



**ZEBRA**



# Westmoreland Coal Company increases efficiency and profitability in the Kemmerer mine with a Zebra WLAN

## The Challenge

Westmoreland Coal Company is the 4th largest coal mining operation in the world; 6th largest coal producer in North America and the oldest independent coal company in the United States. When Westmoreland Coal expanded their operations by purchasing the Kemmerer mine in Wyoming, they bought the oldest open pit mine in the U.S. — a large mine that is 9.5 miles long and 2 miles wide.

Over 70 pieces of mining equipment are constantly connected to the mine's wireless LAN network — including 25 trucks, 10 dozers, two shovels, three backhoes and two front end loaders. This wireless LAN (WLAN) provided the crucial connection between the equipment and Fleet Management System (FMS), which collects information from the equipment to maximize equipment usage and uptime, and ultimately mine production.

Westmoreland wanted to improve the efficiency and profitability of the Kemmerer mine by enabling remote monitoring and remote maintenance — and that meant the collection of a lot of additional data, including SCADA and live video feeds. In addition, the mine was extending open Internet access to some of the workforce, but wanted to extend Internet access to all on-site workers — employees as well as contractors. In order to enable these new capabilities, the mine would need a WLAN with the bandwidth to carry a substantial increase in data, the ability to offer dependable performance despite the high volume of data and the rugged Wyoming environment.

## The Solution

Westmoreland found exactly what they were looking for with Zebra's AP 7161 mesh access points — an access point that could not only provide the bandwidth required to support all the

### Customer Profile



WESTMORELAND COAL COMPANY

### Westmoreland

Westmoreland Coal Company is the 4th largest coal mining operation in the world; 6th largest coal producer in North America and the oldest independent coal company in the United States. The company is focused on ensuring uncompromised worker safety, environmental stewardship and the deployment of state-of-the-art mining techniques.

### Industry

Mining

### Applications

- Remote equipment monitoring and maintenance
- Video monitoring
- VoWLAN voice communication solutions
- Wireless SCADA data access

### Solution

Zebra AP 7161 mesh access points

### Benefits

- Dramatic reduction in repair costs for shovel maintenance
- Increased mine production
- Increased equipment lifecycle
- Substantial increase in equipment uptime

### Partner Profile

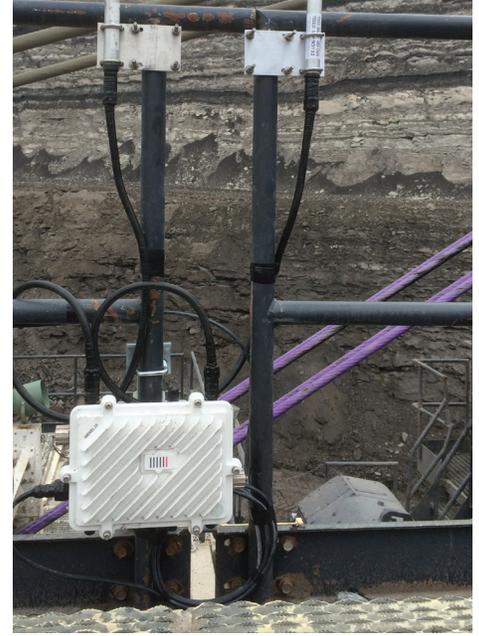


### KNS

KNS provides a full portfolio of professional services to enable enterprises to implement any wireless project of any size. Their staff of RF Engineers and Network Architects provides the expertise required to help businesses define, plan, deploy and manage wireless solutions that deliver maximum reliability, redundancy, performance, uptime and scalability.

## CASE STUDY

WESTMORELAND COAL COMPANY



The tough Zebra AP 7161 is installed throughout the Westmoreland mine, on existing communications towers, on movable infrastructure and directly on mining equipment.

new applications but also the proven ability to deliver a secure and dependable wireless connection, regardless of the weather or where workers might be in the mine's 13,400 acres. Westmoreland monitors and manages the access points remotely through the Zebra RFS 6010 controller, which is located in the mine's server room. Zebra partner KNS Communications Consultants was selected for their worldwide expertise in mining communications to plan and deploy the network.

Says Sue Thomas, President of KNS Communications Consultants, on the success of this deployment, "Westmoreland is extremely happy with the performance of their wireless solution. The WLAN provides more than ample bandwidth for all applications. And even if a node fails, thanks to Zebra's mesh technology and the KNS network design methodology, there is zero performance degradation and zero impact on wireless user connections and wireless application performance."

Key features that made the AP 7161 the idea choice include:

### All the bandwidth required to support the new applications of today — and tomorrow

With support for 802.11n and a 3x3 MiMO tri-radio design, the AP 7161 delivers the wireless network bandwidth and throughput required to carry the additional data required today (including SCADA, video and voice), along with open Internet access for every onsite — employees, contractors and other guests. Despite the volume of traffic, there is still plenty of bandwidth to support many more applications in the future.

### A rugged design, built to survive tough Wyoming winters

Wyoming's blazing summer heat and sub-zero winter temperatures are no match for the AP 7161. With its outdoor rated IP 67 cast aluminum enclosure, the AP 7161 is ready for just about any environmental condition, including windblown dust, rain, sleet, snow, ice buildup on the AP 7161 and more.

