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Special K-12 Schools Issue

## Wireless Technologies Help Keep Schools Safe and Secure

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### PUBLISHERS:

KENT HUFFMAN

Chief Marketing Officer, BearCom

BILL NEWTON

Principal, BNewton Associates

### EDITORS-IN-CHIEF:

JOHN WATSON

Chairman, BearCom

JERRY DENHAM

President & CEO, BearCom

### MANAGING EDITOR:

HOLT HACKNEY

Partner, Hackney Communications

### ASSOCIATE EDITOR:

KRISTIN KIRKHAM

Marketing & Technical Writer, BearCom

### CREATIVE DIRECTORS:

RANDY MOTT

Principal, Mott Graphics Incorporated

ROBERT BONVILLION

Principal, Bonvillion Graphics

### CONTRIBUTORS:

WIRELESS WOMAN

Chief Technology Officer, BearCom

MIKE BUTLER

Project Manager, BearCom

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## INDUSTRY OVERVIEW:

# Wireless Technologies Help Keep Schools Safe and Secure

By Holt Hackney

Wireless technologies are reshaping the nation's elementary, middle, and high schools into environments that dramatically boost learning and foster safer facilities. These technologies range from providing immediate and reliable access to the Internet to video surveillance monitoring to innovative uses around GPS technology.

Take the Cresskill, New Jersey High School, for example. In the summer of 2008, school officials announced that they had installed a wireless local area network (WLAN) to provide its more than 800 students and faculty with mobile wireless access to the Internet and online educational materials. The WLAN deployment was driven by the need to give large numbers of students simultaneous, uninterrupted Internet access via the school's notebook computers, which are moved around as needed on mobile carts. It also supports a recent district initiative allowing students to bring their own notebooks to school for educational use and the district's implementation of an open-source course-management system, which helps teachers create and distribute online instructional programs.

"When a cart with 25 notebooks rolls into the classroom, everyone expects to log on immediately and begin doing research for their projects," said Kevin Whitney, District Technology Coordinator for Cresskill Public Schools. "With our old system, half the class often wasn't able to authenticate and get access, and even then, there were lots of timeouts."

Just as powerful has been the emergence of Sprint Nextel and its EV-DO mobile broadband cards in educational settings, allowing students and faculty to bypass increasingly crowded campus wireless networks. This technology can also be very useful when using high-quality video and synchronizing large amounts of data between mobile devices and central systems, which is highly beneficial to

teachers, who need this capability to engage their students by distributing videos or procuring data for their own teaching practices.

Of course, the second major benefit of wireless technology—enhanced security—is no less important. Wireless video surveillance has emerged as a valuable tool, and one that is increasingly gaining funding support on Capitol Hill. Federal lawmakers recently held a hearing on a proposal to let public schools use millions in federal grants to install such systems. Those grants have historically been used for the installation of metal detectors, lights, and locks as well as paying for security for faculty and staff.

Surveillance cameras can be highly effective as evidenced by a recent New Jersey case, where five high school students, as a senior year prank, put large smoke bombs in their lockers. Because the students' actions were recorded by video cameras, school officials were able to act quickly by calling in the local bomb squad, and the devices were safely destroyed before anyone could be hurt.

There are several crucial components to such systems, all of which have to be brought together by a solutions and equipment provider such as BearCom. These include:

- Sony and Panasonic, suppliers of wireless IP video surveillance cameras
- Motorola and Firetide, developers of wireless, multi-service mesh networking technologies
- BridgeWave Communications, a supplier of gigabit wireless solutions that facilitate the high-speed, point-to-point transfer of wireless data

The power of such systems is that not only can they be used to capture student

*Continues on page 3...*

*“When a cart with 25 notebooks rolls into the classroom, everyone expects to log on immediately and begin doing research for their projects.”*

**Kevin Whitney, District Technology Coordinator**

Cresskill Public Schools

*...Continued from page 2*

mischief after the fact, but they are also an effective deterrent. In fact, the mere presence of surveillance cameras acts to prevent crime in schools. Studies have shown as much as a 25 percent decline in thefts, vandalism, and fights when those devices are present.

