A PARADIGM SHIFT IN OSS EMPOWERS OPERATORS TO MANAGE THEIR BUSINESSES MORE EFFECTIVELY

Operators today are being driven to introduce new processes and management tools in order to deliver network services like Mobile Broadband. But it's not just delivering those services that matters; it's delivering them in a way that maximizes their impact and enables their bottom-line potential to be fulfilled.

New tools battle churn and increase control of networks and activities

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Driven by this, there is an increasing need for a new generation of Operating Support Systems (OSS) which encompass the growing and increasingly important functions of analytics and service assurance. For instance, new use cases that analyze service rather than network resources are increasingly critical. Analytics based on dimensions such as subscribers, hand-sets, and location, all of which are reliant on raw transactional data collected from the network, are becoming central to competitive strategy.

But where do operators look for answers – and solutions – that addresses these challenges? For a start, CICS applications built on MediationZone from DigitalRoute can put today's service providers in the driver's seat. CICS applications built on MediationZone are uniquely placed to address Use Cases that demand the specific solution characteristics and functionality that hallmark the new OSS.

They open up possibilities for the Service Provider to make the best use of its resources and achieve greater performance, while at the same time satisfying customer's needs.

Today, the telecoms market is undergoing a dramatic shift in requirements placed on traditional Analytics and OSS systems. These have historically been based on processing aggregated counter data but now need to be adapted to accommodate **raw event data** at higher volumes and **in real-time.**

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Furthermore, network quality is central to defining service experience. Yet despite this, misconfiguration, damaged equipment, failed upgrades and handset-related problems have historically often gone undetected for long periods. Without the proper tools for creating and acting on information at the network-, customer- and session levels, hidden service problems, lack of root-cause analysis and a failure of pro-active retention activity **will lead to churn**. This reality demands a new set of management tools.
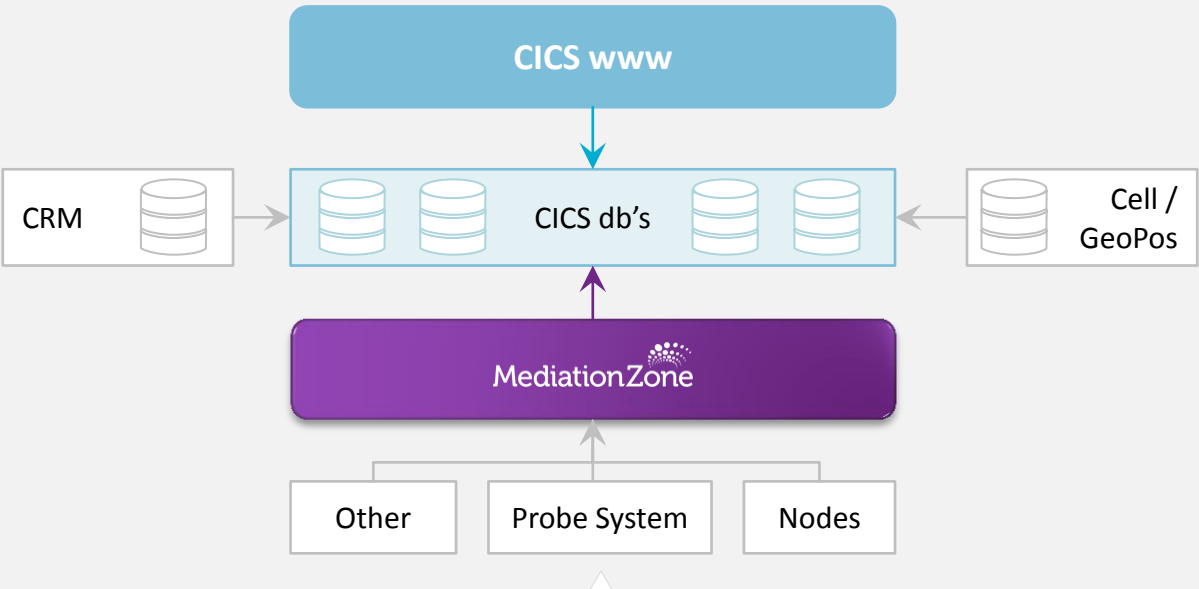