"The engineering support was incredible — Zebra was willing to implement upgrades and changes to support Westmoreland's specific requirements. And their engineers were there whenever we needed them, accessible and extremely responsive — something we often have not found with competitive manufacturers."

Sue Thomas  
President  
KNS Communications  
Consultants

## CASE STUDY

WESTMORELAND COAL COMPANY

### Self-healing technology and network design maximize WLAN reliability and uptime

Real-time visibility into a wealth of information on mining equipment gives dispatchers the confidence to make thousands of decisions every day that keeps vehicles moving and productive. Reliability couldn't be more important. When it comes to reliability, the AP 7161 delivers. The WiNG 5 operating system and patented mesh networking technology work hand-in-hand to dynamically sense weak or failing signals, securely move mobile connections to alternate access points and boost signal power to automatically fill RF holes. In addition, KNS specially designed the network with built-in redundancy and overlapping coverage zones to address environmental issues and more — and it works flawlessly. When lightning recently struck an access point and took it out of service, thanks to the combination of the AP 7161 best-in-class wireless technologies and KNS' unique network design, users on the network were completely unaffected and unaware that a hardware failure had occurred.

The result? Consistent and dependable high performance wireless connections and uninterrupted mobile access. Period.

### In-vehicle flexibility

Some equipment generates a phenomenal amount of information. Since the AP 7161 can be installed on moving vehicles, Westmoreland was able to install the AP 7161 on several shovels and a backhoe, enabling more information to be pulled from that equipment than ever before — information that improved day-to-day management, utilization and visibility into the metrics required to protect the life of these high dollar assets.

### Superior video support

The band-unlocked radios and 3x3 MiMO technology provide a maximum data rate of 300 Mbps, providing the bandwidth required for high quality video transmissions.

## THE BENEFITS

States Don Rily, Kemmerer IT Director at Westmoreland, "Here at Westmoreland, we take pride in deploying state-of-the-art technologies to maximize equipment utilization, production, operational efficiencies and worker safety. We chose the AP 7161 over a major competitor for its proven reliability and superior bandwidth. It was simply the best option available to enable remote monitoring and maintenance in the mine, and we couldn't be more pleased with its performance. Thanks to the AP 7161, we have the dependable information visibility required to help improve the mine's operational efficiency, productivity and profitability."

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Don Rily, Kemmerer IT Director,  
Westmoreland Coal Company

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The AP 7161 access points have made remote monitoring and maintenance at the Kemmerer mine a reality. Riley credits the AP 7161 with enabling the mine to achieve numerous big business benefits, including:

### Dramatic reduction in shovel repair costs

Before, shovel repair time was measured in days — one day to schedule the repair and make travel arrangements, one day to travel to the remote mine location, and one day for troubleshooting and actual equipment repairs. Now, engineers can perform most repairs remotely, in less than an hour.

### Substantial increase in equipment uptime

Real-time data from the equipment allows maintenance engineers to monitor equipment in real time and perform timely programming

## CASE STUDY

WESTMORELAND COAL COMPANY

maintenance to optimize operation and prevent equipment breakdown. In addition, that same data combined with video feeds allows maintenance engineers to see how operators are treating the equipment, which had led to operator training programs that help protect the lifecycle of these very expensive assets.

### Increased mine production

Streamlined processes and increased equipment availability translate into reduced idle time for trucks — and the movement of more loads per shift.

### Maximum return on investment — and profitability protection

With the AP 7161, Westmoreland achieves maximum uptime, maximum network utilization and a maximum return on investment. And in an industry where even a little downtime can cost millions of dollars, the ability to virtually eliminate unplanned downtime protects profitability.

### Increased equipment lifecycle

Timely maintenance and the ability to monitor and manage how operators treat equipment helps extend the life expectancy of the largest capital cost in the mines — the mining equipment.

### Improved wireless network management and utilization

The ability to remotely monitor all users and traffic on the wireless network allows Westmoreland to spot and address any inappropriate network usage. Network administrators can not only spot potential offenders, but also pinpoint which access point and which mobile device are involved. Armed with that knowledge, supervisors can help prevent unauthorized use of the network.

## ZEBRA TECHNOLOGIES — AN IDEAL PARTNER

Creating a wireless solution in the demanding environment of a mine required three elements: the right wireless LAN technology, the right solution design and a flexible partner willing to tailor their technologies to meet our customer's needs. Says Sue Thomas, President, KNS, "Zebra is that partner. The engineering support was incredible — Zebra was willing to implement upgrades and changes to support Westmoreland's specific requirements. And their engineers were there whenever we needed them, accessible and extremely responsive — something we often have not found with competitive manufacturers."

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Don Rily  
Kemmerer IT  
Director  
Westmoreland Coal  
Company

**Partner contact information:** [www.KNSInternational.com](http://www.KNSInternational.com)

**FOR MORE INFORMATION ON HOW YOU CAN LEVERAGE THE POWER OF ZEBRA STATE-OF-THE-ART WLAN TECHNOLOGY IN YOUR OPERATIONS, PLEASE VISIT US ON THE WEB AT [WWW.ZEBRA.COM/WLAN](http://WWW.ZEBRA.COM/WLAN) AND [WWW.KNSINTERNATIONAL.COM/ZEBRA](http://WWW.KNSINTERNATIONAL.COM/ZEBRA)**



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