# Enabling Wireless Applications with Wireless Adaptive Bridge

## WabMAX

Whether you want to provide always-available Internet access to transportation customers, connect or monitor a ship offshore, or control a huge mining truck via GPS, WabMAX allows you to handle these complicated situations and smooth the traffic of information between your base-station and your vehicle.

What if your vehicle, no matter what size, shape or form, could stay connected everywhere, all the time, at any time? Knowing where your vehicle is or the route it took could increase your operational efficiency.

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.

Offshore wireless connectivity is a tool that allows you and your team to get or send important data in real-time, surf the Web and send or receive emails. However, deploying the wireless infrastructure is only the first step in order to get your team connected.

Have you considered everything? 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 network device that helps you reduce the size and the cost of your infrastructure by smoothing the handover between base stations over multiple technologies. With WabMAX, you will be able to deploy one or more subscribers on your large vehicle, use more than one technology or frequency and choose in real-time which subscriber will connect to your network.

Suppose you need to monitor the location of a fire-truck or an airport suitcase-carrier. If you were to connect one radio with an omni-antenna, you would quickly realize that very few technologies actually allow for full mobility of the connection. Furthermore, the technologies who do allow full mobility require many base stations in order to enable both full area coverage and high capacity transmission. WabMAX allows you to enjoy both worlds, get your capacity and the range.

# WabMAX Helps you Mine

AlphiMAX's WabMAX product 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.

WabMAX's can be frequency agnostic and allows you to use it throughout your worldwide operations, knowing that whatever local frequency regulations you face, you will always be able to use the same solution.

Using WabMAX would allow you to connect more than one radio on the platform and enable you to use directional antennas that would increase your range.

## The challenge

Effectiveness in the mining field is quickly translated into revenues. The ability to reliably communicate with a huge 623 ton dump truck, whose mere tiers cost $40,000 each, is extremely important. No wonder that none of the standard off-the-shelf wireless technologies can meet the high standards required by the mining industry. The ability of the wireless equipment to properly handover between base-station sites is critical when envisioning remotely driving these giants. Handover of the traffic from one tower to the next is no easy task, especially when the antenna located on the truck can be obstructed by the huge volume of the vehicle or easily broken if placed in a more strategic location.

## The solution

AlphiMAX Inc., with it's *WabMAX* product, closes the gap with a unique software that evaluates the RF conditions of several 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 the system more robust to changes in its surroundings, since different technologies can be affected differently by their environment.

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

# WabMAX increases your offshore productivity



In projects where customers demand high network availability with either fixed or mobile wireless access environments, WabMAX provides optimal results by adopting multiple wireless networks.

Got a large vessel, like the one shown above? can't make sure that one CPE will provide you with connectivity across all sea conditions and ship heading? WabMAX connects your multiple CPEs, whether aligned in different directions, set at different elevations or just located on two sides of the vessel. With WabMAX, you can avoid no-line-of-sight (NLOS) conditions created by large structures onboard your ship.

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 connect 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.
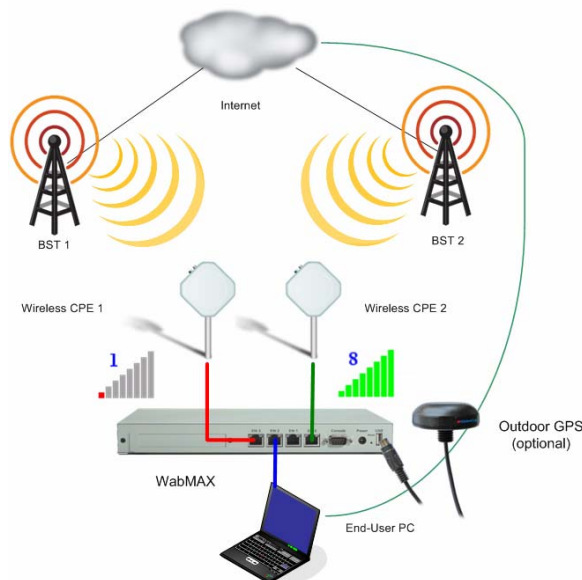


WabMAX continuously monitors the status of each radio-device (i.e. operational or not), the device's wireless performance and its coverage availability. If the combined results are below a predefined threshold for a CPE-radio, WabMAX switches the traffic to the next best-available network, while actively updating the network elements about the change. The network handover is transparent to the end-user.

WabMAX uses a sophisticated and highly specialized software to enable transparent switching between multiple broadband wireless access devices and networks. In case multiple CPEs have connectivity, it will be possible for the user to select the priority and thresholds for the switching decision.

# 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 mountainous road or a tunnel. WabMAX is able to use the GPS coordinates received to over ride 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 vehicle. Allowing the crews to surf the web, get engine statistics, Weight statistics or drilling information at any time, or even to browse live images from a camera installed at the front of the truck are only some of the new possibilities available with this product.

Collecting and providing the GPS-coordinates of vehicles to the Network Operating Center (NOC) would also allow for asset tracking:  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 vehicle 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.