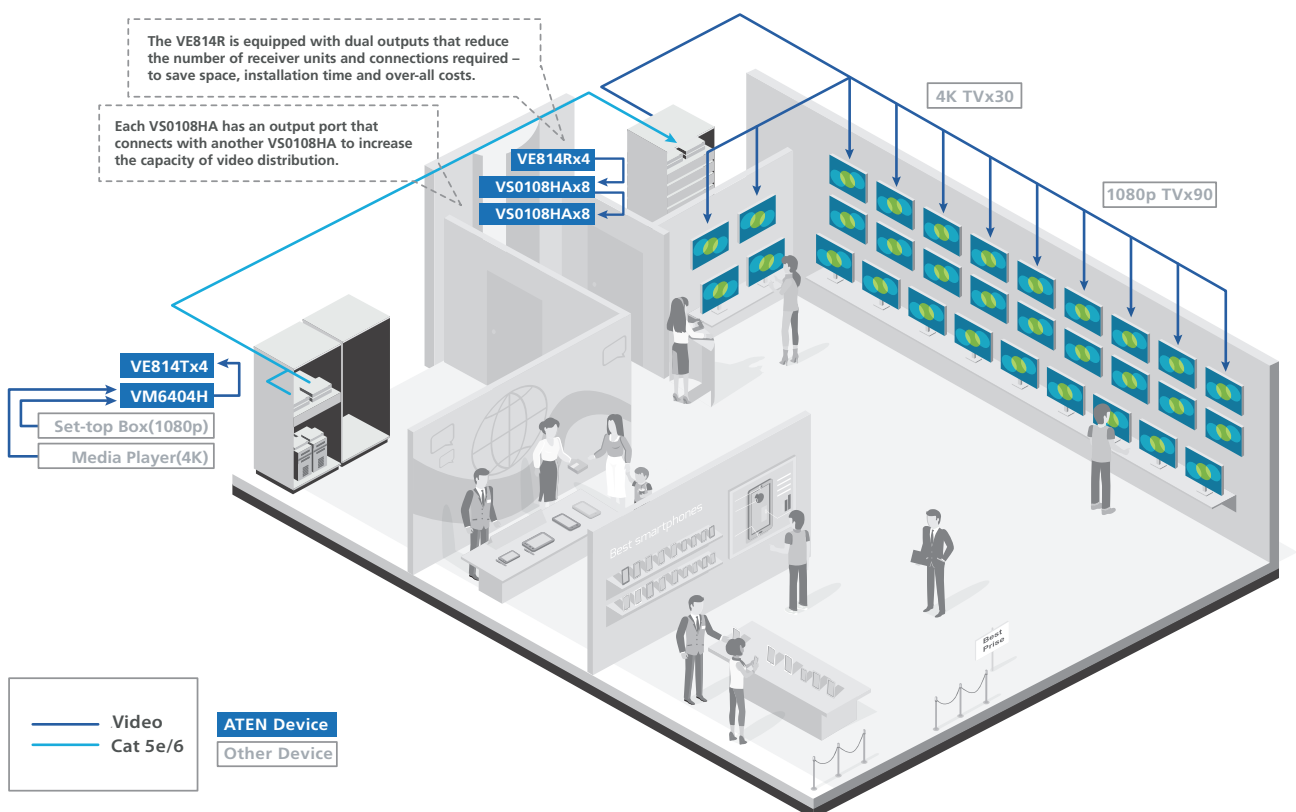
### ATEN Solution

**Provided an HDCP-compliant solution that was able to easily up/downscale 4K and 1080p content and provide dual 4K video output to receivers up to 100m away using a single cable.**

VM6404H – 4K 4x4 HDMI Matrix Switch
VE814 – HDMI HDBaseT Dual Display Extender
VS0108HA – 8-port 4K HDMI Splitter

The VE814R is equipped with dual outputs that reduce the number of receiver units and connections required – to save space, installation time and over-all costs.

Each VS0108HA has an output port that connects with another VS0108HA to increase the capacity of video distribution.