And no component is more visible in that respect than Sony's line of IP-based surveillance cameras, which provide superb image quality and efficiently distribute intelligence to those charged with monitoring campus activity.

When Bob Daugherty, the Pasadena, Texas Independent School District's Executive Director of Technology Services, began exploring what that deployment might look like from a technological perspective, it became abundantly clear to Daugherty that Sony's IPELA SNC-DF70N network video camera was the best of class among such products. The camera was chosen for its superb imaging in both day and night lighting conditions, the high-impact resistant polycarbonate clear dome, aluminum die cast casing, and bandwidth-efficient MPEG4 codec.

That the SNC-DF70N was selected does not surprise BearCom's Mike Butler, who has overseen dozens of projects that involved the deployment of the cameras. “The SNC-DF70N is the industry standard for IP video surveillance,” said Butler. “Sony's expertise in imaging technology is long established, and its success in advancing this into the IPELA line with IP-based connectivity is helping speed the transition from CCTV to IP video security.”

GPS technology is also being used to create a safer environment. Bryan Adams High School in Dallas, for example, is

using a new wireless GPS device in a pilot program to track truant students who are under court order to attend class. The teenagers are enrolled in the program under order of a Dallas County Truancy Court and administered by the Attendance Improvement Management (AIM) program being developed by some individual community citizens.

A year ago, truant teenagers wore electronic ankle bracelets—often used on criminals, as part of another pilot study. Today, they use a device that requires the teen to “key in” a code indicating they have arrived at school and returned home. This ensures that they go to class and observe nightly curfews. At any time, a supervisor can detect a student's location in real time using Internet tracking software. A GPS “geofence” has been programmed around

*Continues on page 4...*



Using two-way radios like those offered by Motorola and Icom, school administrators can quickly connect with maintenance workers and get status reports, as well as address emergency situations. And the increased use of mobile broadband cards on K-12 campuses around the nation has made students more efficient at meeting their educational responsibilities as well.



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Wireless video surveillance systems—such as those offered by BearCom—have emerged as valuable security tools on K-12 campuses all across America and are increasingly gaining funding support on Capitol Hill. Federal lawmakers recently held a hearing on a proposal to let public schools use millions of dollars in federal grants to install such systems across the U.S.

...Continued from page 3

the campus, so when students arrive, they trigger the system to report, "I'm here and everything is okay." If students don't show up, officials can pinpoint their location or call their device to coach them about the importance of complying with their court-mandated restrictions.

The solution couldn't come at a better time. Dallas was recently listed as having the seventh-worst graduation rate among school systems in the 50 largest urban cities according to America's Promise Alliance, a Washington, DC-based non-profit organization.

Wireless technology is even helping schools notify parents of emergencies. For example, one day last year in Columbia, Missouri, gunfire was reported in the southern part of the city. Parents received a text message on their cell phones letting them know that nearby K-12 school buildings were locked down and students were out of harm's way.

With such powerful improvements in wireless technology and how it can be used, school districts are continuing to experience major operational efficiencies through the use of two-way radios, like those offered by Motorola and Icom. Using radios, administrators can connect with maintenance workers to improve efficiency as well as link up with teachers. This also means, in the case of the latter, that administrators can respond promptly to emergency situations where the health or safety of a student is at stake. Wireless technologies can not only save lives; it can mitigate the district's legal exposure by exhibiting a heightened level of care. ●

*Holt Hackney is Managing Editor for Today's Wireless World magazine.*

*For more information about the wireless products and solutions discussed in this article, please contact BearCom at [TodayWirelessWorld@BearCom.com](mailto:TodayWirelessWorld@BearCom.com).*

The BC130 two-way radio is a robust upgrade from previous radios and those devices that are currently offered at similar price points in the marketplace. Besides its cast aluminum chassis, the BC130 is a non-display radio, which helps protect it from damage over time. School districts can deploy the device across a wide spectrum of positions, from teachers and administrators to coaches and maintenance personnel.



