



#### Organization

**Beaufort County Emergency Management Division**

#### Industry

**Government**

#### VBrick Products

**VBrick MPEG-4 Encoders**

#### Applications

- **Real-time monitoring and control of county-wide traffic**
- **Intelligent Traffic Systems Management**
- **Emergency Management**

#### VBrick Technology Partner

**CNIC Inc.**

## Beaufort County, South Carolina

### Live Video for Traffic and Emergency Management

Draw a line around Beaufort County, South Carolina, and you'll find water comprises over a third of its total area. A spider web of rivers and waterways dissect its lowland interior, and empty along an Atlantic shoreline dotted with some 65 islands, including the famous Hilton Head.

In springtime, a deluge of tourists nearly doubles Beaufort's population, but during Hurricane Season, the county is susceptible to a more dangerous kind of flooding. Threatened by anything upwards of a Category 3 storm, over 250,000 people may be forced to evacuate the islands and lowlands in a single day.

Since there are only two main roads traversing the county, even heavy fog or a bad traffic accident may be enough to create traffic problems from Hilton Head to Beaufort.

Around 2001, Beaufort saw a potential solution for improving the flow of traffic on its roads. It began installing a dark fiber network as the foundation for an Intelligent Traffic System (ITS) operated by the county's Emergency Management Division (EMD) operations center. However, that solution introduced an additional challenge.

#### The Challenge

**Monitor traffic with real-time video along key routes and chokepoints to aid evacuations, emergencies and traffic management**

The origin of Beaufort County's ITS system began with a major construction project along one of its many highway and bridge crossings. As part of that work, it installed eight cameras along the route to monitor the project's progress and its impact on traffic. But once the cameras were activated, county officials discovered how useful they could be in actively managing traffic.

That led to Beaufort's decision to install a dark fiber network with the eventual goal of building a county-wide traffic management system based on live video. Among the things the system would enable were:

- Real-time monitoring of road, bridge and highway construction
- Faster, more coordinated responses to traffic accidents and disruptions
- More intelligent routing of emergency response teams
- Increased ability to manage and direct hurricane evacuations

Some two years later, when the county began expanding its highway to Hilton Head, it added another 18 cameras along the route. Monitoring of the cameras was primarily the responsibility of staff at Beaufort's Emergency Management Operations Center. In addition, the county also connected police and emergency dispatch centers into its camera network, allowing them to help coordinate officers in the field when necessary.

Today, sixty four cameras line Beaufort County's highway system, all integrated into a network that encompasses 75 to 80 percent of the county's government buildings, including several operations centers and military installations.

**Government staff and every agency operations center need to have access to any video camera at the same time."**

**Charles Seder**

Systems and Network Analyst,  
Beaufort County Management  
Information Systems

**The Challenge**, continued

"We realized we would need to patch in operation centers for the local utilities, police stations and other county dispatch centers," said William Winn, Director of EMD. "That meant we needed a technology that allowed everyone to see it simultaneously."

Therein lay the challenge. As the number of potential end-users grew, so did the likelihood that several of them would try to access the same cameras simultaneously. In a unicast network structure, the corollary would be several different people trying to connect to the same phone at once.

In order for Beaufort County's ITS system to work, each camera had to mimic a conference phone – accepting and responding to several simultaneous contacts. In other words, it needed multicast video technology.

**The Solution**

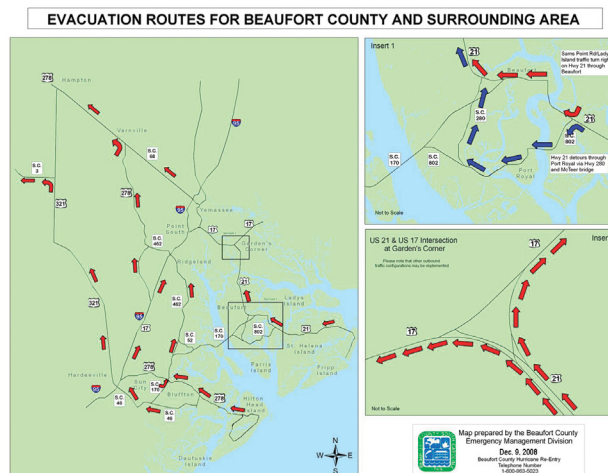
**A compact, cost-effective video encoder able to multicast signals to several locations on the network with little or no impact on bandwidth**

Multicast is not a particularly new concept for telephones, or even data, but multicast video signals typically require the signal to be patched through a computer server. That clearly didn't fit the cost or space profile for the camera sites around Beaufort County.

