



Location: **Las Vegas, USA**

# High-Speed Video Transmission over IEEE 802.11n WLAN for Bus Surveillance System

## Application:

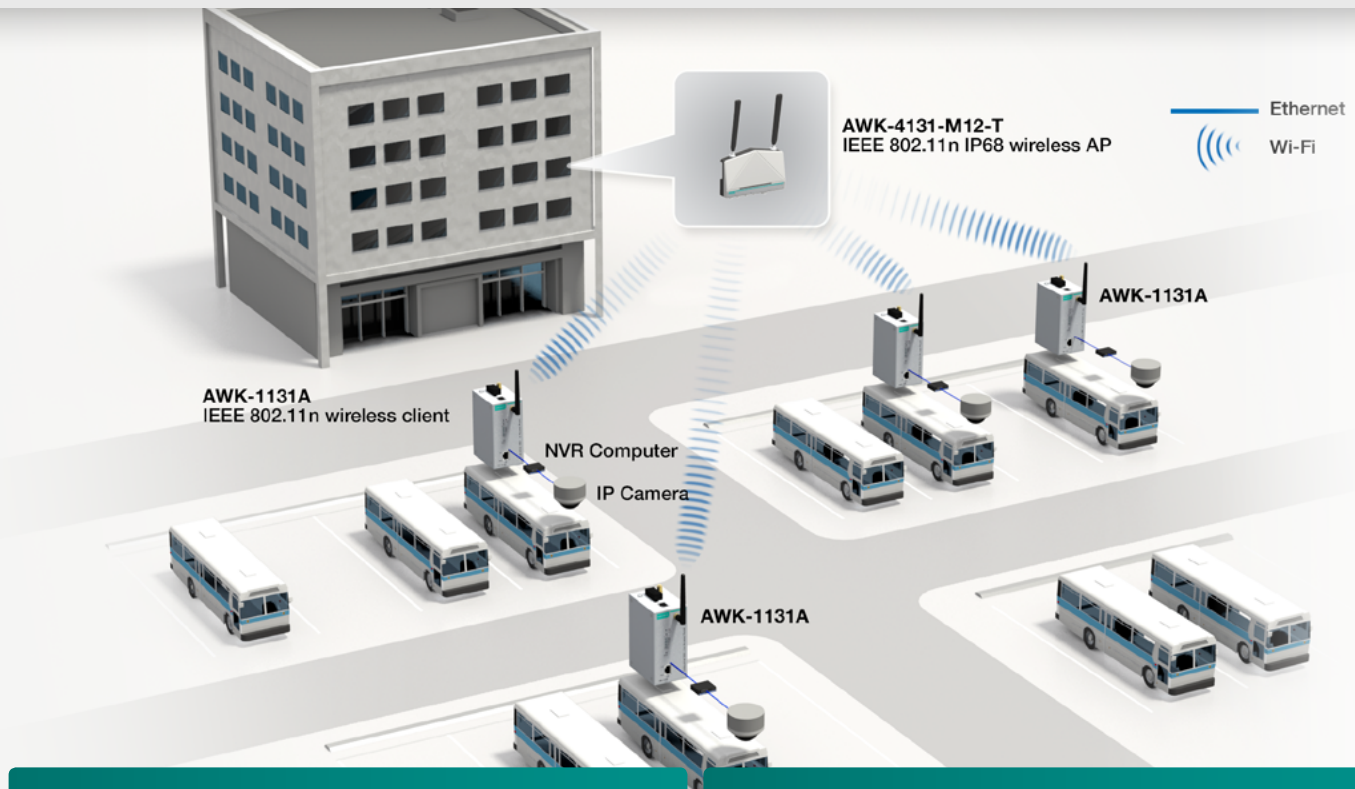
High-speed transmission for wireless video uploads at a bus depot