## PRODUCT REVIEW:

# Back to School with the New BC130 Two-Way Radio

By Mike Butler

If you work as an administrator, teacher, coach, security manager, or maintenance person at a K-12 school and have ever dropped your phone or two-way radio, it may be time to consider Motorola's newest portable device: the sleek, solid BC130.

The BC130 two-way radio is being made available exclusively by BearCom, a nationwide provider of wireless communications equipment and solutions. It is a durable and robust upgrade from previous radios and those devices that are currently offered at similar price points in the marketplace.

After obtaining extensive feedback from educators about their needs and wants, the BC130 was developed by Motorola specifically for BearCom's customers. Among the issues that BearCom identified was that the previous model was often subjected to constant wear and tear, and as a result, over time it would lose some of its usefulness. In response, BearCom asked Motorola to make a more tough, rugged device.

Hugh Johnston, Purchasing Manager at BearCom, recently pointed out

that the BC130 has a cast aluminum chassis, which makes it far more durable than other radios in the same space, which typically have a plastic frame. "This is a business radio, not a 'bubble pack' radio you can buy at a retail store," Johnston said. "It is much more durable and is ideal for everyday and commercial use, both indoors and outdoors. What's more, previous radios had displays, which would get beat up over time. The BC130 is a non-display radio, which makes a lot more sense for the industries into which this product is primarily sold, for example, education, retail, and hospitality."

Unlike cheap radios purchased from "big box" retail stores, the BC130 features two programmable buttons, as well as single priority scan, nuisance channel delete, and option button talkaround capabilities. Also, the BC130 meets MIL-STD-810C, D, E, and F. The UHF version features four watts of power and 16 channels and is priced at \$255, while the VHF version has five watts and 16 channels and is priced at \$235. Thus, the radio offers superior coverage and better-sounding audio, even in larger school buildings,

such as a gymnasium. This is enhanced, according to Johnston, by the aluminum chassis, which acts as a ground plane for the antenna. "It improves the radio's ability to send and receive."

There are many other benefits as well. Many schools with large campuses, especially high schools, are beginning to use radio repeaters for extended reach. However, most low-cost radios cannot be used with them, Johnston said. Even at this very attractive price point, though, the BC130 can be programmed onto the repeater's frequency, which can greatly extend the radio's useful range.

In addition, users benefit from having a battery that is known for its longevity. BearCom recently upgraded all of the BC130 radios to include Lithium-Ion batteries, which extend the talk time for administrators. "It's critical for school personnel to be able to use their radios without having to worry about the battery losing its power," said Johnston. "These batteries also weigh much less than traditional batteries, which is why

*Continues on page 6...*

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The two-way radio has become widely adopted in the education industry, where the device's ability to instantaneously connect administrators with their faculty and staff has become indispensable. With wireless devices such as the new BC130 radio from BearCom and Motorola,



administrators now have the ability to easily transition staff, including landscapers and maintenance workers, to other more pressing projects at a moment's notice. This enables the school to become a much more efficient operation, stretching budget dollars so that school personnel can pursue their chief mandate—educating students.

this new radio is lighter and much more portable than its predecessor."

Johnston noted, "Combined with its sleek design, school administrators and staff can feel like they are walking around the school grounds with the latest in wireless communications technology." He added that the radios come with rapid-rate chargers, while six-unit gang chargers are also available as an option.

Another perk of the BC130—which measures 4.21"H x 2.28"W x 1.46"D and weighs in at 9.52 ounces—is the compatibility for accessories with most low- and mid-tier two-way radios, such as the Motorola BC120, BPR40, and CP200. For example, several hands-free operation options are available, so school staffers can focus on their work and not the operation of their radios.

Other available accessories include holsters, speaker and surveillance microphones, headsets, and listen-only earpieces. The BC130 radio also comes with a one-year limited warranty.

The bottom line is, whether a teacher is directing traffic at an elementary school, a security guard is patrolling the grounds of a high school, or a principal is overseeing a junior high school assembly, the BC130 is the ideal two-way radio for educational environments.

"The BC130 really is a lot of radio for the money," said Johnson, who added that BearCom keeps a significant stock on hand, ready for immediate shipment. "It is hard to find a better deal for today's K-12 schools."