Figure 1: Architecture overview

Extend your OSS with service performance and new views

Traditionally OSS tools have been network-centric, displaying node health and performance via agreed KPI metrics. This type of OSS monitoring will continue to be an essential part of network management, but in addition to this, effective service assurance is also required. As we will see, CICS and MediationZone combine unique assets and skill-sets to address this need.

Here, the focus is on measuring how well services are performing and how performance actually affects the subscribers' service experience. Once Service Assurance is added to traditional, network-centric OSS, service performance data can be contextualized to deliver impact analysis from an individual customer perspective.

This is mission-critical management information, not only tied to traditional network views but also tied to subscribers, subscriber groups, handsets and geographical areas. Instead of just monitoring and maximising OSS by using network performance data, operators can now support advanced decision-making within BSS and BI systems too.

Mobile data service performance – a new beast

While mobile data volumes are growing, that is not the only challenge. The impact of the decoupling of control signalling from the "service plane" is even more evident in mobile data than for voice services. Hence, measuring service performance for mobile data is much more challenging, and once service delivery moves into the packet world, it becomes even more so.
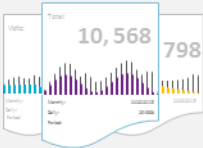
> To effectively measure data service performance and at the same time deliver root-cause analysis, operators need to correlate subscriber positioning and KPI metrics such as throughput in real-time.

This means transactions from the radio network need to be correlated with core network metrics for all customers at once, all the time and in real-time, capturing the essential while shaving off the irrelevant.

Service performance and "area off" effect

Often network problems and service outage issues are local in the mobile world. Thus, geo-positioning of base-stations coupled with positioning of subscribers can provide an unparalleled view of the actual service outage spread and impact. This information is vital in communication with customers as well as for assessments of the severity of a service outage. To make this happen, operators need to enrich their network data with geo-position in real-time as well as keeping state of number of unique subscribers utilizing services at any given time and in any given area.

The challenges in achieving this new OSS are considerable. For instance:

| Data must be correlated in real time.	The control plane must be linked to User plane records.	Multiple Network Data Records needs to be merged from a customer perspective to create a unified Customer Service Performance Record.	Data must be enriched with location information.	State needs to be kept to understand who is where when a negative impact occurs.

Addressing the challenge

CICS have together with its partner DigitalRoute, has created a solution to these challenges that we believe provides operators with a new OSS paradigm. Assurance and Analytics applications are based on probe data which is collected and consolidated by DigitalRoute's industry-leading MediationZone platform which:
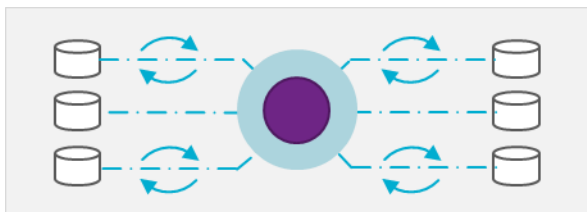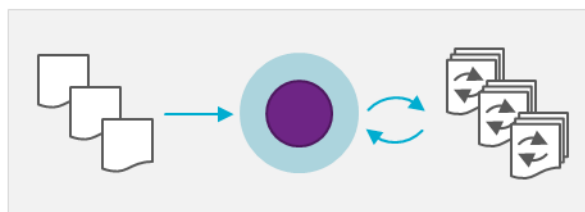
Provides a horizontal integration layer that is capable of acquisition and high-volume processing from a large number of individual sources simultaneously.
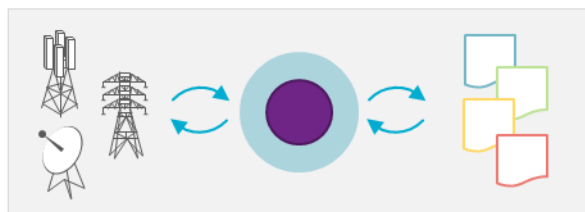
Correlates from all network segments to create actionable information adapted to target applications.
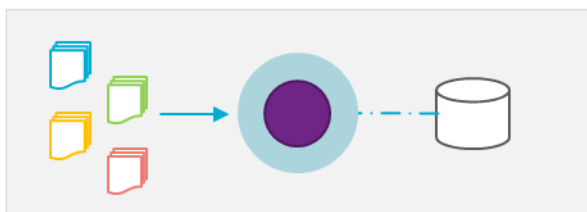
Filters away and refines the raw data and thereby off-loads the database layer by 90-95%.

