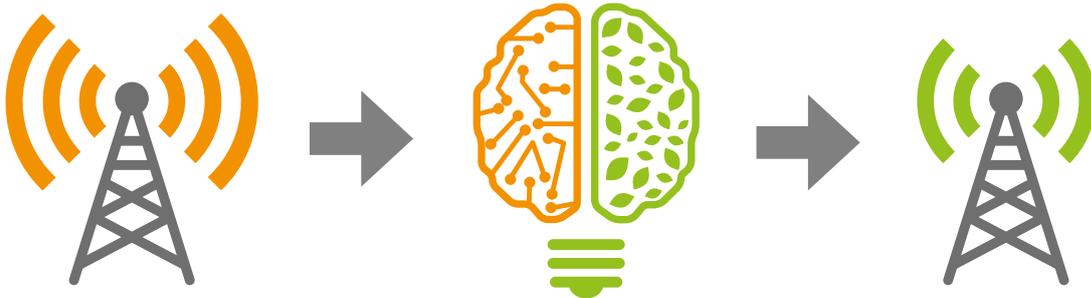




2solve

Energy Consumption Optimization

Use AI to unlock energy reductions in RAN operations



Accelerate transition towards a sustainable and greener profile by energy optimization in RAN

New ways for mobile operators to face energy consumption challenges

Reducing energy consumption and carbon footprints have become a worldwide focus as part of greener company profiles and operating protocols.

Energy consumption by base stations contributes significantly to high mobile network operating costs, and Radio Access Networks (RAN), account for the majority of the power consumption involved. And RAN operating costs are expected to increase even more as 5G rolls out and more frequency bands become available in 4G.

One of the most effective ways to save energy in such network operations is to turn off any unnecessary equipment during off-peak hours, making sure the network only uses the minimum energy required to maintain a high-quality service.

2solve ECO-RAN raises the bar compared with existing solutions by addressing this key element of energy saving as a data-driven optimization system. It does this by forecasting traffic demands, calculating the best combination of network elements that can be deactivated when traffic is low, and by automatically re-configuring the network “on the fly”.

AI and data-driven power optimization

2solve ECO-RAN takes advantage of the data sources already available in the 2solve Operations Support System (OSS) portfolio by combining them with advanced AI optimization algorithms and knowledge about RAN configurations in order to make energy demand forecasting more accurate. This breakthrough solution is specially designed to address the practical operating realities encountered in modern heterogeneous mobile networks that feature complex combinations of network infrastructure elements, along with numerous parameter settings.

By adding an extra layer of software intelligence derived from a combination of knowledge, experience and automated reasoning, 2solve ECO-RAN is able to predict low-traffic periods and identify network elements that can be entirely or partly deactivated in order to reduce energy consumption. After analysing, understanding and drafting a strategy for defining these low-traffic periods, the system then automatically generates configuration files that can be downloaded to the RAN.

In addition, if different power sources are available in the base stations, it's easy to achieve more reductions in energy-related operating expenditure by dynamically selecting the most energy-efficient primary source at any given time.

Energy Consumption Optimization

This intelligent software solution supports complex business rules and advanced functionality for real-time service quality assurance by preventing deactivation in areas subject to traffic congestion as well as providing intelligent features for suggested energy-saving measures. Because traffic load characteristics vary over time, this also involves in-depth examinations of historical network data to determine traffic patterns – taking into consideration unusual traffic during nights, weekends, holidays and special events in order to prevent any negative effects on the Quality of Experience (QoE) for end users.

2solve ECO-RAN also monitors a range of different performance parameters, either by manually observing how the business rules impact existing network services or by implementing AI-based self-learning mechanisms in which outcomes progressively improve over time. This AI-based tool also provides self-adaption capabilities in which the network infrastructure upgrades itself automatically, doing away with the need for numerous costly manual adjustments as the network evolves.

In addition to the power-saving predictions, the optimization algorithms are able to help to identify areas in which the quality of service could be improved by optimizing interactions between neighbouring cells and/or the deployment of new equipment.

Smooth integration

2solve ECO-RAN consists of a toolbox of optimization algorithms that automatically identify the best possible RAN configuration at any given time. It is designed for seamless integration into any OSS. The interfaces for input as well as output are designed in accordance with 3GPP standardization, making it simple and cost-effective to integrate and maintain them.

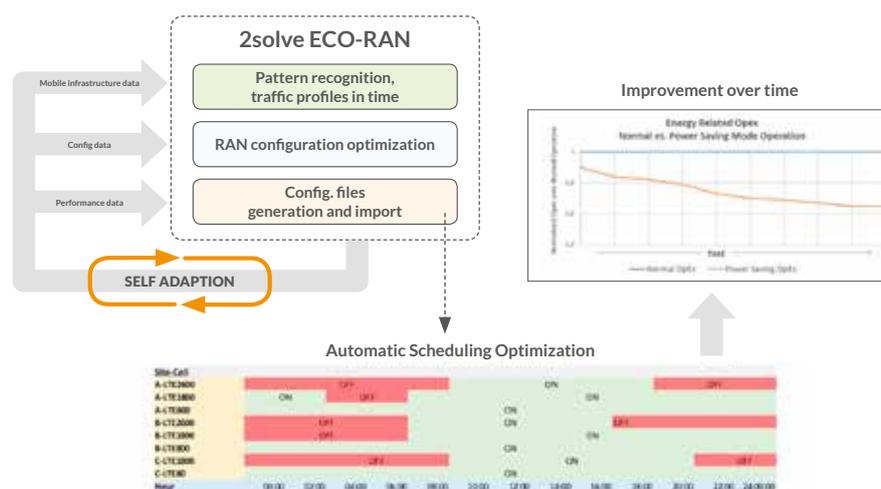
The processing power required to run the ECO-RAN algorithms can be either placed within the operator's own IT infrastructure or within an independent cloud computing system.

2solve ECO-RAN in a nutshell

2solve ECO-RAN is an easy-to-use, fully automated tool that supports configuration files for multi-vendor technology. It also:

- ✓ Ensures the dynamic integration of customized network configuration profiles
- ✓ Enables mobile operators to predict energy consumption profiles
- ✓ Ensures intelligent alignment between capacity supply and quality-of-service demands
- ✓ Provides significant OPEX savings by making sure less energy is used in mobile network operations

How does it work in practice?



2operate develops and delivers breakthrough software solutions for mobile and satcom service providers to use in operations-critical configuration, management and fault-findings setups. Our expertise is within the field of OSS incl. Performance Management, Fault Management, Site Configuration Management and Green Energy Solutions.

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