

Always Up Broadband Satellite Networks

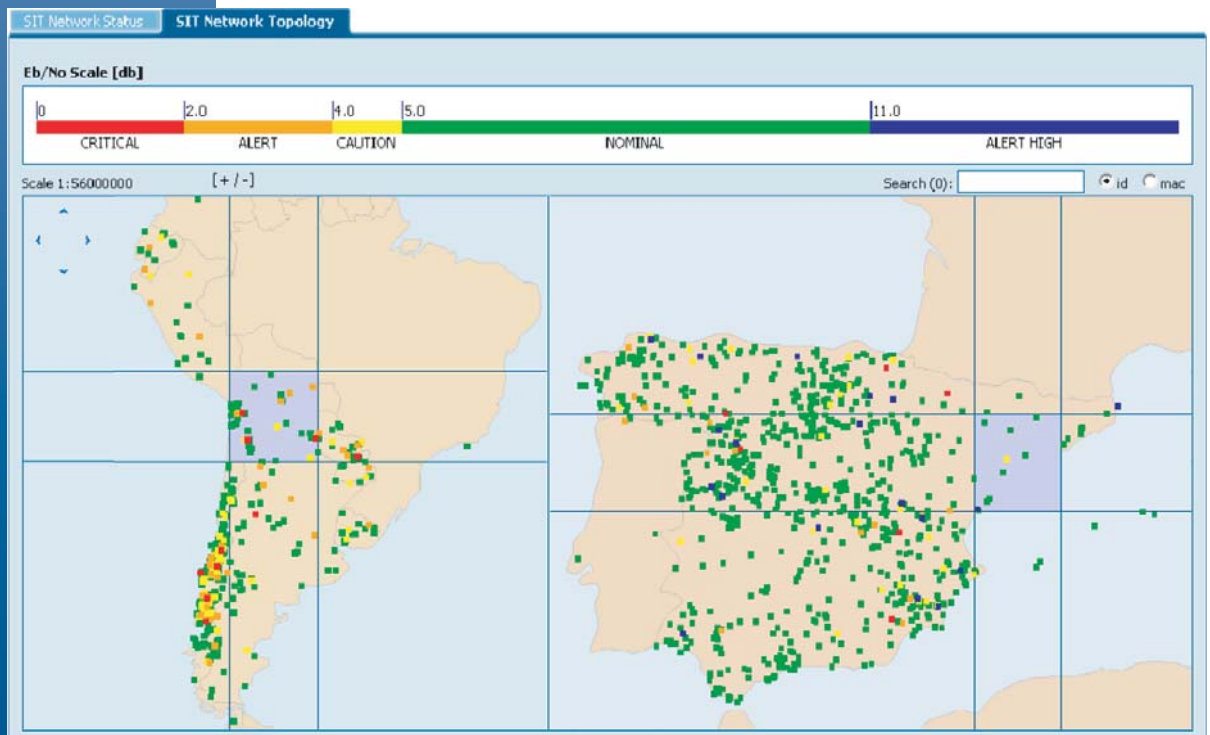
Who can benefit from ALUSAT?

Current Network Management Systems assume that RCSTs are reachable and aim to optimise network performance or detect RCST malfunctions based on RCSTs feedback. However, disarrangements at customer premises (e.g. antenna de-pointing) or signal level variations due to atmospheric conditions not successfully fixed by mitigation techniques, usually result in RCST connectivity break and a visit of maintenance staff to customer premises.

The ALUSAT product at a glance

ALUSAT aims to optimise the operation of 2-way satellite networks by enabling maintenance procedures which minimize operational costs caused by service failures, thus maximising network availability.

ALUSAT combines traditional equipment management with spectrum monitoring and measurement in a new way to accurately derive the RCST status and recover, under certain conditions, out-of-service or service-degraded RCSTs.



