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Geolocation

Usage and benefits for
Network Optimization

What is Geolocation?

The possibility to find the exact location of devices is known as geolocation and it uses algorithms and position methods to find motion or stationary objects with the generation of a set of geographic coordinates.

Location engines often use radio frequency (RF) location methods, such as Time Difference Of Arrival (TDOA) for precision, which uses mapping display or other geographic information systems. When GPS signal isn't available, cell towers information can be used to approximate the position, without the same accuracy as GPS.

The techniques that are used in this location finding process can have different natures:
- Technological: beacons, satellites, cellular networks.
- Data Source: handset or infrastructure.

Telecom engineers can then get data faster and more assertively, reducing time to problem solving and data collection and improving quality and assertiveness in the network optimization process.

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Benefits of the usage of geolocation

Using geolocation data in the network monitoring and optimization can bring a set of benefits, included:

- Greater assertiveness of data and accuracy, which assists in solving key problems, ensuring the necessary attention at the most important points where network problems are identified.

- Assistance in network planning and optimization, ensuring that the areas with the greatest demand are met efficiently and correctly.

- Reducing the time for data analysis to identify problems, producing better and faster perceptions about network performance and the possibility of improvements.

- Increasing the value added to the service and customer service, in addition to faster and more assertive improvements in the network system.

- Development of maps for better visualization of data and identification of critical regions.

Geolocation for Mobile Networks

There are many benefits in the use of geolocation for telecom industries and some of them are:

Improve small cells management:
In order to provide a better return on investment (ROI) of small cells, geolocation makes it easier to analyze great areas to find out where there is the need to install new small cells to leverage the capacity and coverage.

Facilitates new technology introduction:
The introduction of new technologies can be accelerated by the use of geolocation, once it can set the ideal VoLTE in each area, in order to provide the best network performance. Geolocation can also help in resolving troubleshooting by identifying areas that need support.

Improve the efficiency in the network investment:
In order to get a better network investment, geolocation can be used in the planning process, for instance in deploying new sites, maps can show the areas with bad coverage, indicating where the signal needs to be improved. In the validation process, geolocation facilitates the Single Site Verification (SSV), using data of real customers to accelerate the "site-on-air" time.

Better network optimization
With geolocation maps, engineers can have a better analysis of the status of the network based on areas rather than cells. This can show where they need to improve the customer's experience, optimizing the analysis time of the optimization team.

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Optimize areas with diverse traffic profiles:
Geolocation maps have advanced filtering capabilities, which can be used to optimize scenarios with traffic mix. Also, areas like railways and roads can be monitored with this performance maps

Reduce drive tests:
Geolocation has a series of advantages with a low cost for drive tests like instantaneously data availability, reproduction of the conditions of failed calls, adaptable for indoor or outdoor areas and 24/7 basis.

Track IOT devices and mobility
Monitoring devices in the internet of things era, adds value to the services offered to the customers. Geolocation and mobility in low-cost IoT is an important differentiator.

Enrich customer care
With the support of a map, customer care can have a better view of the customers' needs and get to a better and faster solution. Geolocation improves the MTTR while reduces the costs in reproducing customers problems.

Increase revenues:
Geolocation can provide better subscriber mobility information, geolocating high revenue hotspots (roamers, VoLTE subscribers, fleets, etc.), determining the customer experience in these areas.

NetGeo

NetGeo is a vendor agnostic, multi access technology platform designed for analysis, troubleshooting and optimization of Mobile Networks with data gained from more than 100,000's subscribers devices.

