

Enabling Mobile Wireless Networks with Wireless Adaptive Bridge

WabMAX



ABOUT AlphaMAX

AlphaMAX Inc. is a unique software and hardware system solutions development company focused on the broadband wireless access market. With core expertise in WiMAX and LTE technologies we create specialized tools and products which enable and enhance the design, installation, provisioning, operation and optimization processes of complex IP based wireless networks.

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We all experience a new world, expecting to be connected everywhere, all the time, at any time. We all got used to surfing the Web, sending and receiving emails, or watching a movie on YouTube. We would all like to be able to know where the nearest food court, movie theatre or shopping center are, wherever we are. Whether just outside our home, in a nearby coffee shop or on the road, we have come to rely on wireless connectivity to keep us online on the go.

On a different front altogether, it is no secret that infrastructure, and in particular public transportation, is getting a great push from the newly elected US president. For many firms in the transportation sector, fleet management is a huge challenge. The good news are that locating and, better yet, communicating with remote units have now become not only desirable but also achievable goals.

So how do personal connectivity and fleet management come together? Keep reading... Deploying a wireless infrastructure is only the first step in order to get your team connected. Achieving your targets technically and within budget could be a challenge if you are not implementing the infrastructure correctly and in the most efficient way.

WabMAX is a unit that helps you reduce the size and the cost of your infrastructure by smoothing the handover between base stations over multiple technologies. Billions of dollars will be dedicated to improving infrastructure and AlphaMAX is ready to help you take advantage of the situation. Intrigued yet?

For railroad companies in particular, providing their customers with always-available Internet access is one way to make the customers feel at home. Allowing customers to see online where the train is and when it will reach the next station is a benefit for both customers and railroad companies.

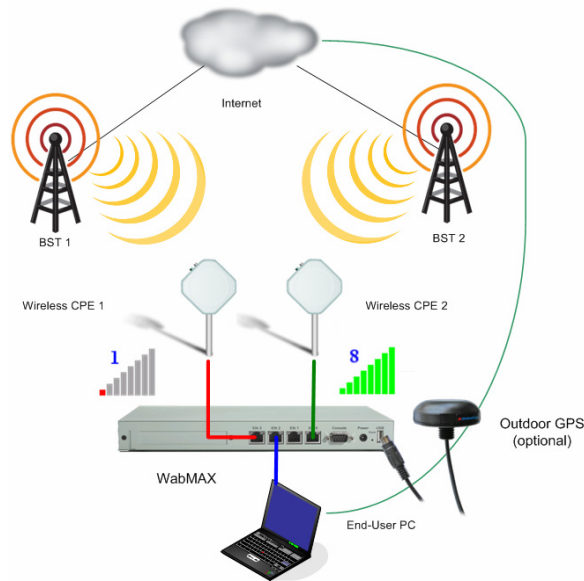
The ability to track every train or railroad vehicle (e.g. hazardous cargo) or to get live engine status and communicate directly with the engineer at any time are no longer a dream, WabMAX can help you do all that and more.

With WabMAX, you can handle both customer wireless connectivity and train car fleet management.

So what is new? The need for connectivity is not new, the need to track the location is definitely not new and it seems that WiFi is already used on trains as a means of Internet access and real-time tracking. So where is the gap, you ask?

Reality is showing that not too many train projects came to life and the main reason is the ability of the wireless equipment to properly handover between sites. Handover of the traffic from one tower to the next is no easy task, especially at high speeds.

WabMAX Saves You Money



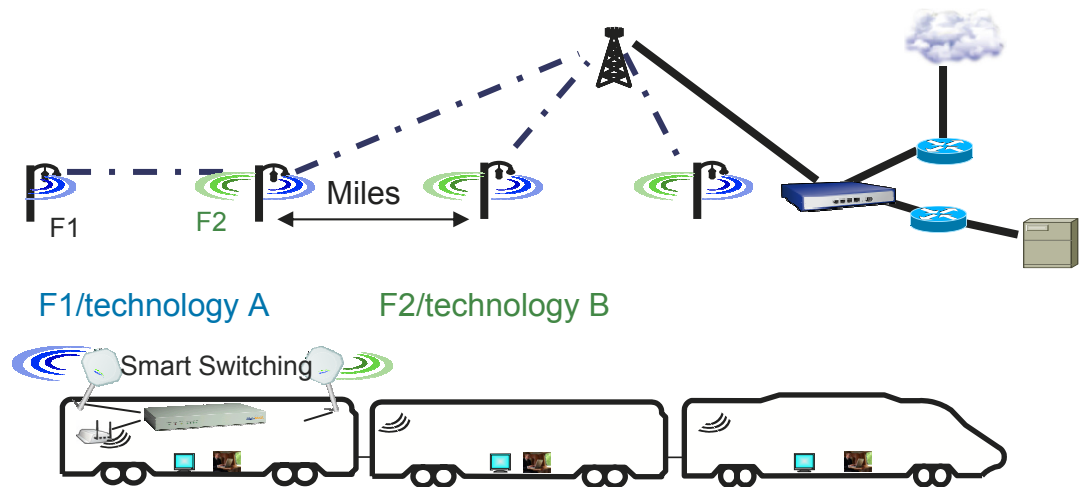
AlphaMAX Inc., with its WabMAX product, closes the gap with a unique software that can evaluate the RF conditions of several radio subscriber units, *regardless* of their respective frequencies. Even more interesting is the ability of WabMAX to handle several different technologies at the same time. WabMAX's abilities make your system more robust to changes in its surroundings, since different technologies can be affected differently by their environment. AlphaMAX's WabMAX is a unique unit that allows you to use both licensed frequencies (3.65GHz, 3.5GHz, 3.3GHz, 2.5GHz and 2.3GHz) and unlicensed frequencies (900MHz, 4.9GHz, 5.3GHz, 5.4GHz and 5.8GHz). This gives you flexibility to choose the wireless platform that best meets your needs.