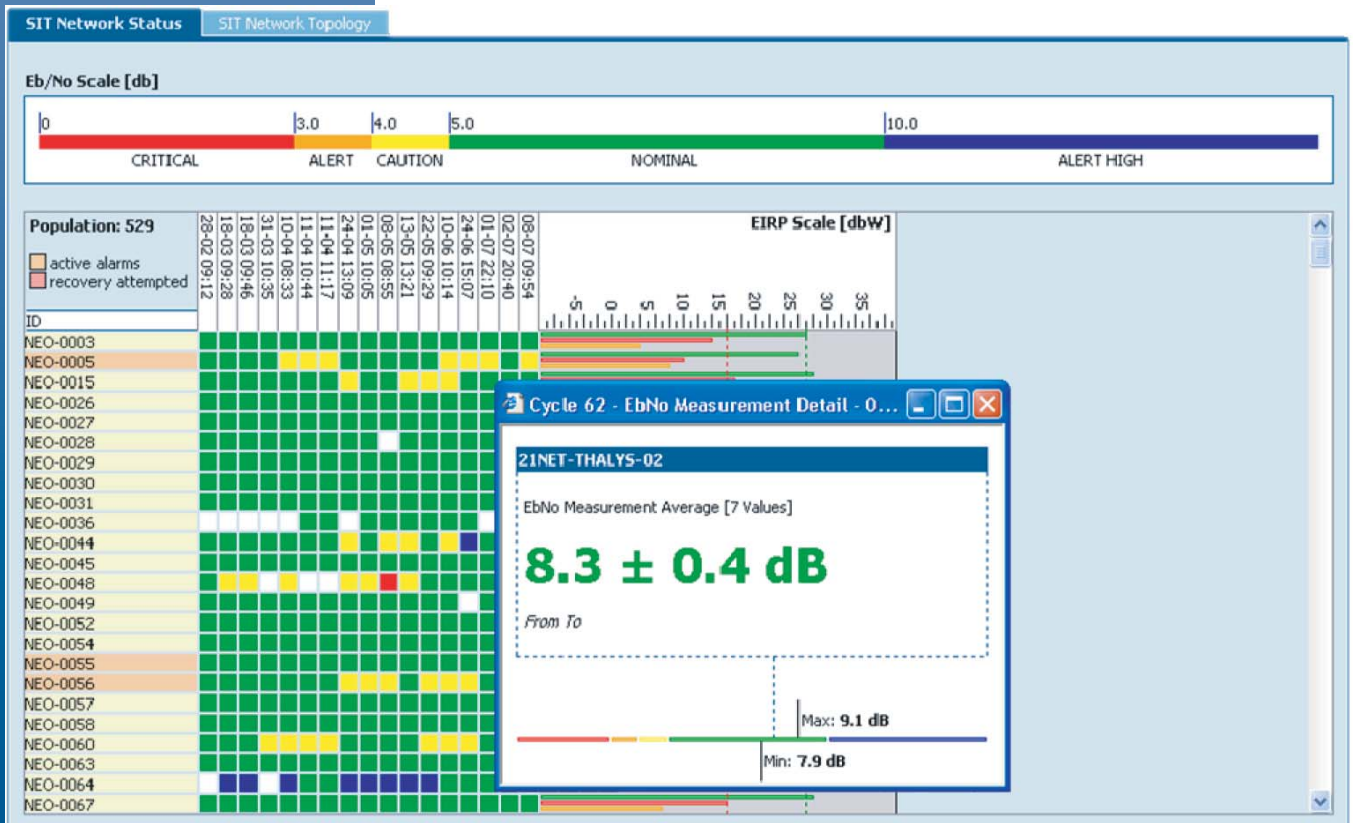
Features

ALUSAT implements the key functionalities of a Network Management System for Broadband Satellite Networks. Deployed at the Networks Operation Center (NOC) site, it automatically checks the uplink and downlink health of the RCST population at radio level, collecting additionally relevant configuration and performance information.

Special attention is paid to the transmit capability of the RCST, which is much more prone to disarrangements than the receive one due to the higher precision required for antenna pointing in order to achieve the required link quality.

