



Arch Coal [NYSE: ACI]  
St. Louis, Missouri

### Packeteer Re-energizes Leading Coal Producer's WAN Performance

**Arch Coal saves \$10,000+ per month by getting the most from existing network bandwidth**

Over the next 20 years, electricity demand in the United States will increase by 45%, according to estimates by the U.S. Department of Energy. In the face of this sobering forecast, companies responsible for contributing to the nation's electricity needs, being fueled by nationwide business expansion and the proliferation of digital technologies, have a mandate to improve business operations significantly in order to meet this soaring demand.

As the second largest coal producer in the United States, Arch Coal, Inc. [NYSE: ACI] provides U.S. utilities with the fuel for roughly 7% of the nation's electricity needs, operating numerous remote mining sites in seven states. To manage its rapidly expanding operations, Arch Coal connects its remote sites via Frame Relay links (256, 512, or 768 kbps) to the company WAN. The corporate office in St. Louis, Missouri connects to the WAN with an ATM DS-3 circuit. Despite this network infrastructure, the company's rapid growth has greatly increased network traffic at existing sites and new mine locations, putting a significant strain on network capacity and application performance.

#### **THE CHALLENGE: Making the Most of Very Remote WAN Links**

Arch Coal relies on a continuous stream of real-time information from its mining sites, delivered over the company WAN. This crucial data is used to manage mine operations and coal supply deliveries to its electrical utility customers. But the remoteness of many mine sites, presents special network challenges.

In most areas of the United States, local exchange carriers provide the "last mile" network link. However, the Arch Coal mining complexes are in rural areas where the local carrier may not have nearby facilities. "We're ten miles beyond that last mile, so we need to provide our own fiber connections within the mine complex and out to the carrier's demarcation point," explains Don Staten, manager of technology support with Arch Coal.

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– Don Staten  
Manager of  
technology support

Connecting isolated mine locations also requires expensive Frame Relay WAN circuits that carry recurring and significant monthly costs. With growing volumes of e-mail and Web traffic overwhelming the bandwidth on local links, the company's business-critical applications started experiencing significant performance problems. This traffic growth meant that Arch Coal had to face the reality of adding costly bandwidth to these local links.

When Arch Coal network staff added bandwidth at one location, they found it was quickly consumed by higher volumes of Web traffic. However, there was no change in the performance of lower-volume, but more important core applications.

It became imperative for the network staff to know which applications or business processes were using the added bandwidth. An attempt to use network monitoring tools such as probes or sniffers proved fruitless, because these tools did not provide the application-level monitoring necessary to determine the source of unacceptable bandwidth consumption.

Arch Coal relies on several large and complex applications – for financial reporting, revenue tracking, and mine operations management – that require real-time data exchange between users and devices at the mines and systems at company headquarters. All Internet traffic to and from the WAN is consolidated on a separate DS-3 link at the headquarters.

"We knew that simply buying more bandwidth wasn't the long-term solution for handling our network growth," said Staten. "What we needed was a solution that would help us give the right bandwidth to the right applications with the links we already had in place."

### **THE SOLUTION: Improve Bandwidth Utilization with the Packeteer System**

Arch Coal found the solution to its needs for maximizing bandwidth utilization with Packeteer's PacketShaper appliances. Initially, Arch Coal deployed a PacketShaper 6500 at the corporate headquarters to prioritize outbound WAN traffic for the core financial and operations management applications. It soon became clear that application performance could be further improved – and WAN bandwidth used more efficiently – if PacketShapers also were deployed at the remote mining complexes.

