



# Asentria® | Leading WiMax Provider Gets Proactive With Base Transceiver Station (BTS) Monitoring

**Asentria provides a versatile monitoring and control system which is ideally suited for assisting and maintaining the uptime of WiMAX deployments**

In the high-stakes battle of Internet providers, WiMAX represents the latest technology to challenge DSL and cable technologies. This new wireless technology is gaining attention for its ability to provide high-speed, high-throughput broadband connections over distances of up to 30 miles instead of a few hundred feet.

A leading provider of WiMAX high-speed Internet service to residential and small business customers in North America, with service in 46 markets covering more than 400 cities and towns, quickly discovered the benefits of proactively monitoring, accessing and controlling remote equipment, DC power and environmental conditions.

## THE PROBLEM

As with any network service, unplanned remote site downtime due to equipment and power failure, and adverse environmental conditions can severely impair network service. When designing their remote site infrastructure, one of the biggest challenges this WiMAX service provider had was the maintenance of continuous and economical service regardless of the myriad of potential problems in such a complex network.

With an array of remote communication towers linked to their main communication hubs in each service area, every market has dozens of remote sites that are vulnerable to lightning strikes, heat, wind, and various other conditions or equipment failures that can cause outages or reductions in service quality.

For this WiMAX service provider with thousands of remote sites, any outage would mean that a legion of technicians in service trucks must roll to the remote locations. They viewed this as an enormously expensive and time-consuming "reactive" strategy that could impact the price, reliability, and consumer perception of their new WiMAX service. As WiMAX is considered a new technology by consumers relative to DSL or cable, it is imperative that quality of service be as high as possible.

To avoid physical site visits, the WiMAX operator wanted their deployed base transmission sites to have the ability to remotely cycle DC power of individual devices when equipment would freeze. Since equipment within the base transmission sites is responsible for providing communication back to the Network Operation Center (NOC), it was also important for them to have an Out-of-Band method of connecting the NOC to the remote BTS locations in case the primary communication equipment caused this link to fail. This is imperative to allow the NOC to fulfill its role in managing the health of the network. Also required was the full-time monitoring of cabinet entry and environmental events, as well as protecting and managing the devices within the cabinet. Most importantly, they wanted the ability to remotely handle all of these functions through SNMP (Simple Network Management Protocol) over a private IP network to enable the direct control necessary to ensure reliability.

Realizing that providing all of this functionality typically grows rapidly into an expensive proposition, thereby threatening the competitive pricing they needed to offer, they searched for a vendor that could provide the necessary monitoring, access and control functionality within a cost-effective package.

## THE SOLUTION

They chose Asentria, and initially used Asentria's SL81 units, plus a subsidiary Asentria DC switching device called the PB-1. This pair of devices enabled the provider to conduct DC switching for up to eight devices within the remote

BTS locations, monitor environmental variables, and to gain remote Out-of-Band access to the BTS locations via a POTS dialup modem.