Only one company offered a solution that digitized video signal for multicast transmission: VBrick Systems.

VBrick's encoders enable multicasting directly across any network without the need for a server. In addition to simplifying the set up, this meant a single camera could broadcast a single 500 Kb stream of video data to viewers at multiple end points across the county.

Efficient evacuations don't simply happen in Beaufort County. They require advanced planning, plus centralized real-time traffic management supported by VBrick's video technology.



Besides eliminating the need for a server, VBrick's encoders are compact. No larger than a conventional DVD player, they fit neatly inside the box housing the electronics and network switch accompanying each camera. Plus, each encoder incorporates VBrick's Integrated Web Server (IWS), an intuitive interface that allows seamless configuration of each VBrick in a very quick and intuitive process. That not only facilitated installation, it now simplified the remote monitoring and management of Beaufort's multiple camera feeds.

"Beaufort is the only South Carolina county that's required to do a 100 percent evacuation for any storm rated a 3rd category or higher," said Charles Seder, the Systems and Network Analyst for Beaufort County's Management Information Systems. "When that happens, government staff and every agency operations center need to have access to any video camera at the same time."

## The Solution, continued

The county initially installed close to 100 VBrick single-channel MPEG-1 encoders at camera sites and operations centers around the county. About half that many dual-channel decoders were located at end points on the network. The selection of dual-channel devices helped minimize installation costs, while maximizing the efficient use of rack space at the operations centers where they were located.

In 2004, Beaufort County replaced its MPEG-1 encoders with VBrick VBSSM video-only appliances, with the help of VBrick channel partner, CNIC Inc. These ruggedized, single-channel devices are designed expressly for security and surveillance monitoring applications.

"The MPEG-4 encoders provided a higher quality image and better compression to minimize the impact on bandwidth even further," said Jay Seaman, sales manager at CNIC. He added that even the non-ruggedized encoders proved extremely reliable. "I've had to replace less than six units from either generation, and all were due to lightning damage."

## The Benefits

**Better coordination of county-wide emergency personnel and traffic management operations saves money, time, property and often lives**

On a typical day, staff at the EMD operations center monitor the camera feeds. Police, fire and medical dispatchers can also tap into the feeds as needed; and even laptop-equipped field personnel can access live video from one of the 110 WiFi hotspots located along the county's highways.

In fact, Beaufort makes the feeds publicly available online around the clock and, during peak traffic hours, on local cable television stations.

Winn said Beaufort County had tapped a dozen different sources of federal, state and local grant money to fund the system. However, he added about 60 percent of the money now comes from local sources because the community has increasingly seen the value of the system.



In the spring of 2007, for example, a barge struck the underside of the J.E. McTeer Bridge, one of only two ways on and off Lady's Island. The accident closed the bridge and caused monumental traffic problems throughout the county.

In the ensuing weeks EMD staff monitored video feeds from around Beaufort to facilitate traffic management on the ground. "We assigned deputies to the trouble spots," said Winn. "But where the deputy could only see 100 yards down the road, we could access camera's everywhere and radio him instructions on how to proceed."

After the bridge was repaired, Winn added, there was a tremendous outpouring from the public about how well we managed the incident.

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### William Winn

Director of Emergency Management Operations, Beaufort County Management Information Systems

Beaufort County's Emergency Management staff cannot be everywhere at once, but VBrick's encoders enable them to determine where their services are needed most.