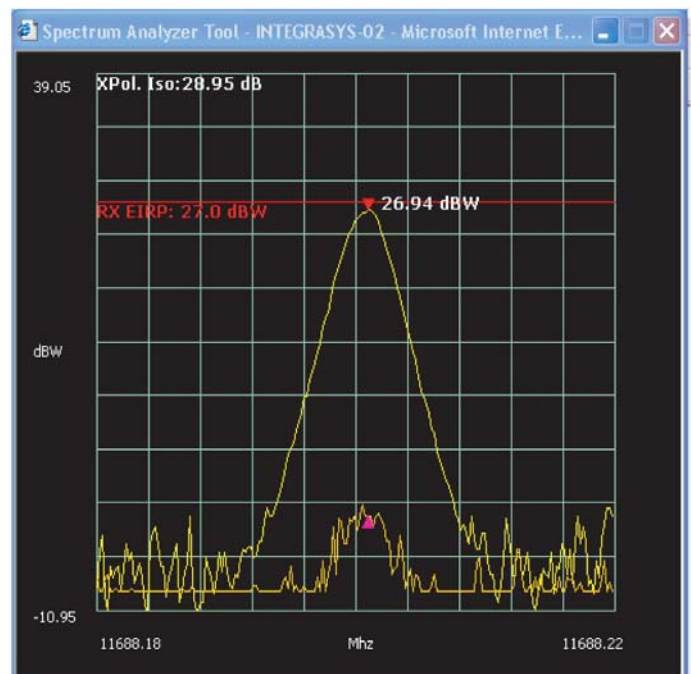
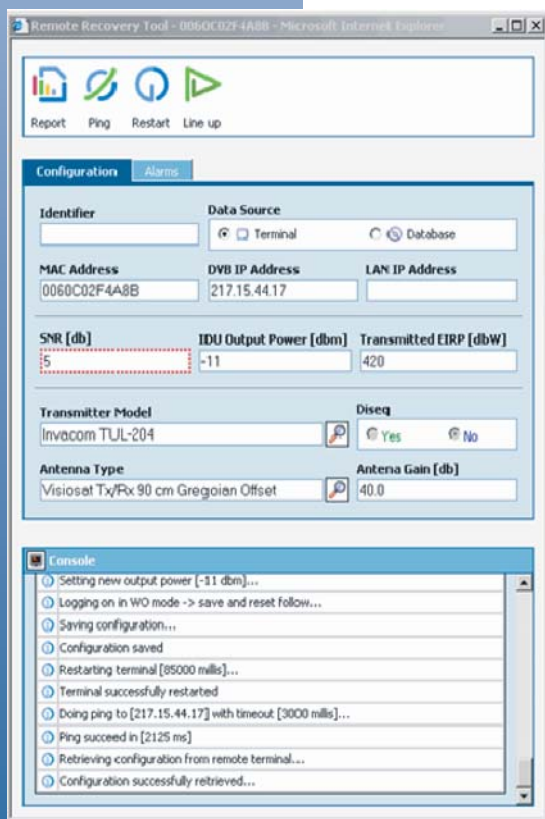


The key parameter to determine the health of a satellite terminal in ALUSAT is the Eb/No value measured of the uplink. Such a figure provides a meaningful indication of the current link quality seen by the terminal.



Management planning in ALUSAT refers primarily to the establishment of different thresholds for the Eb/No parameter used to classify the terminal status and determine further actions to be run over it. The operator designs and parameterises these policies according to the maintenance decisions and requirements in order to automate the actions he would otherwise perform manually.

The primary networks targeted are low cost broadband satellite networks with sub-optimal terminal components (prone to disarrangements/degradation), which are expected to support large subscriber communities with affordable services.



The ALUSAT maintenance routine checks sequentially all of the terminals in the target community to detect failures, raising conveniently alarms and performing, if configured to do so, some tentative recovery actions on selected terminals. In addition to current Eb/No values, the routine uses historical information from previous monitoring cycles from the ALUSAT database, including Eb/No measures, raised alarms and RCSTs excluded from ALUSAT procedures.

The operator-guided console enables the NOC staff to manually configure, execute and control the tentative recovery operations implemented in the automatic routine, with helpful online diagnosis messages reporting on the ongoing operations.

The recovery process implemented in ALUSAT has been able in systems tests to bring back to correct operation failing terminals with downlink SNR as low as 5 dBs.

ALUSAT is a fully open solution, based on programming, information and communication standards, COTS equipment (computing and instrumentation), and independent of hub/terminal manufacturer and satellite access method.

The key features of the system are:

- Combination of terminal management and spectrum monitoring and measurement. Straightforward integration with the SATMOTION system.
- Automatic checking routine for fault-finding and accurate problem diagnosis, which enables guided procedures that allow minimum skilled/trained engineers intervention.
- Powerful terminal recovery tools for network operators.

*B*enefits

ALUSAT allows network operators:

- To monitor automatically and more frequently required RCST parameters.
- To focus attention on those RCSTs experiencing continuous and relevant service degradation, using proper time correlation. In this way, we can dismiss spurious RCST outages (e.g. due to heavy rain) and also detect relevant RCST failures otherwise obviated by manual procedures. These obviated failures could be seen as not critical at a given point of time, but they could result in significant degradation in the medium-term, increasing terminals failures in average due to lack of timely detection.
- More powerful tools to remotely recover failings, by running a remote alignment procedure of terminals in CW mode with real-time spectrum.
- Web-based graphical interface. Monitor and control the RCST network from any computer connected to the ALUSAT system without further installation requirements.

In addition, ALUSAT assures quality-controlled network grow with current NOC resources, avoiding extra investments. In this concern, ALUSAT implements automatic detection and incorporation of new terminals installed in the network.