VE814Rx4
VS0108HAx8
VS0108HAx8

4K TVx30

1080p TVx90

VE814Tx4
VM6404H
Set-top Box(1080p)
Media Player(4K)

Video
Cat 5e/6

ATEN Device
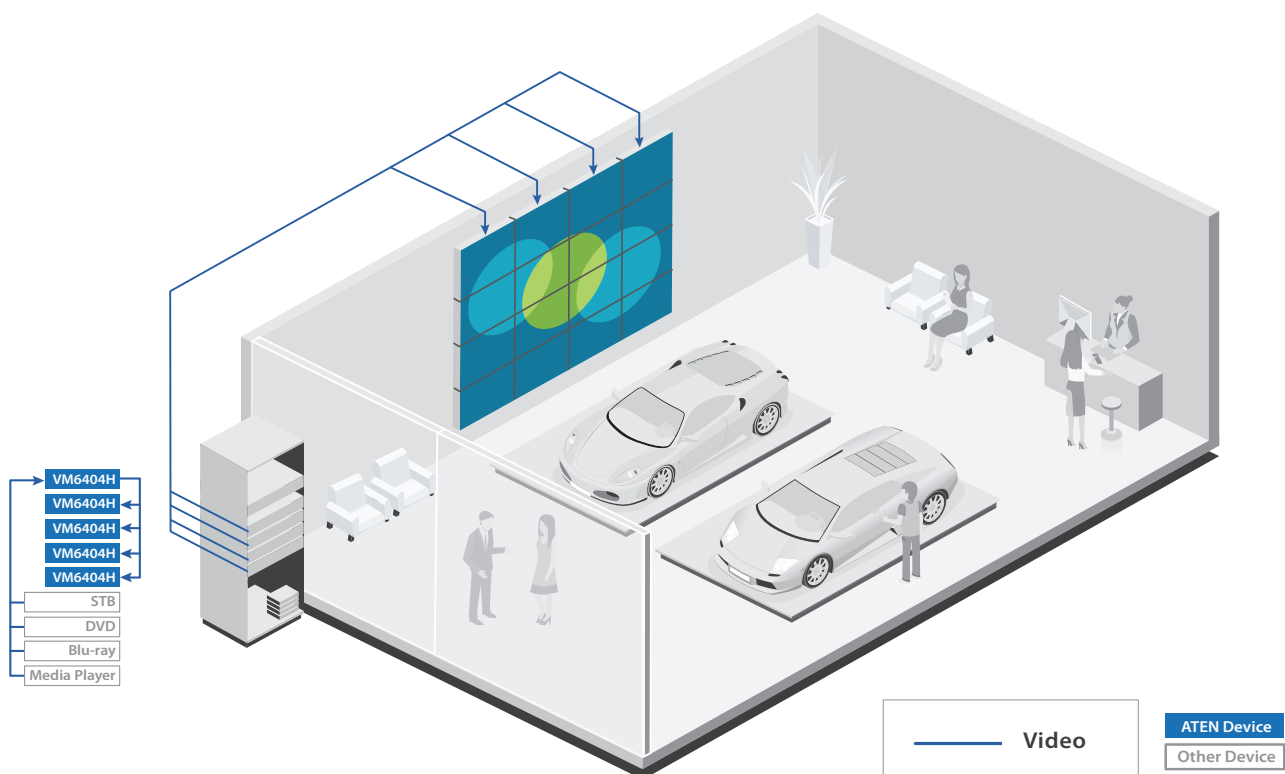Other Device

## Video Wall Solution

### Luxury Sports Car Showroom, UK

A luxury sports car showroom in the UK required a 4x4 video wall to increase the showroom's visual appeal by showcasing dynamic videos and graphics for promotion, show running footage of new models and inform customers about current incentives. The previous installation was using a normal projector and projection screen to play all the content. The owner wanted to hold VIP gatherings and allow them to show F1 racing events during the weekend to build relationships with car owners and VIP customers.