This is the second time in the last five years that Motorola has worked closely

with BearCom to develop a market-specific product like the BC130 two-way radio. "This is a wonderful opportunity for us," said Andrew Byrne, a Vice President at Motorola. "Because the education industry is its largest market, BearCom has a deep understanding of the unique communication needs of customers in K-12 schools."



By collecting input from those customers through BearCom, Motorola was able to more accurately gauge the needs and wants of school staffers and translate those variables into the manufacture of the new BC130. The result is an innovative two-way radio that delivers maximum functionality and efficiency to school administrators and their key employees.

Jerry Denham, President & CEO of BearCom, added, "We are excited about this new BearCom-branded portable from Motorola. Because of its robust feature set and budget-friendly price point, we expect the BC130 to

become one of our most popular radios for K-12 schools within a very short period of time. The response to the BC130 from the education community has been overwhelming. Fortunately, we anticipated that would happen and have plenty of inventory ready to deliver to schools anywhere in the country." ●

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*Hugh Johnston is Purchasing Manager for BearCom.*

*For more information about the wireless products discussed in this article, please contact BearCom at [TodaysWirelessWorld@BearCom.com](mailto:TodaysWirelessWorld@BearCom.com).*



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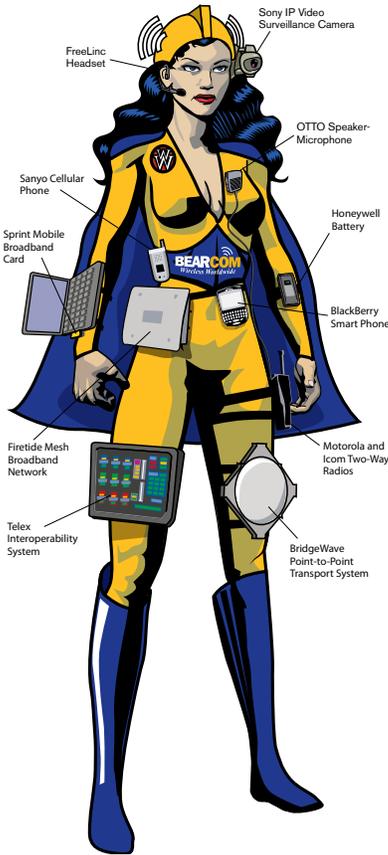
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## Q&As:

# GPS-Enabled Phones on Buses and Mesh Networks on Campuses

By Wireless Woman



Meg A. Hertz, the Chief Technology Officer for BearCom, provides innovative wireless solutions to BearCom customers every day. But when a communications problem requires superhuman powers, Meg becomes Wireless Woman—and always saves the day!

### Question:

*Transportation is such a big issue for school districts, especially from a security standpoint. Can you give me an example of how wireless technology is being used to ease such concerns?*

### Answer:

Sure. Sprint Nextel and the Kansas City, Kansas Public Schools (KCKPS) recently announced the availability of a new tool to help the administration monitor the district's fleet of school buses in real time, using a GPS solution.

Specifically, the district's 157 buses have been outfitted with mounted Nextel/Motorola i265 GPS-enabled handsets. Each handset is equipped with a GPS-tracking mobile management application as well as Nextel walkie-talkie service, enabling instant voice communication between drivers and the district's transportation office. The solution also provides the dispatcher with the ability to give school bus drivers their mapped-out route with directions and time expectations. Furthermore, it gives drivers the capability to contact 911 in an emergency.

The GPS system wirelessly transmits real-time location information to the dispatch center on the Nextel National Network to a server where data is monitored by the district's transportation department, allowing transportation officials to monitor, in real time, the locations of the buses as they pick up and drop off students along their routes and improve safety. Bus locations are displayed on a map, allowing dispatchers to quickly recognize if a bus is delayed or off course. Location information can be displayed on a computer screen or Nextel BlackBerry device. Location data can also be stored to manage the fleet more efficiently: minute-by-minute updates of bus locations offer the ability to view an exact bus route and can generate increased efficiencies and reduced operating costs over time.