**The Benefits,** continued

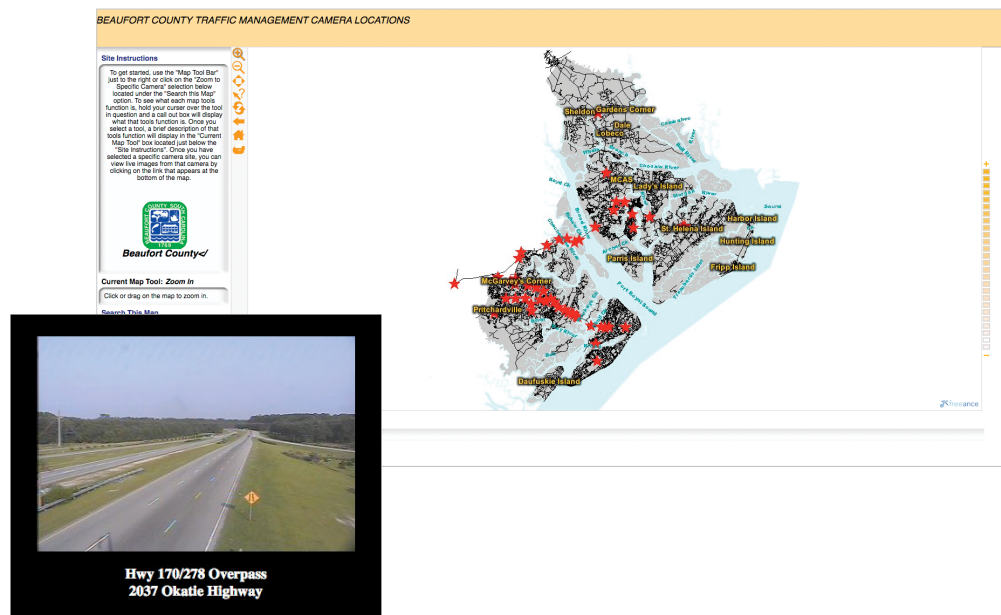
Beaufort’s EMD operations center also gets occasional calls from the National Weather Service requesting visual confirmation of a suspected funnel cloud via video feed. The ITS system has also found applications in marine rescue on the county’s rivers. In fact, it recently prevented a repeat of the 2007 bridge accident.

These benefits may be only the tip of the iceberg. Winn said Beaufort is now considering linking every traffic signal to the EMD operations center to allow its staff to remotely guide traffic as well as monitor it.

It had the occasion to demonstrate the potential value of this when operations staff recently noticed traffic was backing up at a local shopping center.

“Normally, we would have had to dispatch an officer to that intersection, which is dangerous. There are four lanes of traffic there,” said Winn. “Instead, we changed the setting of the signal and in 15 minutes the problem disappeared.”

VBrick’s multicast technology enables several Operation Centers distributed around Beaufort County to simultaneously access any of the sixty four cameras lining its highways.



**About Beaufort County, SC**

About an hour south of Charleston, Beaufort County is located on South Carolina’s “Treasured Coast” which includes the historic towns of Port Royal, Beaufort and Bluffton as well as the popular golf and tennis resort of Hilton Head Island. With a population of 150,000, Beaufort County is one of the South’s fastest growing areas. The county has a total area of 923 square miles of which 587 square miles is land and 336 square miles is water. The many islands and communities of Beaufort are connected by bridges to navigate through the Intracoastal Waterway, the Atlantic Ocean and a myriad of rivers and creeks.

**About VBrick Systems, Inc.**

VBrick is the leader in Enterprise IP Video solutions, with over 9,000 corporate, education and government customers and 60,000 installations worldwide. VBrick solutions work over standard IP networks and the Internet to deliver rich media communications that connect people everywhere – from employees and customers, to partners and shareholders. Our comprehensive product suite and end-to-end solutions are used in a wide range of live and on-demand applications including meeting and event broadcasts, distance learning, digital signage, TV distribution, video surveillance, and Web-based marketing campaigns. Headquartered in Wallingford, CT, VBrick’s products and services are available through industry-leading value-added resellers.

For more information, visit [www.vbrick.com](http://www.vbrick.com)



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