### ATEN Solution

**Created a custom 4K video wall to deliver stunning promotional materials and clear visuals to provide an alluring atmosphere for their visitors.**

VM6404H – 4K 4x4 HDMI Matrix Switch

VM6404H
VM6404H
VM6404H
VM6404H
VM6404H
STB
DVD
Blu-ray
Media Player

—— Video

ATEN Device
Other Device

# Hospitality

Hospitality digital signage is a cost-effective way for hotels, pubs and restaurants management to create, upload, schedule and distribute visual content to screens within their establishments. It is the perfect way to engage with customers and to increase sales. Bars and pub digital signage can be used within venues to increase customer numbers for special events (sports and entertainment), promote food and drinks offerings, deliver future event information and incorporate promotions and local news and community events.
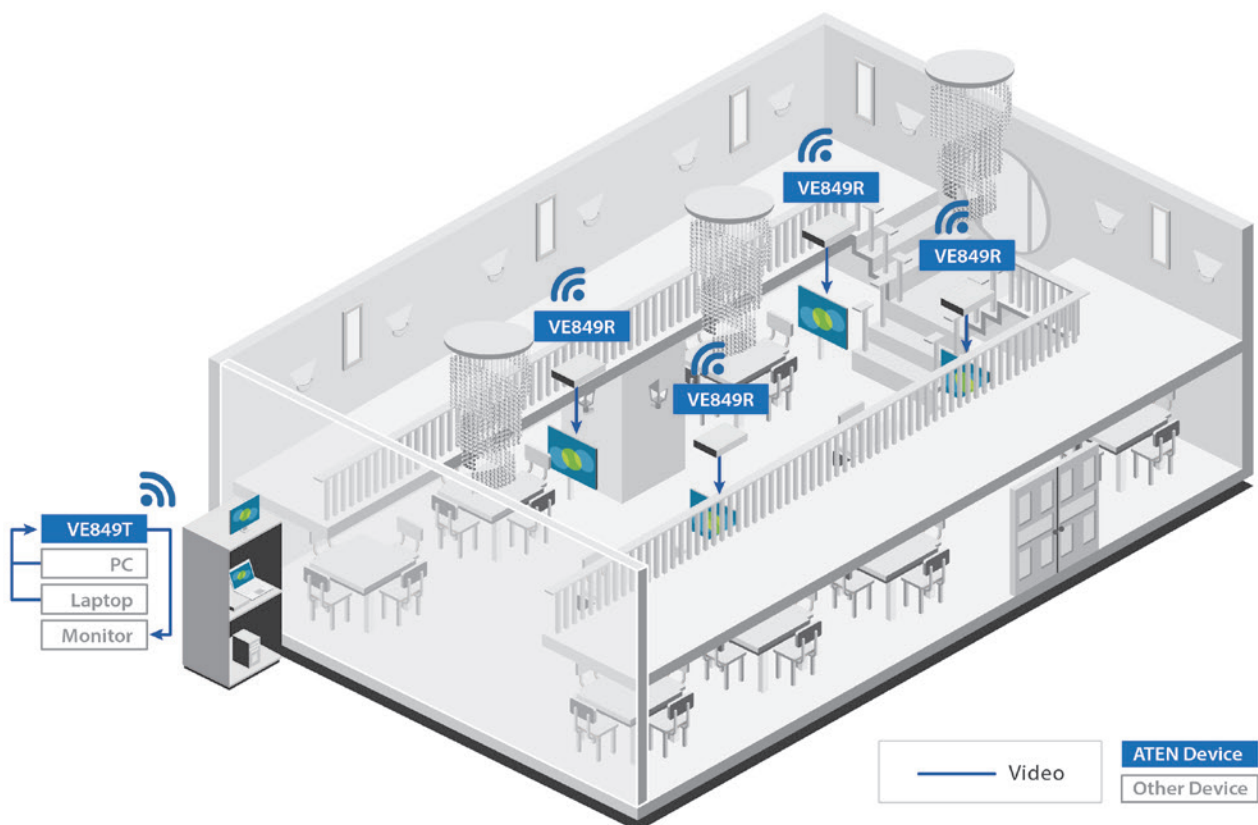
## Distribution Solution

### Theme Park, Belgium

The Plopsaland De Panne theme park in Belgium required a multicast solution for their theater. This needed to provide stable wireless transmission in a public area, since cabling was not possible, and be able to stream Full HD content (presentations, slideshows, video, and more) without any loss in quality. A further requirement was that a local output was required to verify the transmitted content and also to serve as a 5th display.