Sprint Nextel and BearCom have a long history of providing GPS-based services. Beginning with in-vehicle solutions and then introducing the first GPS-enabled phone in 2001, Sprint Nextel created the largest portfolio of wireless mobility solutions for businesses

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## The Adventures of Wireless Woman™



and organizations, and today, it is the number one provider of GPS wireless solutions. In addition, Sprint Nextel offers a wide range of GPS tracking solutions from basic bus location tracking to robust, integrated fleet management and student tracking applications that provide school districts with the ability to monitor buses, keep their students safer, and more quickly respond to parents' inquiries.

**Question:**

*I have heard a lot about wireless mesh networks on K-12 campuses and how they can benefit a school district. But basic wireless access points are cheaper. Why should I buy a wireless mesh network?*

**Answer:**

You really have to look past the initial cost and examine the extraordinary benefits that a wireless mesh network can offer your campuses.

Mesh networks provide cost-effective wireless Internet access to both educators and students, making it easier than ever to deliver educational materials and resources to where they're needed. As you know, having ready access to Internet-based educational materials and campus resources is almost as important as the subjects being taught in classrooms.

Robust Internet access means K-12 educators and their students can have wireless connectivity anywhere across the campus as well as embrace unique tasks, such as creating temporary labs and networks for junior high and high school projects.

With many standalone buildings of different ages and sizes, installing a wired, campus-wide network can be exceedingly difficult and expensive and falls outside the budget of many school districts. By contrast, a Firetide instant mesh network is an extremely cost-effective alternative because it eliminates the need to install backbone wiring. It also works seamlessly indoors and outdoors, making it ideal for extending existing networks to older buildings and for enabling high-capacity Wi-Fi access anywhere on campus, including outdoor areas, such as playgrounds and parking lots.

In particular, Firetide's high-performance HotPort mesh network can also help alleviate the performance challenges that schools often face regarding dense pockets of heavy Internet users and a proliferation of Wi-Fi enabled computers. With its high capacity and overall performance, the HotPort network is capable of handling large network loads, including time-sensitive services such as voice and video.

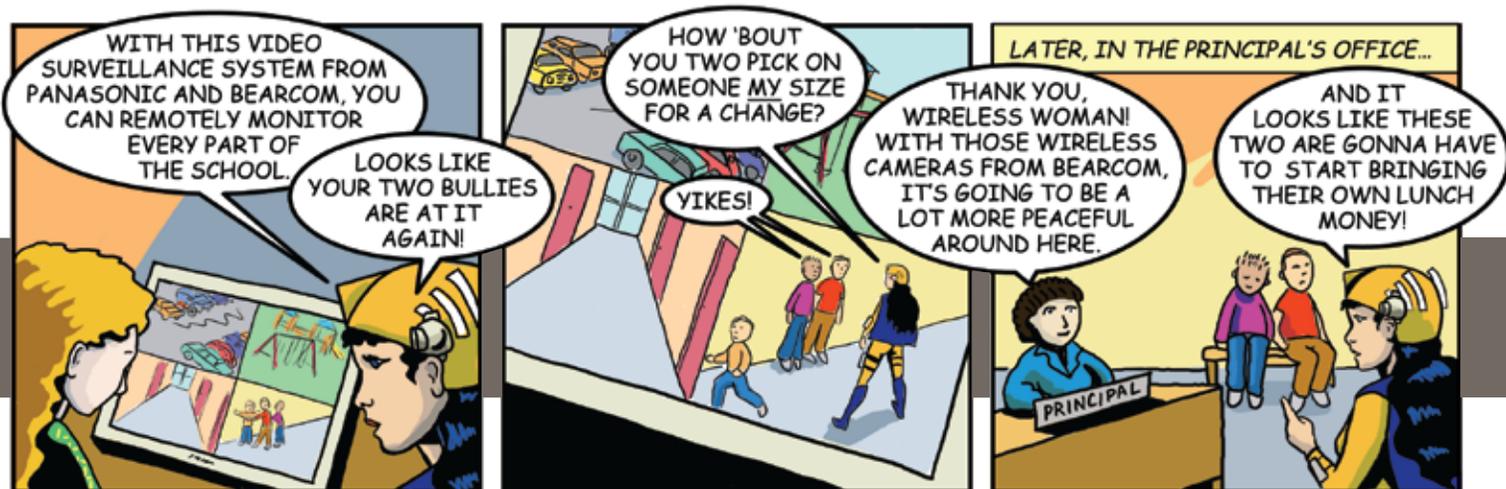
It is also important to remember the powerful impact that Firetide's wireless mesh networks can have with regard to security. Packaging Firetide's wireless mesh nodes with IP video surveillance cameras allows administrators to better monitor parking lots, walkways, and other public areas. Ethernet cameras, such as those manufactured by Sony and Panasonic, can be installed wherever they're needed. These cameras are connected to a HotPort node. Real-time feeds are then delivered to a central monitoring area over the Firetide multi-service broadband network, where software such as that provided by On-Net Surveillance Systems (OnSSI) help administrators monitor the feed. BearCom has extensive experience working with all of the above partners to create a customized solution that satisfies the needs of virtually any school district, small or large.