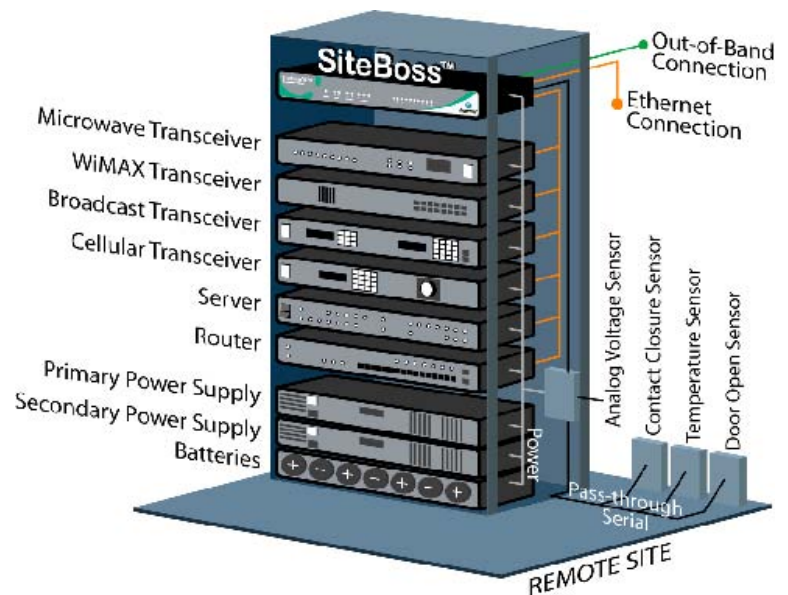
After successfully deploying Asentria's SL81/PB-1 solution to hundreds of BTSs, Asentria set to work creating a next generation product that would encompass the functions of both the SL81 and the PB-1, plus address additional needs identified from the experience gained in the initial roll-out. Asentria's development and manufacturing teams set out on a mission to create a more capable single hardware device, ideally suited for BTS and other small location monitoring. The mandate was to create a smaller, less expensive, multi-functional and more powerful device.

Based on the Linux operating system, the new SiteBoss 571 (S571) device uses only 1U of rack space, provides 10 DC relays capable of switching 10amps at -48VDC. It provides both In-Band and Out-of-Band access to as many as 16 serial devices.

The experience in the WiMAX deployment process led Asentria to add an SD slot to enable field technicians to more easily service units by using the SD cards to upload or download data from the S571. The S571 is also designed to scale for larger, more centralized Point-of-Presence (POP) locations. The WiMAX service provider is also using the S571 in their POPs throughout the country.

Support of Asentria's "EventSensor" products enables the S571 to support PB-1 external DC switching devices in order to switch up to 138 DC relays at a single site. The S571 is also capable of controlling external relay devices that can switch up to 100amps at -48VDC.

There was a strong focus to utilize the new Linux operating system in the S571 to increase the power of the unit as a utility for NOC personnel to troubleshoot problems at a remote site. A second Ethernet port was added to improve the troubleshooting capability of the device through port mirroring and packet capture. Frequently a BTS might experience problems that are more related to a degradation of service, rather than a complete failure. The S571 is designed to assist NOC personnel in eliminating these problems. Advanced passive logging capabilities



Example of the WiMAX service provider's cabinet with Asentria's S571 Remote Site Controller



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allow the S571 to track and store records of service personnel's remote access and activity to determine if human error is responsible for problems.

## BENEFITS

Asentria's S571 controllers have been able to prevent damage to costly equipment, and prevent expensive "truck rolls" for service calls. Decreased downtime at the WiMAX sites has also improved the operator's service quality to their customers.



SITEBOSS 571

As you can imagine, this is a particular concern for operators deploying new technologies such as WiMAX.

Asentria's S571 controllers improve reliability and reduce costs. Reliability is improved in three primary ways:

- 1) Using a wireless modem, even if primary communication is lost to the BTS, the NOC can still access the BTS via Asentria's Out-of-Band methods to reboot equipment, and try and correct a problem. This access enables communication to the various equipment within the BTS cabinet to try and determine where the problem lies, without the delay and expense of service technicians to arrive at site.
- 2) Asentria's S571 DC relays allow for equipment that are "hung-up" to be rebooted almost instantaneously, often before customers would even notice a loss of service.
- 3) The S571 Linux operating system and multiple Ethernet ports that allow for packet capture and port sniffing enable the NOC to troubleshoot more insidious problems such as loss of performance.

## COST SAVINGS

- Asentria remote site monitoring devices help centralize problem solving, enabling the NOC to more fully utilize fewer, more highly trained personnel, rather than less sophisticated field technicians.
- Asentria remote site monitoring devices help prevent "truck rolls", first giving the NOC a chance to solve problems remotely, and secondly, if a truck roll is still necessary, helping prepare the technician in advance for the problem at the remote BTS.
- Higher reliability improves a service providers overall reputation, and prevents loss of customers due to a perceived lack of reliability.