## Customer Needs

- Sufficient bandwidth to upload high-definition videos via a wireless connection
- Wide wireless coverage to ensure continuous Wi-Fi access at the bus depot
- Wireless devices that can operate under extreme environmental conditions in the desert

## Moxa's Advantages

- IEEE 802.11n compliant wireless devices that provide data rates of up to 300 Mbps
- MIMO (multiple-input multiple-output) technology support ensures wireless coverage at a bus depot
- Devices with wide operating temperature range (-T models only) and IP68 rating (AWK-4131 only) for outdoor protection



## Project Background

A transportation company in Las Vegas serves thousands of travelers each day, across well over 100 routes each week, with approximately 200 buses operating from a bus depot. The administration wanted to implement an intelligent surveillance system that can provide video recordings of standard quality during normal operating conditions and that can switch to high-definition (HD) video footage when an emergency arises. With multiple surveillance cameras installed throughout each bus, video surveillance is captured at 300 DPI under normal conditions. However, when an emergency situation is identified by the bus driver, the quality of the pertinent video will increase from 300 DPI to 720 DPI (HD) to provide enhanced imagery of the incident for durations of 10 minutes before and 10 minutes after the incident occurred. A wireless device that can support high bandwidth is required to ensure that the footage stored on the onboard NVR can be extracted via a reliable wireless connection when the vehicle returns to the depot.

## System Requirements

- Sufficient network bandwidth to upload high-definition videos from the bus via a wireless connection to the depot command center
- Wireless access points installed at the depot control center must be able to provide wireless coverage for every bus in the bus depot
- Wireless access points must be able to withstand the drastic changes between day and night temperatures in the desert

## Moxa's Solution

Aboard each bus, video footage captured by the vehicle is stored on an onboard NVR. When an unexpected incident/emergency is identified by the bus driver, image quality is immediately increased from 300 DPI to 720 DPI for a duration of 20 minutes, and the video footage is stored on the onboard storage drive. Control room operators at the bus depot will then be notified of the recorded events and will process requests for wireless transfer of video data when the bus arrives at the depot. The file size for 20 minutes of 720-DPI video is approximately 200 MB.

For this high-bandwidth wireless application, an AWK-1131A IEEE 802.11n wireless client was installed in each bus to provide up to 300 Mbps data rate transmission for sending the onboard video footage to the control center. When the bus is parked at the depot, the onboard wireless devices will connect with the IP68-rated AWK-4131 access points attached to the outer wall of the control center building, to maintain high-speed 802.11n wireless connections using MIMO capabilities, and to reach data transfer speeds of up to 300 Mbps. The huge difference between day and night temperatures at the depot have the potential to damage outdoor wireless devices. However, the AWK-4131's IP68-rated waterproof housing, which can withstand temperatures between -40 and 75°C, protects the wireless devices from harsh conditions to guarantee continuous, reliable wireless connections.

## Benefits

- Up to 300 Mbps data rate to provide efficient transfer of 720-DPI video footage from the onboard NVR to the control center
- IEEE 802.11n MIMO technology maximizes wireless coverage to ensure that wireless clients on buses will have uninterrupted Wi-Fi access
- -40 to 75°C wide operating temperature range (-T model only) for extreme operating environments
- IP68-rated (AWK-4131 only) for outdoor protection against dust and rain to reduce maintenance efforts



## Related Products



### AWK-1131A

Entry-level industrial IEEE 802.11a/b/g/n wireless client

[http://www.moxa.com/product/AWK-1131A\\_Series.htm](http://www.moxa.com/product/AWK-1131A_Series.htm)



### AWK-4131-M12-T

Outdoor industrial IEEE 802.11a/b/g/n wireless AP

[http://www.moxa.com/product/AWK-4131\\_Series.htm](http://www.moxa.com/product/AWK-4131_Series.htm)

© 2016 Moxa Inc. All rights reserved.  
The MOXA logo is a registered trademark of Moxa Inc. All other logos appearing in this document are the intellectual property of the respective company, product, or organization associated with the logo.