

TECHNICAL CASE STUDY

INCREASING NETWORK RESILIENCE AND EFFICIENCY FOR 18K SITES FOR A US MOBILE NETWORK OPERATOR

Increasing Network Resilience and Efficiency for 18K Sites for a US Mobile Network Operator

The customer is a North American mobile network operator with remote cabinet sites implemented nationwide. Their plan was to build a very large network, deploying Asentria's devices as the network itself was deployed. It was a cabinet solution, so Asentria's products were designed to be integrated into cabinets in an integration facility before being sent to individual locations for deployment. The client's main interest was in Asentria's ability to do DC reboot and provide cellular wireless out-of-band coverage.

As often happens in large projects, Asentria tailored the application to fit the need. Asentria designed new DC reboot peripherals initially, and over time finally created a new product, the S571, as a specific TRU integrated power distribution unit and remote access device.

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Customer Challenge

As the client was preparing for the network's deployment nationwide, they thought ahead to potential issues that might occur in operating such a large network. As it was a new network, they were looking at field staffing issues and if there were ways to cover more sites with fewer field staff. In most networks, some equipment problem at a remote site would be resolved with a truck roll. They were searching for ways to operate more efficiently and allow fewer service people to cover more sites. It was also important to them that any network outage is corrected as soon as possible. Particularly with service staff covering larger numbers of sites, some sites were many hours away from the nearest field service personnel.

After deployment had occurred, an additional issue occurred during the winter in the midwest where AC grid power was lost and site batteries fully discharged, leaving the sites in a powered down state. When the grid power was restored some equipment was damaged due to the equipment being powered on while still being extremely cold. Asentria's mission was to provide solutions for remote control of the site's power systems with extensive remote visibility for the customer's network operation center.



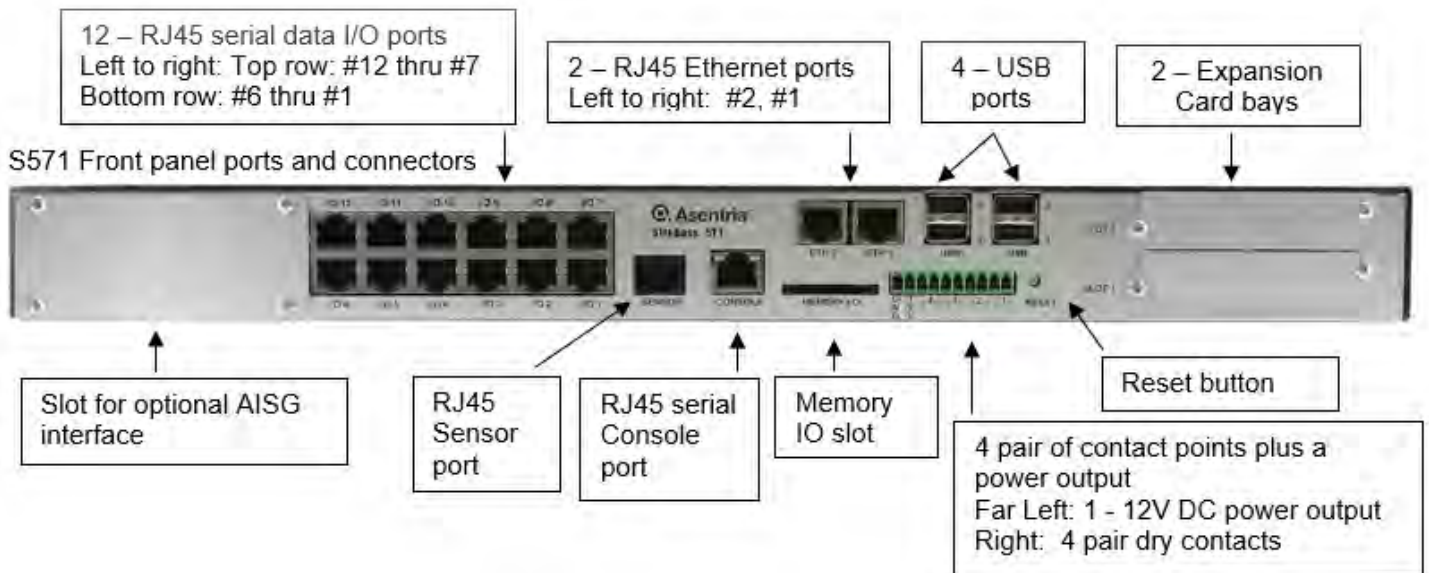
Objective

The Asentria SiteBoss S571 devices ensure full remote cabinet monitoring and control which means that these units not only act as a DC power distribution unit, but they also act as an intelligent means of power cycling devices attached to its power outputs to provide reboot ability for equipment experiencing problems in remote locations. On top of this, they also provide connectivity to remote sites via the optional on-board wireless modem, allowing for out-of-band connectivity to the remote location should a primary connectivity method fail.

The following variables and functionalities had to be measured and integrated by Asentria’s solution (SiteBoss S571):

- ➔ High-Current DC Power Outputs
- ➔ Expansion Card Slots
- ➔ On-board Temperature Sensor
- ➔ On-board ES/ESJ Port
- ➔ Ethernet Ports
- ➔ On-board Contact Closures
- ➔ Intelligence to query other devices via SNMP

(Example of a SiteBoss S571 front panel shown below. More details and options can be viewed in the Support Product Portal).



Solution – Dual Deployment

The client decided to adopt a proactive strategy, to prevent any of the potential issues they considered initially and to reduce the overall field service personnel. They chose to deploy Asentria's S571 Linux-based units at the same time as the network's deployment. These devices use only 1U of rack space and provide up to 12 individually controllable DC power distribution outputs. They deliver both in-band and out-of-band access to as many as 16 serial devices for troubleshooting. Asentria's Technical Services department managed deployment of the SIM cards used in the deployment.

In an early example of telecom site automation, Asentria's engineering team created a power systems management solution, initially thought of as a shut-down process, but eventually referred to as "Load Shedding". The SiteBoss unit continuously and autonomously query the rectifier for the presence of AC grid power and the state of battery charge as well as monitored the internal cabinet temperature with the SiteBoss' own temp sensor.

When the SiteBoss detected that the AC grid power was lost and the batteries fully discharged, the SiteBoss shut itself down with its relays in a state prepared for AC power to be restored. Once power was restored to the SiteBoss (which has a wide operating temperature range), it then powered up the site heating equipment. Once the temperature was above a certain level, it began to restore each additional site device in a timed and logical order.



Customer Benefits

- ➔ Gain remote out-of-band access to cabinets using an optional wireless modem with GPS Support
- ➔ Manage and monitor up to 12 non-networked serial devices
- ➔ Control other network equipment using IP Routing via Ethernet or wireless modem connection
- ➔ On-board contact closures
- ➔ Web interface for easy configuration
- ➔ Powerful on-board scripting capability for customization of unique applications
- ➔ Maximize traffic efficiency & administration flexibility with 802.1Q VLAN support on both Ethernet ports
- ➔ Connect up to 16 remote EventSensor™ modules to add I/O ports.
- ➔ Wide operating temp range (-40 to +45 C)
- ➔ Send alarms via pager, email, TCP Alert and/or SNMPv1 and SNMPv3 traps, and SNMPv2 Informs



About Asentria - Asentria is a 30-year-old company based in Seattle, Washington, and has multiple hardware deployments of 10,000 or greater sites in the largest mobile network operators worldwide.