Manages data type diversity in both online and offline mode.

Utilizing state of the art MediationZone technology, CICS applications bridge the gap between the Business departments and the Technical departments of telecom operators. By bringing these different sides of the organization closer, new ways of looking at problems and possible solutions arise. They open up new possibilities for the Service Provider to make the best use of resources and achieve greater performance, while at the same time satisfying customer's needs via:

- ✓ Better leverage existing hardware.
- ✓ Removing hardware bottlenecks and lower TCO.
- ✓ Simplify operations when scaling architectures through automatic data distribution.
- ✓ Optimize data streams.
- ✓ Gain protection from disruptive changes in the network via a better picture of resource utilisation.
- ✓ Ensure the continuous availability of services.
- ✓ See the complexity of the underlying network in one, end-to-end service experience record.
- ✓ **Minimize revenue loss and reduce risk for churn!**

Why OSS on MediationZone?

Figure 2: MediationZone GUI

Although CICS could have built its Service Assurance apps using open source components, MediationZone enables the company to build, adjust, and if required change its applications much more quickly than they would have been the case using any other platform. For instance, critical configurations required for new customer implementations are easy to realize because of MediationZone's GUI framework. And setting up completely new applications is straightforward because logic components can be reused and quickly combined together via a modular approach.

MediationZone also ensures that scaling is not an issue, meaning that building solutions for large customers is as easy as empowering a Tier 3 due MediationZone's long established record of scalability.

In choosing MediationZone as its platform, CICS was able to quickly bring robust applications to market via the most stable and field-proven environment for high speed OSS processing in the market. Via its OEM agreement with DigitalRoute, CICS benefits from full embedding of the platform and a smooth integration with the other components used in its solution. Built on Java and with a DTK available. MediationZone ensures that CICS will be able to tackle any data format it might face, both today and in the future.

> "
>
> *In MediationZone from DigitalRoute, we are using a platform from which we can build both mission-critical OSS applications and a successful company.*
>
> Said Andreas Jorbeck
> Founder and CEO, CICS