The PacketShapers control bandwidth allocation on each WAN link, prioritizing the core applications that require real-time data exchange. Staten reports that adding Xpress® compression to the PacketShapers delivers up to 7-to-1 traffic compression with average compression of more than 2-to-1. When applied to e-mail and Web traffic, compression effectively increased network bandwidth by 200% for critical applications. "Our overall goal is to deliver WAN traffic as

## **Executive Overview**

### **BUSINESS PROFILE**

- Arch Coal is the second largest coal producer in the United States operating numerous remote mining sites in seven states

### **INDUSTRY**

- Mining/Energy business

### **CHALLENGE**

- The company needed to increase bandwidth allocation to its remote mining sites, greatly improve network performance for real-time, business-critical applications, absorb additional traffic loads from a recently acquired company with newly opened mining complexes, and support future application rollouts including voice-over-IP (VoIP) and distributed video services. Arch Coal evaluated the tradeoffs between costly WAN upgrades and WAN optimization alternatives to address its network requirements.

### **SOLUTION**

- Standardizing on Packeteer PacketShaper systems to monitor and control WAN bandwidth allocation at company headquarters and key remote sites, Arch Coal has avoided a major WAN upgrade by increasing existing network capacity, dramatically improving application performance over its existing WAN links, and prioritizing critical WAN traffic to ensure improved and ongoing operational business efficiency.

### **BENEFITS**

- Saving \$10,000+ per month in recurring WAN link costs by eliminating the need for a major network upgrade
- Improves business performance by prioritizing network bandwidth for business-critical applications

efficiently as possible to improve application performance and control costs," said Staten. "The PacketShapers are helping us deliver on this core set of objectives."

The Arch Coal network staff learned about the PacketShaper from Results Technology, Inc., a Packeteer Solutions Partner. "Our 15-year relationship with Arch Coal gave them confidence in our recommendation of the PacketShaper product," said Mike Hummel, of Results Technology.

PacketShapers are currently deployed at 18 remote sites, and will be part of the standard equipment that Arch Coal deploys at six new locations planned for the network this year.

### **THE RESULTS: Significant Cost Savings and Improved Performance**

Arch Coal has realized two notable benefits from its use of the PacketShapers: significant ongoing cost avoidance and improved application performance. By using existing WAN links more efficiently, the company has eliminated the need to add capacity even though data volumes have increased. According to Staten, "We estimate that we're saving a minimum of \$10,000 per month because the PacketShaper system helps us use our existing bandwidth so much more efficiently."

"If we didn't have PacketShapers, we would be spending a lot more on bandwidth and we would be getting a lot of calls to the service desk about network performance issues," he continued. "Thanks to Packeteer, we can say with confidence that application performance is meeting our users' needs across the network." Staten estimates that calls to the service desk about poor network performance have declined by 50 percent since installing PacketShapers.

Arch Coal is expanding its business by acquiring other companies and opening new mines. These new locations will increase the need for bandwidth efficiency throughout the WAN. For example, when Arch Coal acquired Triton Coal, the bandwidth efficiency delivered by PacketShapers allowed the company to consolidate existing network links and infrastructure at adjacent mining complexes in Wyoming. This consolidation reduces ongoing WAN costs and the burden of managing disparate networks.

Arch Coal plans to use PacketShapers to control allocated bandwidth for new applications such as VoIP and video. With more sites and more applications to manage, the Arch Coal network staff also will benefit from the centralized reports and administration tools in the Packeteer ReportCenter™ and PolicyCenter™ software. "The Packeteer System is designed to scale well, which is really important as these new, bandwidth-demanding applications are added to the WAN," said Hummel.

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- Dramatically increased network capacity by up to a factor of 7 times with the existing WAN infrastructure
- Delivering necessary bandwidth and application performance levels to existing and new remote sites over the existing WAN infrastructure

### **Quick Facts:**

#### COMPANY PROFILE:

- St. Louis-based Arch Coal [NYSE: ACI] is the nation's second largest coal producer, with subsidiary operations in West Virginia, Kentucky, Virginia, Wyoming, Colorado and Utah. Through these operations, Arch Coal provides the fuel for approximately 7% of the electricity generated in the United States.

#### HEADQUARTERS:

- St. Louis, Missouri

#### #OF REMOTE SITES:

- 18

#### EMPLOYEES:

- 4,150