AirMedia Use Smarter 802.11n to Drive Digital Signage Business in Airports Throughout China

Operating the largest digital media network in China, AirMedia needed a more flexible and cost effective way to deploy hundreds of digital signs through airports in China. AirMedia operates over 95 percent of the digital TV screens, over 2,000, that display high definition flash-based advertisements with contract rights in 52 airports including 28 out of the 30 largest airports in China.

At these airports, cabling installation is extremely costly and inflexible. Cable drops required the approval of airport authorities and in many locations, cable drops to the display screens just wasn't possible. In addition, sending someone to swap out DVDs at each sign was inefficient and costly.

AirMedia needed to find flexible and reliable alternative for connecting local digital players at each digital sign to secondary servers. Without an alternative, the business model would be too costly and difficult to implement.

AirMedia operates a network of over 18,000 screens and has installed over 2,000 high definition digital signs throughout airports in China. AirMedia uses Ruckus Smart Wi-Fi to provide reliable and long-range connectivity.

Wi-Fi was a clear alternative but not well suited to support stable, long-range connections to digital signs located in RF noisy areas such as baggage claim and boarding gates. Public areas within airports are typically harsh RF environments with thousands of passengers using Wi-Fi devices at the same time, high ceilings, metal and glass construction and other moving obstacles and obstructions that inhibit the propagation of Wi-Fi signals.

To support high definition (1920 x 1080) digital media displays, video transmission links had to be high performance, stable and adaptive to the fluid RF environment within every airport. This led AirMedia to look for higher speed 802.11n offerings with adaptive signal routing capabilities.

"We had to find a Wi-Fi system that was designed to deliver robust, consistent performance in order for us to support HDTV ads in real time," said Jianyu (Joe) Zhu, technical director at AirMedia. "Equally as important was quick deployment of our digital signs anywhere and the ability to remotely manage the Wi-Fi network."

Each AirMedia digital sign is attached to a local digital player equipped with an 802.11n Wi-Fi receiver. Live ad updates are sent from the Beijing network center over a CDMA WAN link to multiple secondary servers located in public areas throughout the airports. From the secondary servers, live flash updates are delivered to multiple digital media players.

Wi-Fi access points (APs) needed to be placed at fixed to locations where Ethernet drops were available. AirMedia digital signs, however, needed to be positioned in strategic, high-traffic areas throughout the terminals. The distance between a digital sign and an AP delivering content to the sign can often exceed 200 meters or more.

Finally, AirMedia needed a simple way to remotely remotely manage the APs as a unified system. Local controllers in each airport had to be remotely accessible and easy to use.

"The combination of our requirements was quite daunting for any Wi-Fi equipment supplier," said Zhu. "Being able to deliver a long-range, high-speed Wi-Fi connections in such harsh RF environments and do it all affordably seemed almost impossible."

COMPANY OVERVIEW
Based in Shanghai, AirMedia operates the largest digital media network in China dedicated to air travel advertising. Publicly-held, Airmedia operates 95% of the digital TV screens that display ads in the 15 largest airports in China with over 2,000 digital TV screens. AirMedia has contract rights to operate digital signage in 52 airports in China.

REQUIREMENTS
- Reliable Wi-Fi connectivity with a minimal number of access points
- High performance to support HD advertising
- Extended coverage to minimize Ethernet cabling and AP deployment
- Simplified and centralized management
- Fast, easy installation and configuration
- Dynamic RF management support
- Remote management of WLAN controllers over a wide area network

SOLUTION
- 80+Ruckus ZoneFlex 7942 802.11n APs
- Redundant Ruckus ZoneDirector Smart WLAN controllers at each airport

BENEFITS
- Fewer APs to cover each airport
- Higher speed 802.11n Wi-Fi to support the distribution of HD content
- Longer range connectivity
- More reliable Wi-Fi signals that provide consistent performance
- Automatic interference avoidance in noise airport RF environment

Ruckus
WIRELESS

"The key to our success was finding a robust Wi-Fi system that could deliver reliable HD video transmissions in a noisy environment to digital signs that were far away.

Without the Ruckus ZoneFlex system, we'd be spending twice as much time and money deploying thousands of digital displays throughout nearly every airport in China"

Jianyu Zhu
Technical Director
AirMedia, Inc.

After evaluating various Wi-Fi products from Siemens, Proxim and others, AirMedia selected the Ruckus ZoneFlex™ 802.11n Smart Wi-Fi system and worked with Sino Business Bridge (SBB) Technology to get everything working.

Each Ruckus ZoneFlex 7942 802.11n AP is used to transmit live ad updates to four digital signs. Each ZoneFlex 802.11n AP integrates a high-gain, long range smart antenna array driven by sophisticated expert control software (BeamFlex™) that constantly forms and directs Wi-Fi signals over the best performing paths for any client.

With this smart antenna system, each ZoneFlex AP has over 4000 different antenna combinations or signal paths available for any given client. In turn, Wi-Fi interference can be automatically avoided by steering signals over alternative paths in real time as interference is experienced. This is ideal for any delay-sensitive applications such as the transmission of live digital IP-based video and voice.

In addition, Wi-Fi signals are extended two to four times farther than conventional Wi-Fi APs that use omni-directional antennas. This translates into fewer APs needed to cover a given airport.

In the Tianjin Airport where AirMedia had deployed 90+ signs, over 22 APs from other vendors would have been required to support this airport. With the Ruckus ZoneFlex system, AirMedia needed only 15 ZoneFlex APs. In Xian, Kumming and other airports, the story was the same. This kept CAPEX/OPEX low.

"Ruckus smart antenna technology is perfectly designed for our application," said Zho. "With the Ruckus ZoneFlex 7942, we didn't have to worry about AP placement because the APs handle what

signal path is used and provide automatic and localized RF management."

Redundant ZoneDirector controllers in each of the airports provide local Wi-Fi management of ZoneFlex access points. "Another capability that we really liked was how simple and easy it was to use the controllers with the APs," commented Zho. "Configuration took minutes and the APs are automatically discovered. We are also able to remotely manage the APs through the local controllers and liked the fact that all traffic doesn't have to flow through the controller. This eliminates any potential bottleneck."

From its Bejing network operations center, AirMedia remotely manages Ruckus ZoneDirectors over the wide area network as if they were locally connected to the device. Administrators quickly see any problems, such as packet loss, weak RSSI levels and other metrics associated with a given connection to a digital sign.

"Without the Ruckus Wi-Fi system, we would be spending twice as much time and money deploying thousands of digital signs," said Zho. "These Smart Wi-Fi systems have helped us drive our business forward, reducing both capital and operational costs while speeding our ability to deploy digital signs in a timely manner."

RIGHT:
Each AirMedia digital display is attached to small media player with an 802.11n interface. HD flash content is continuously uploaded to the players over a broadband CDMA network and reliably tranmitted to digital signs in the airports using Ruckus 802.11n Smart Wi-Fi.

AIRMEDIA BEIJING NOC

Public Servers   Time Server

HQ LAN

CDMA router

CDMA, HSDPA, 3G BROADBAND NETWORK

AIRPORT(s)

Secondary servers

CDMA router

ZoneFlex 802.11n APs

Airport LAN

ZoneDirector controllers

802.11n WLAN

Plasma displays

Local player