The Solutions

The new solution architecture is designed to be able to easily add new applications for Technical teams, such as Network Operations and Engineering, and also Customer Care. DigitalRoute technology provides a data capture and consolidation layer and enables quick introduction and updates of data sources and processing logic.
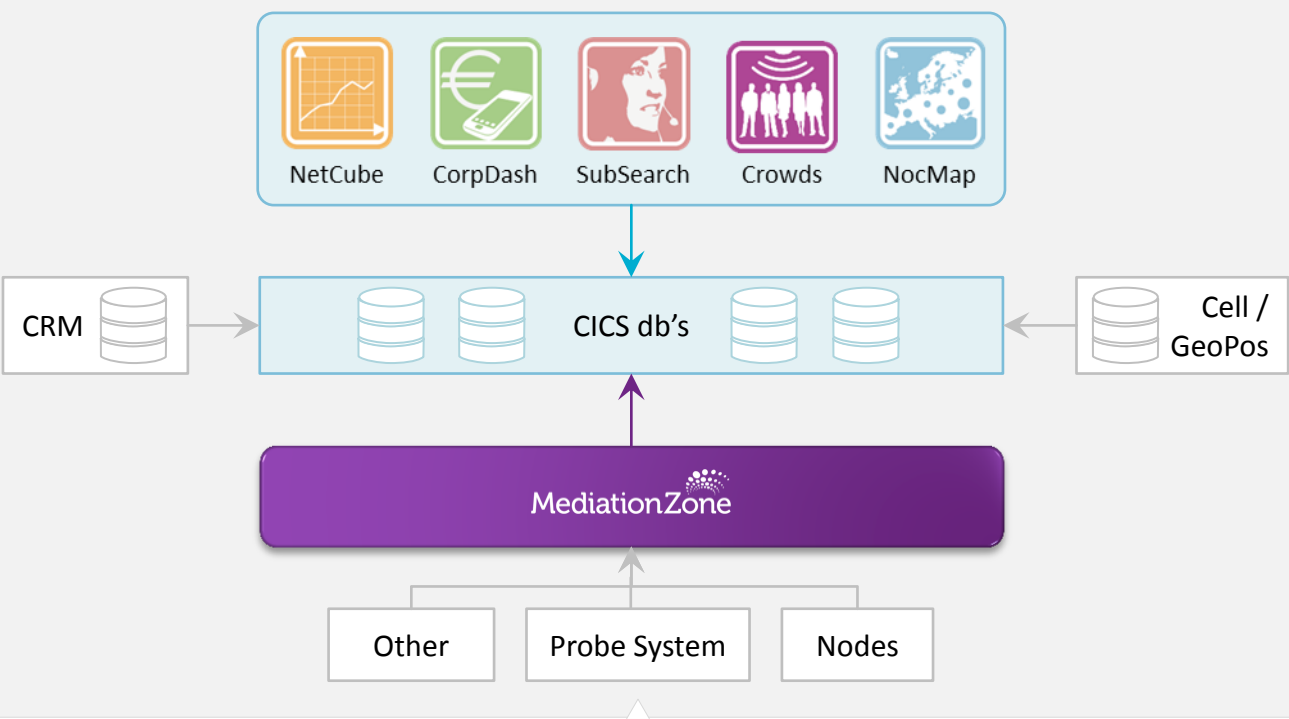

Figure 3: CICS Applications in the architecture

NetCube for Network Analysis

NetCube places end-to-end customer account analysis in the most easy to use desktop tool available today – Excel! It is an OLAP cube built with multiple different dimensions to achieve maximum flexibility and it delivers the power to create and update management reports on the fly encompassing analysis of very long time series right down to 15 minute granularity.

This means that Excel exports from OSS tools become a thing of the past while doing effective time series analysis is made easy. NetCube provides a front-end tool that everyone in your organization is already familiar with so staff can quickly create management dashboards and more, literally in a matter of minutes.