Using NetGeo, optimization engineers can analyze crucial information, such as signal strength, interference and call events (dropped calls or setup failures) for a specific cell or area. Tricky areas, such as overshooting cells, misaligned sectors and swapped feeders, are automatic and easily detected. Key features, such as data usage and/or smartphone type distribution, can use maps to help optimization teams make better informed decisions when optimizing the network.
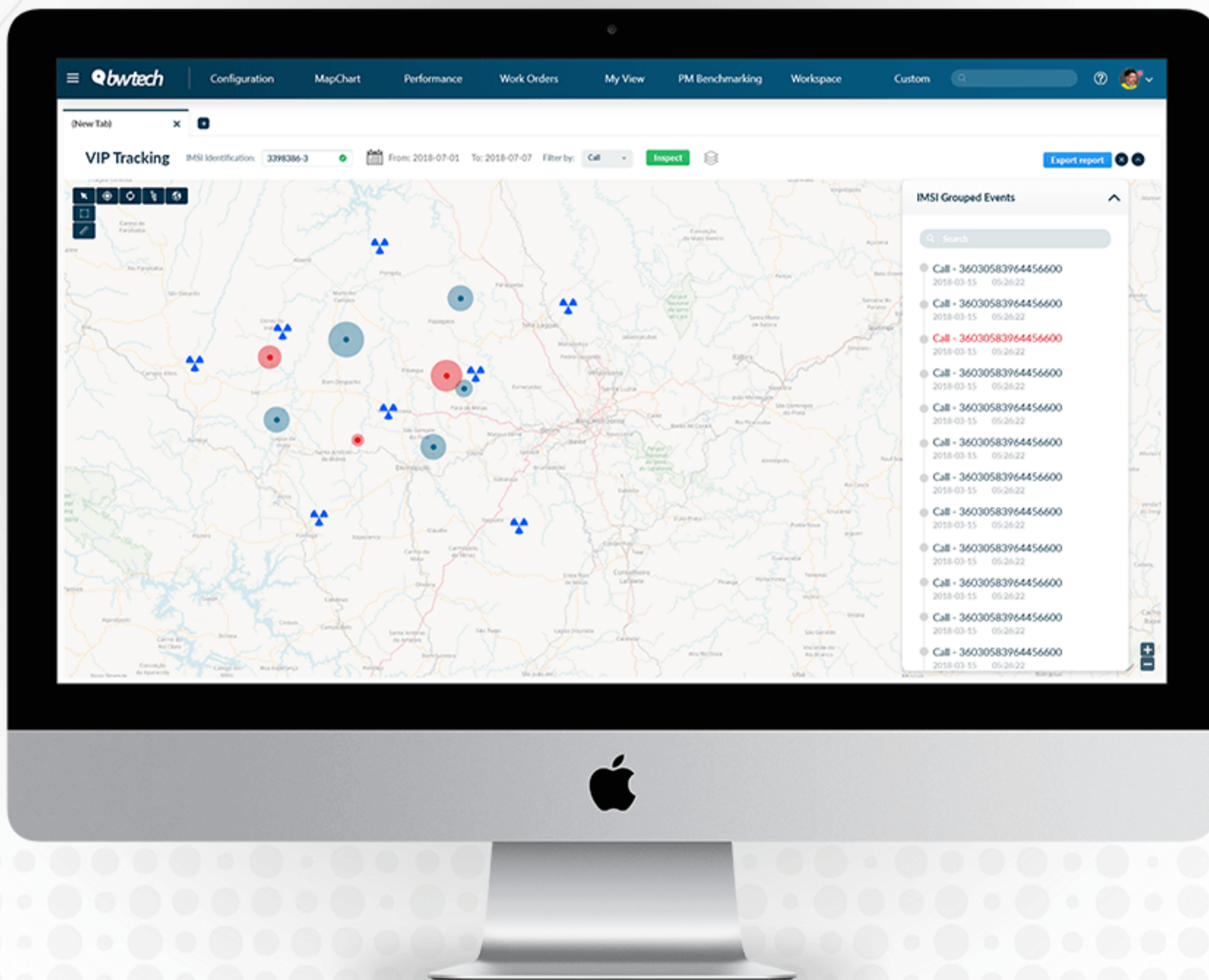
Key Features:

Coverage maps and cell footprints:
Colored maps are displayed for selected areas, selected group of cells or single cell, the RSCP and Ec/No

Pilot pollution maps
Interference analysis is available with pilot pollution maps. The number of polluters per square can be shown or pilot pollution probability per square colored maps are available.

Event maps:
Events detected in the log files are presented on a map as symbols and they can be customized, as well as colors. Different events can be all displayed at the same time and area or cell selection is possible.

Event density, throuhgput and traffic volume maps:
All detected events can be aggregated and presented as colored square maps. All colors and scales are fully customizable. Packet traffic, volume maps and throughput maps are also available.

Key Features:

Cell lines:
It gives the information related to the event's origin cell. Detailed cell information, in any square, can be achieved using cell lines.

Device types:
Events can be filtered by device type. Some predefined categories, like "Apple", "iPhone" or "LTE Capable", are available, but full user defined categories are also possible.

Optimization features:
Calculated from measurements sent by UE's, NetGeo knows the actual cell footprint and compares it with the cell footprint, including azimuths, in the operator's database.