The challenge

In most cases, the train is connected to the outside world through WiFi technology. Since WiFi signals do not travel very far, this implies that the towers along the track need to be closely spaced, creating two problems for railroad companies:

- First, the handover of the subscribers between wireless base-stations along the way has to happen over a very short distance. The short handover creates many technical challenges and is the main reason for dropped calls and reduced connection speed. The short handover is one of the reasons that existing systems do not fit applications where a continuous connection is critical.
- Second, the number of towers and backhaul required when implementing WiFi or a WiFi-based technology makes the solution too expensive from the point of view of CAPEX and OPEX.





The Solution— how does it really work?

WabMAX is a specialized device that enables broadband wireless-access customers to adopt the best possible wireless network on the fly, based on radio coverage, frequency, technology and performance availability and stability.

Whether you are working with a fixed or a mobile wireless environment, when your customers require high network availability, WabMAX provides you with optimal results. WabMAX delivers by adopting multiple wireless networks when available while at the same time maximizing customer-retention and ROI.

WabMAX is composed of a sophisticated software, specifically tailored for the WiMAX and Broadband Wireless-access technologies that run on small-size hardware platforms. WabMAX functions as a transparent Ethernet-layer-2 wireless-bridge, with multiple interfaces. Each interface can be connected to a wireless Customer Premises Equipment (CPE) which in turn has wireless connectivity to a base station. Each of the CPEs can use different frequencies and/or wireless technologies.

WabMAX continuously monitors the status of each radio-device (i.e. operational or not), the device's wireless performance and its coverage availability. If the combined results are below a pre-defined threshold for a CPE-radio, WabMAX switches the traffic to the next best-available network, while actively updating the network elements about the change. The network handover is transparent to the end-user and is performed at Ethernet Layer, which maximizes the handover speed and minimizes the complexity of dealing with Routing and IP addressing.

WabMAX is a small-size computer with multiple Ethernet Ports. WabMAX uses a sophisticated and highly specialized software to enable transparent switching between multiple broadband wireless access devices and networks. The switching decision is based on the signal quality and availability and is transparent to the network on the train. In case multiple CPEs have connectivity, it will be possible for the user to select the priority and thresholds for the switching decision. WabMAX will also perform the necessary network topology updates to keep the broadband wireless network up to date with any handover changes.





ZERO DOWNTIME

Got a special need, need to make sure your network has the right redundancy, ask us how.

SOLUTIONS

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Using GPS - New possibilities

Optional algorithm enhancements are available for mobile applications where the handover decisions are GPS-assisted for increased quality and handover speed. By using the GPS coordinates, the WabMAX can make a predefined judgment on the CPE it selects, based on expected obstacles which can't be anticipated through the analysis of the RF status. One good example could be a twisted train-track or a tunnel down the road, WabMAX is able to use the GPS coordinates received to override the RF inputs and switch to a new base station in order to avoid potential reduction in performance around these extra difficult locations.

Since the WabMAX is able to handle both data and voice, it will enable a reliable connectivity to and from the train. Allowing passengers to surf the web, get engine statistics, speak to the controller or the driver of the train at any time, or even to browse live images from a camera installed at the front of the train are only some of the new possibilities available to railroad companies and/or transportation departments with this product.

Collecting and providing the GPS-coordinates of railroad vehicles to the Network Operating Center (NOC) would also allow for asset tracking. No more trains smashing equipment forgotten on the tracks somewhere: each device would be able to report its location back to the NOC.

Creating maps with the exact real-time location of each and every train is turning into a reality, thanks to the reliability achieved by using the WabMAX and the addition of GPS functionality.

So what is new?

Not much, WabMAX is just making your transportation dreams come true.