### ATEN Solution

**Provided effortless, wireless Full HD transmission to up to 5 displays with a single transmitter.**

VE849 – Multicast HDMI Wireless Extender

## Distribution / IoT Control Solution

### Sports Bar, UK

A sports bar in the UK, the UK Bierkeller Beer Garden, was looking for a way to digitally represent all their entertainment equipment on a network in order to easily control the 60 televisions located across the three jointly-owned pubs in their entertainment complex. They wanted to move on from IR control, manual switching and replace it with an IoT-based solution that provided centralized control of all multimedia devices via an Ethernet network.

### ATEN Solution

**Provided simple, centralized control of all connected multimedia and entertainment equipment across three large venues from a single handheld device.**
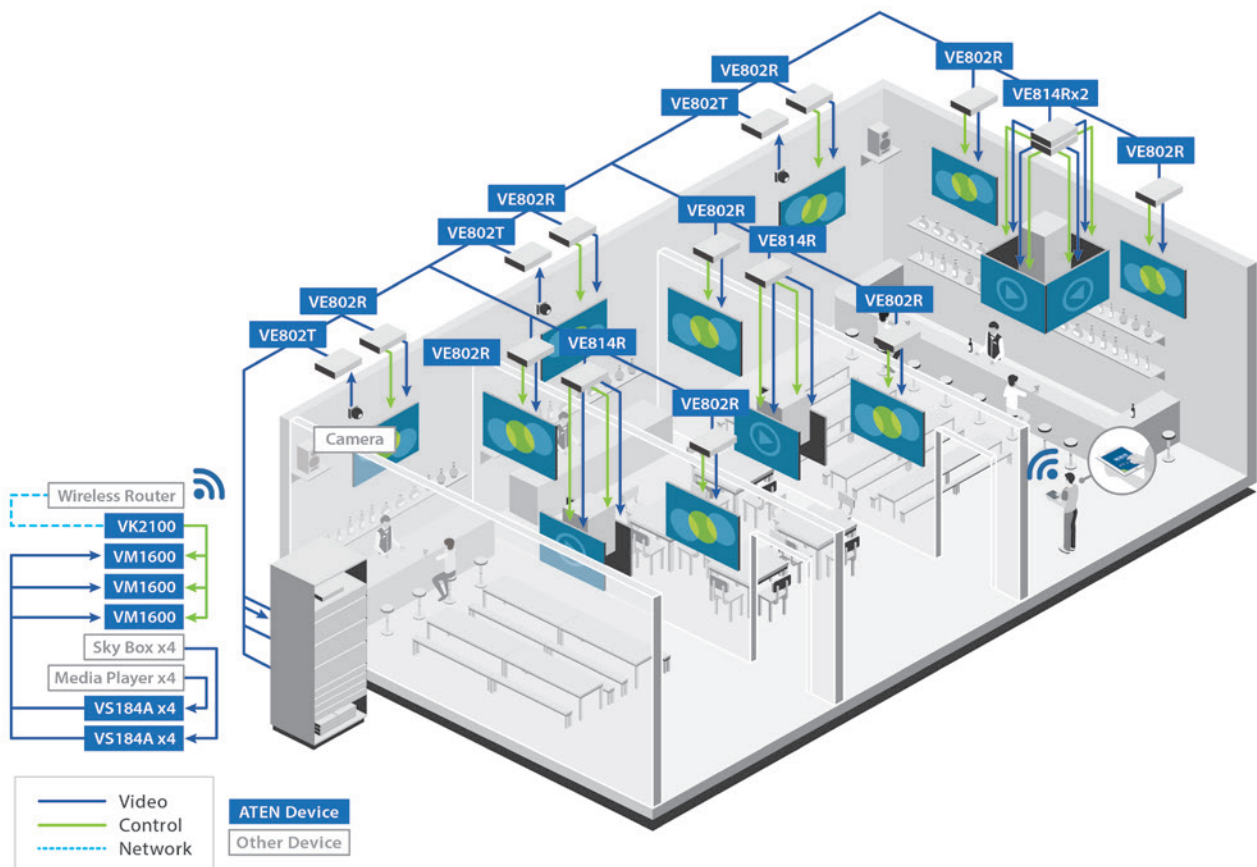
VK2100 – Control Box
VM1600 – 16x16 Modular Matrix Switch
VE802R – HDMI Receiver with PoH
VE814R – HDMI HDBaseT Receiver with Dual Output
VS184A – 4-Port 4K HDMI Splitter

