

## drive-less optimization

### Challenge

A tier 1 European mobile network operator (MNO) with over 20 million subscribers faced similar challenges to most service providers operating their own mobile network, particularly with regard to cost and network quality:

- Operational efficiency is a key differentiator for MNOs; addressing network-related customer complaints quickly and successfully has been proven to increase customer satisfaction
- Network quality remains one of the top 3 reasons for churn; the ability to identify network issues proactively and analyze/resolve them in a right-first-time manner is essential

To analyze and optimize its 2G/3G/4G network performance, the MNO was interested in alternatives to drive testing. While indispensable for pre-launch testing of new technologies or for competitive network benchmarking, drive testing has also been known for key limitations.

### Main drive testing limitations

#### Only a sample of network performance/experience

Restricted to specific (outdoor) locations at specific times of the day and specific days, drive testing fails to capture the 24x7 impact of the dynamic wireless environment on network performance, and can only approximate the distinct usage profile and experience of each customer

#### Significant direct/indirect cost

A time and investment demanding activity (despite solutions such as relying on MNO employees' cars), drive testing is behind many non-captured or slow-to-resolve issues and customer complaints that lead to churn, and has an environmental (carbon footprint) impact too

The MNO wanted to follow a drive-less optimization<sup>1</sup> approach, and engaged Amdocs after prioritizing the following key areas:



1. Strictly speaking, the 'drive-less' reference does not imply use of call traces, i.e. records of calls with information on signal strength/quality, throughput, timing (used for call geo-location), subscriber, device, etc. In effect, network optimization based on any data source or set of data sources other than drive tests could qualify as drive-less optimization. The terminology 'virtual drive testing' has also been used for network (and handset) test methodologies that simulate or approximate drive tests.

Specifically, the MNO wanted to:

- Drastically reduce dependence on drive testing for the identified key areas of network operations, including new site/carrier launch
- Substantially decrease the time needed to resolve customer complaints or analyze/optimize/verify sites in order to, for example, improve SLA performance for high-priority complaints
- See the benefits of drive-less optimization in practice, by confirming the metrics (KPIs) that can be measured and by checking the impact of actions suggested in the absence of drive tests

In effect, the MNO needed a solution to quantify the drive-less optimization benefits: enhanced operational efficiency and network quality (customer experience) – and therefore better network ROI – by facilitating faster, more accurate and more cost-effective analysis/optimization.

## Solution

Amdocs provided a solution that combines the power of the Amdocs ActixOne platform with the expertise of Amdocs engineers. Variants of this solution have been deployed in similar engagements, proving in practice the benefits of the Amdocs approach.

### High-level benefits of Amdocs Drive-less Optimization solution

Peace of mind through objective evaluation of network performance independently from equipment providers, using network expertise and a software-powered offering built upon 25+ years of experience

Increased operational efficiency, including reduced cost due to drive testing and faster resolution of customer complaints, via a centralization and automation based approach

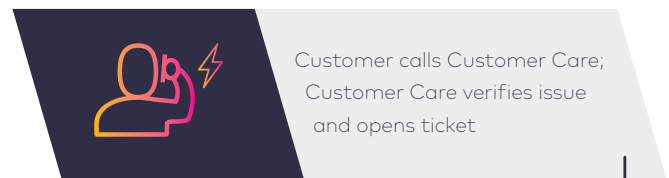
Improved customer experience through the ability to proactively monitor network performance, and potential revenue/profit increase via enhanced SLA offerings (and fewer SLA penalties)

Minimal risk for MNOs worried about solution scalability or (niche) vendors' future, using a flexible and scalable deployment model

The project required fewer than 10 Amdocs engineers – both on premise and remotely – who used Amdocs ActixOne and worked with the relevant MNO teams. Amdocs highlighted the need for Configuration Management, Performance Management, and call trace data. Mobile agent data (3G) were also considered for application (Facebook, WhatsApp, etc.) performance insights. Using the provided data, the Amdocs team produced detailed reports and suggested network actions to resolve customer complaints, improve worst cells or site clusters, and verify site performance. It also assisted the MNO in confirming any data limitations/issues and in understanding how drive testing could be reduced.

Amdocs proposed a revised approach to operations such as customer complaint handling, to bypass the need for multiple analysis tools and a slow – often iterative, trial-and-error – process: field visit for drive test data collection, log processing for root-cause analysis (RCA) and recommendation, and field visit for change verification.

### 1. Customer issue



### 2. Detailed analysis



### 3. Recommendation & change implementation

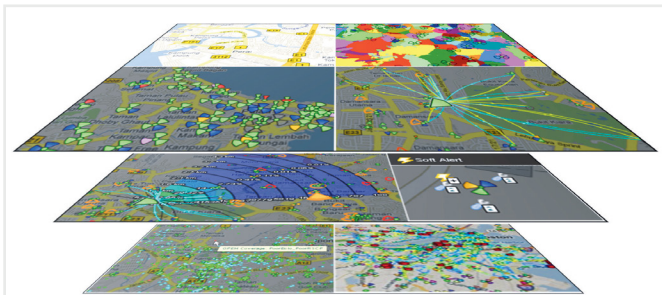


### 4. Change verification



## The software platform used by the Amdocs engineers

Amdocs ActixOne is a unified (one-stop) multi-vendor and multi-technology platform for effective and efficient network performance analysis/optimization and management. It addresses various use cases with focused modules, bringing together call traces, drive tests, OSS counters/alerts, planning data, customer information, etc. as needed. Amdocs ActixOne provides a web-based graphical interface and a secure, multi-user environment that facilitates standardized/tailored in-depth analysis, tool consolidation, data sharing, and end-to-end process automation.