In short, this is a wireless technology solution that pays for itself many times over when a school district is ready to take full advantage of its functionality. ●

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*Wireless Woman, a.k.a. Meg A. Hertz, is Chief Technology Officer for BearCom.*

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## SUCCESS STORY: Birdville ISD

By Kristin Kirkham

### The Customer

Located in the heart of the Dallas/Fort Worth Metroplex, Birdville Independent School District (ISD) covers more than 40 square miles in Northeast Tarrant County, Texas. Birdville ISD employs 2,800 faculty members, serving 22,000 students at 32 campus locations, consisting of 21 elementary, seven middle, and four high schools.

### The Challenge

Birdville ISD's two-way radio system consisted of several different brands of radios at virtually every school and in every department. Some of the radios couldn't communicate with each other because of interoperability issues. The district also faced unnecessary difficulties by having to carry multiple inventories of batteries and accessories to service the various models. To address the problem, Birdville ISD took its radio fleet out to bid. Competing with several local companies, BearCom, a nationwide wireless equipment dealer and integrator, won the Birdville ISD project with a carefully tailored system and several thoughtful consultations and strategy sessions with the district.

### The Solution

BearCom helped Dr. Rick Kempe, Administrator for Birdville ISD, to devise a five-year plan to implement a complete interoperability strategy for the district. With an original order of 350 Icom IC-F4GS and IC-F21 two-way radios, Birdville ISD was well on its way to connecting all 32 campuses. Because the wireless solution involved only Icom products, BearCom was able to streamline the district's entire stock of batteries and accessories, saving Birdville ISD time and money associated with its previous multi-brand fleet. Two additional equipment orders followed the first, each requesting 104 Icom IC-F4021 digital radios. The digital display allows users to easily and quickly switch channels by scrolling through a list of schools throughout the district.

### The Results

In only three years, BearCom was able to accomplish more than what was expected in the original five-year plan. By updating its two-way radio fleet, Birdville ISD significantly reduced costs by standardizing the makes and models of radios and accessories, as well as user training processes. The district plans to auction off its entire stock of old radios as its budget allows, so that it can continue to upgrade the system. And by utilizing the state bid that is available



to all schools in Texas, Birdville ISD no longer puts its radios out for public bid. This guarantees that the district gets a product that meets its needs at a competitive price. Dr. Kempe said, "The people at BearCom don't just provide radios—they provide top customer service and professional, personalized consulting. An experience like that is priceless." ●

*Kristin Kirkham is Marketing & Technical Writer for BearCom.*

*For more information about the wireless products and solutions discussed in this article, please contact BearCom at [TodayWirelessWorld@BearCom.com](mailto:TodayWirelessWorld@BearCom.com).*

*"The people at BearCom don't just provide radios—they provide top customer service and professional, personalized consulting."*

**Dr. Rick Kempe**

Administrator  
Birdville ISD

Icom's IC-F4021 digital two-way radio is housed in a compact, lightweight body and has many attractive features, such as multiple signalings, a high-capacity battery, and wide frequency coverage. The large buttons allow blind-touch operation, and the radio meets IP54 requirements for dust and splash resistance.

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