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About Bwtech

Bwtech is the global expert in gathering, processing and visualizing network analytics for network assurance.

Our monitoring and optimization platform, NetChart, is a single user interface, cloud-based, multi-vendor and multi-technology, real-time, monitoring and optimization system.

NetChart addresses the challenge of dealing with modern and hugely complex mobile networks that generate vast and diverse volumes of data, providing advanced network analytics and the correlation of various network data sources, such as counters, parameters, inventory, alarms, CDRs, traces and drive test with each other.
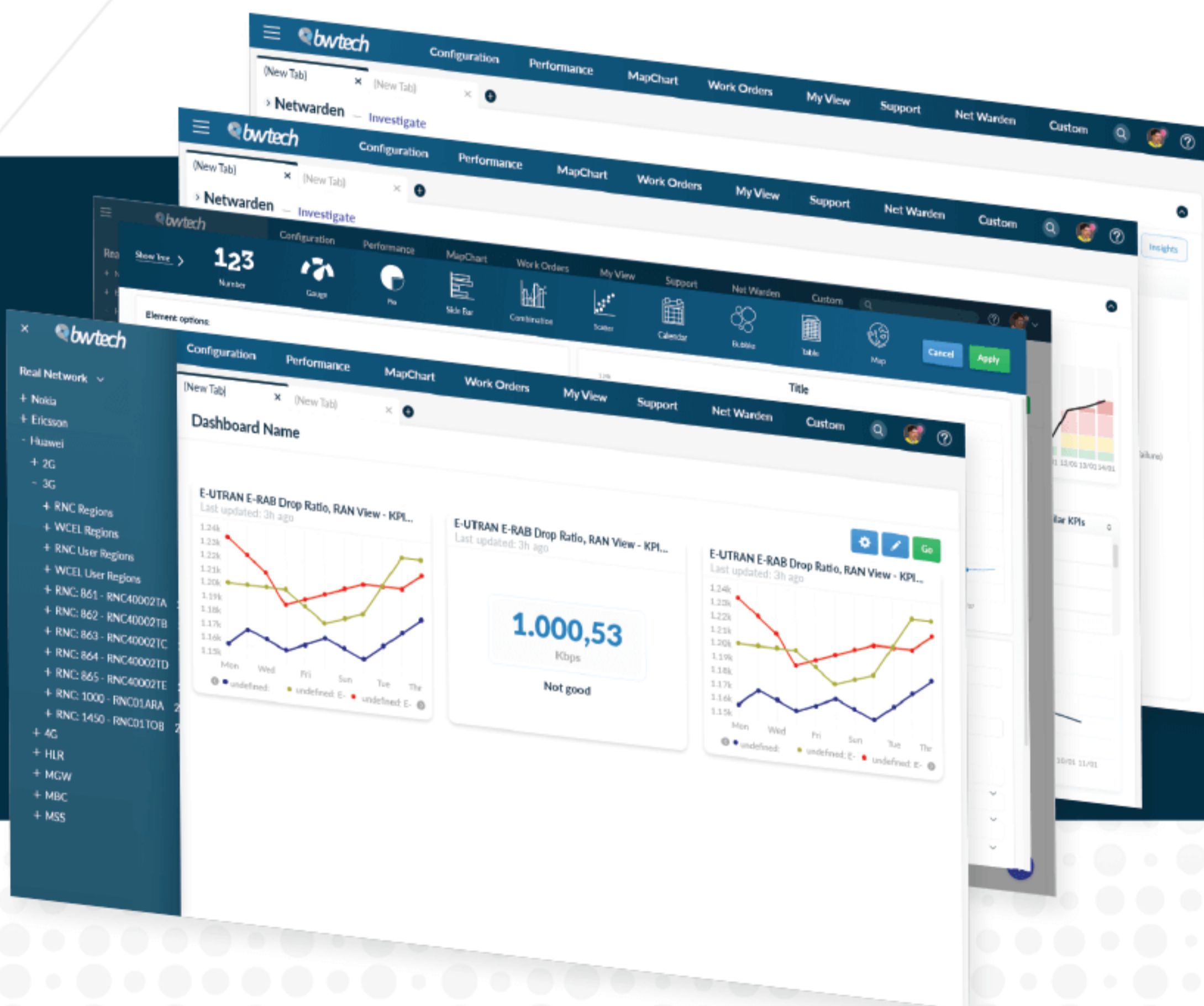
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