### Network-wide visualization

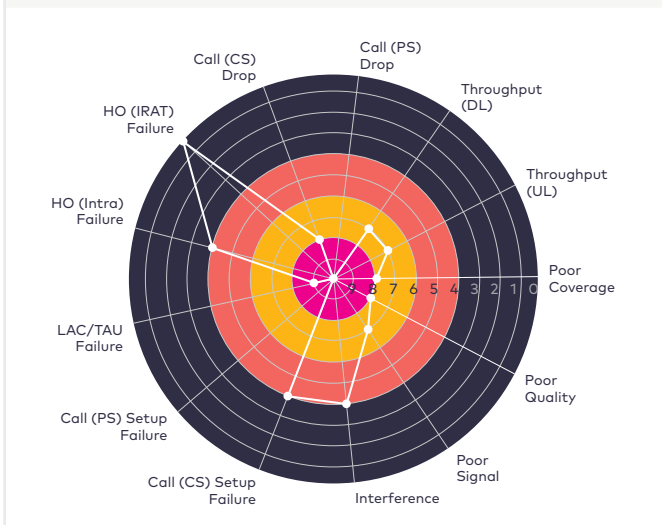
Dashboards, reports, integrated views across data sources

### Drill-down analysis

Configuration, alarms, events, traces

### Multi-dimensional approach

Mobile agents, PM, CM, FM, call traces



Amdocs ActixOne use in this project

## Result

The Amdocs team worked closely with the MNO for a month. Key figures and outcomes from this engagement are highlighted opposite.

## Customer complaints: Amdocs team impact

- Complaint resolution time of approximately 40 minutes
- Suggested actions improved network experience, e.g. poor indoor coverage



Geo-located customer experience (blended and high-res discrete, signal strength) maps for customer complaints analysis

## Worst cell optimization: Amdocs team impact

- Analysis for special event (football match) also conducted
- Suggested actions improved network experience, e.g. connection failures due to insufficient downlink power



Detailed cell-specific analysis for worst cell optimization

## Cluster optimization: Amdocs team impact

- MNO-specific (template based) report creation time of approximately 30 minutes, and 4-5 hours for detailed analysis and recommendations<sup>2</sup>
- Suggested actions improved network experience, e.g. poor signal quality



Geo-located customer experience (signal strength/quality) maps for cluster optimization

2. Time reflects the resource allocation per task in this project (more than one engineer focused on cluster analysis compared with single site verification, where one engineer typically suffices)

### Single site verification: Amdocs team impact

- MNO-specific (template based) report creation time of 1-5 minutes, and less than 2 hours for detailed analysis and recommendations<sup>2</sup>
- Suggested actions improved network experience, e.g. poor indoor coverage



Geo-located customer experience (signal strength/quality and too many server) maps, created for single site verification

Response speed improved as the Amdocs and MNO teams got used to working together. In similar projects, further performance enhancements were seen after each month. Automation enabled rapid report creation and analysis, while recommendations for action (e.g. antenna tilt and cell parameter changes) were based on Amdocs ActixOne and Amdocs engineers' expertise. The considered actions led to network experience improvements, including voice/data drops and traffic.

#### Benefits in practice: what it means

Commercial project significance, on top of reduced cost due to drive testing, and Amdocs team impact

#### Operational efficiency

For example, the ability to accurately analyze and pinpoint the network root cause of customer complaints in a matter of minutes can drastically reduce the cost of network operations

#### Network quality

Customer experience focus helps identify network issues faster and earlier, and can also unveil hidden/unexpected problems that may affect customers indoors or outdoors

Based on the available mobile agent data, Facebook was seen to be the most used application. Amdocs also assisted the MNO in confirming which drive test measured KPIs can be fully/partially replaced, and which ones may require equipment/other updates. Finally, Amdocs provided suggestions for the next project phase, e.g. establishing best practices and closer collaboration amongst teams.

#### Benefits in Amdocs engagements of similar nature

Reduced cost for new site related drive tests by 80%

Accelerated analysis of network issues by 50%

Improved SLA performance and network experience for enterprise customer by reducing network issues, such as call drops by 75%

### Amdocs Network Experience Management

Amdocs offers a new approach to understanding and managing how customers experience network performance. Amdocs Network Experience Management comprises equipment and technology agnostic services and software products/platforms, focusing on:

- Actual customer experience of the network, beyond cell-centric and area/time-limited network KPIs
- End-to-end network performance, analyzed/optimized using analytics and cross-domain data correlation
- Operational agility, beyond silo organizations that make little use of automation and resource synergies
- Return on network assets, through effective optimization targeting high-value customers/areas first

The offering addresses a variety of use cases, from network rollout/acceptance and operations (e.g. triage) to service/technology introduction and optimization, including LTE/LTE-A and VoLTE.