# ATEN Featured
# **Products**

## ATEN Distribution Solution

### HDMI MDS Series

VS1818T (HDBaseT Class A) + VE812R
VS1808T + VE800AR/VB802

### Matrix Switches

VM6404H
VM3404H/VM3909H
VM5404H/VM5808H
VM5404D/VM5808D
VM0404HA/VM0808HA
VM0202H

### Switches

VS381
VS481A/VS481B/VS0801H
VS482
VS261/VS461/VS0801A

### Converters

VS840/VC480
VC812/VC182, VC810/VC180
VC925/VC965/VC980
VC920/VC960/VC980

### Extenders
- HDBaseT-Lite, Class B
  VE801/VE802, VE601, VE901

- HDBaseT Class A
  VE812/VE813/VE814

- Wall Plates
  VE806, VE606, VE156

- Fiber
  VE882/VE892

- Wireless
  VE809, VE829, VE849, VE819

- Equalizers
  VE800AR/VE810/VE803
  VE600A/VE602/VE066
  VE170/VE150A/VE022/VE200

### Splitters

VS182A/VS184A/VS0108HA
VS172/VS174
VS162/VS164
VS146
VS0102/VS0104/VS0108

# ATEN Video Wall Solution

## Seamless Matrix Switches with Videowall Processor

- Modular Matrix Switches
  VM3200/VM1600

- Matrix Switches
  VM5808H/VM5404H,
  VM5808D/VM5404D

- HDBaseT Matrix Switches
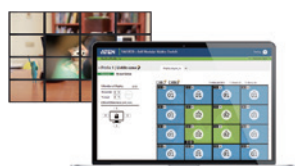  VM3909H/VM3404H + VE805R

- 4K Matrix Switches
  VM6404H/VM6809H

- The VM Seamless Switch Series Web GUI
  VM3200/VM1600
  VM6406H/VM5404H
  VM5808D/VM5404D

reddot award 2015
winner interface design

## Video over IP Extenders

- 4K HDMI over IP Extender
  VE8950
- HDMI over IP Extender
  VE8900

## Video Extenders

- HDBaseT-Lite, Class B
  VE801/VE802, VE601, VE901

- HDBaseT Class A
  VE812/VE813/VE814

- Fiber
  VE882/VE892

# ATEN Control Solution

## Control System

• Control Box
  VK1100/VK2100



• Expansion Boxes

  VK224 4-Port Serial
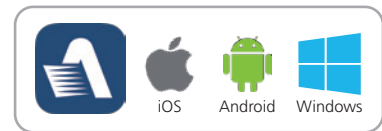  VK236 6-Port IR
  VK248 8-Port Relay



• Control Interface
  VK108US 8-Button Keypad (US, 1 Gang)
  VK112EU 12-Button Keypad (EU, 2 Gang)



• Configurator Software
  VK6000



• ATEN Control System Mobile App



iOS    Android    Windows

# ATEN

Simply Better Connections

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# About ATEN

ATEN International Co., Ltd., established in 1979, is the leading provider of IT connectivity and management solutions. Offering integrated KVM, Professional Audiovisual, and Intelligent Power solutions, ATEN products connect, manage, and optimize electronics in corporate, government, industrial, educational, and retail environments. ATEN has 500+ issued international patents and a global R&D team that produces a constant stream of innovative solutions, resulting in a comprehensive portfolio of products available worldwide.