## SUMMARY

Today's networks have evolved into business-critical services that individuals and organizations rely on every day. WiMAX is a new technology relative to DSL or cable, and therefore, it is imperative that quality of service be as high as possible. Unplanned downtime at remote Base Transmission Sites due to equipment and power failure, and adverse environmental conditions can severely impair network service.

One of the biggest challenges to service providers with advanced WiMAX operations is the maintenance of continuous and economical service regardless of weather conditions and power irregularities or outages. Asentria provides a versatile monitoring and control system which is ideally suited for assisting and maintaining the uptime of WiMAX deployments.

Asentria brings the remote site environmental conditions, and the often complex array of heterogeneous equipment within reach of the network administrator, by enabling them with proactive monitoring, access and control. Our intelligent remote site monitoring solutions alert network IT personnel of problems; locate the problems, route alarm information directly to the people who need it, and, automatically correct problems. These capabilities help make the difference between an inconsequential event and critical downtime.

## ABOUT ASENTRIA

Asentria develops remote site monitoring and telemanagement solutions that enable providers of critical communications infrastructure to more efficiently and reliably run their networks. Asentria's products help ensure quality of service and lower operational costs, while making it easier to provision, maintain and support remote equipment. Our strategic solutions fit both large and small communication networks and provide high-value, cost-effective and competitive differentiators to our customers.

Asentria helps administrators cost-effectively manage their call reporting data and remote site infrastructure, while extending confidence and security to ensure availability, integrity and performance. Asentria enables administrators to avoid failures from poorly performing equipment that threaten end-user service expectations, while providing better control to predict the performance of remote infrastructure. These new levels of protection shield end-users from remote site equipment failure. Our service provider and enterprise customers trust their remote equipment sites to Asentria. The company is headquartered in Seattle, Washington. For more information go to [www.asentria.com](http://www.asentria.com).

## ACCESS

The need to re-provision equipment to restore communications especially at remote locations is often difficult and costly to service. When it comes to remote access, traditional network management systems often fall short because they only work in-band, or over the main connection. If that connection goes down, that site goes down, and no alarms and management data will be collected or reported. NMS also lacks the control and automation capabilities to correct problems without manual intervention. A support technician must still be dispatched to solve the problem, which can take hours or even days, depending upon the location and availability of the technicians. Traditional in-band software solutions are limited due to their dependence upon the underlying network being up and available in order to function. By contrast, existing out-of-band technologies, such as terminal and console servers, provide local access via serial connectivity to networked devices. However, they lack robust management capabilities, such as automated maintenance and recovery.

Asentria provides secure dial-up phone, wireless modem access and Ethernet via VPN for secure login and encrypted communications to Asentria devices and other serial connected equipment. Asentria products are designed to reduce the dependence upon IT personnel to physically maintain, troubleshoot, and configure distributed network devices. Our products are co-located with WiMAX transceivers, routers, switches, and other equipment to overcome traditional remote support barriers, delivering proactive out-of-band communications to complement and integrate with existing in-band network monitoring systems.



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## CONTROL

Minimizing or even eliminating truck rolls saves you time and money, while keeping your customers satisfied. Asentria's control capabilities allow you to remotely send commands to enable or disable power plants and relay switches, change equipment configuration parameters, connect remote users to restricted ports, collect, buffer and securely transfer data, and much more. Asentria's products use your existing dialup line for phone or wireless modem out-of-band control, or your communication network for in-band power cycling control and reboot for transceivers, servers, routers, A/C power, and much more. Our SiteBoss™ products enable you to control remote equipment using telnet, phone, modem, and serial ports.

## COLLECT

Asentria remote site monitoring products collect device and alarm data from status logs generated by monitored equipment. Asentria products help to prevent loss of call data from legacy PBXs and IP telephony switches to call reporting applications. For PBX data collection we enable Data Filtering, IP Record Collection (IPRC), and SNMP Trap Capturing.