CorpDash for Account Management

A corporate dashboard, *CorpDash* enables effective SLA follow-up for profitable corporate accounts and removes the problems of poor complaint resolution due to lack of visibility into service quality and unprofitable fault investigation and resolution due to the time and effort required. Instead, via a fast, clean and intuitive web GUI, users can quickly determine if high-level service delivery SLA levels are being met, with geographical representation to point out problem areas, network foot-print analysis and service quality KPIs down to cell level, handset analysis & worst performers analysis, and more.
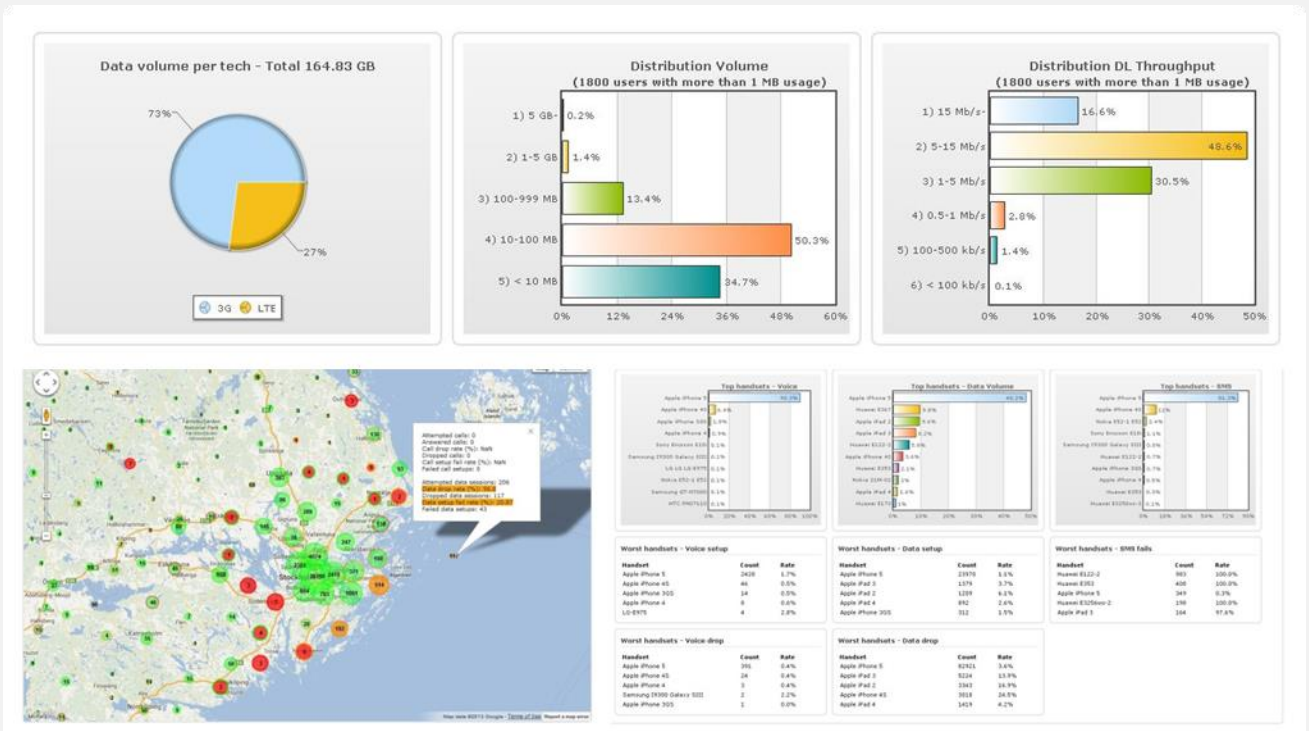

Figure 4: CorpDash application example

Monthly, on-demand, formatted and styled Excel reports including quick selection of accounts through auto-completing text search or from your personal "favorites" result in a product that delivers a differentiator in how SLA & SLA-follow-up can be used as a USP in corporate sales.

It puts Service Providers in control of service and by enabling customer accounts to be more effectively managed through improved Quality of Service, has the effect of reducing churn.

SubSearch for Customer Support

A Customer Support application, *SubSearch* empowers personnel to take control of service delivery performance on a per customer level. Today, too many customer service departments fly blind where service quality is concerned, meaning many cases are unnecessarily escalated and fault investigation and resolution take too much time and effort, turning profitable customers into unprofitable ones.

SubSearch collects and aggregates service performance on a single subscriber level, for a whole network and subscriber base. It delivers a fast and easy to use web application where you search for individual subscribers by MSISDN, IMSI or IMEI, high-level service delivery KPIs that give a quick overview of delivered quality, root cause analysis on a per service level, pointing out radio and core network issues and more.
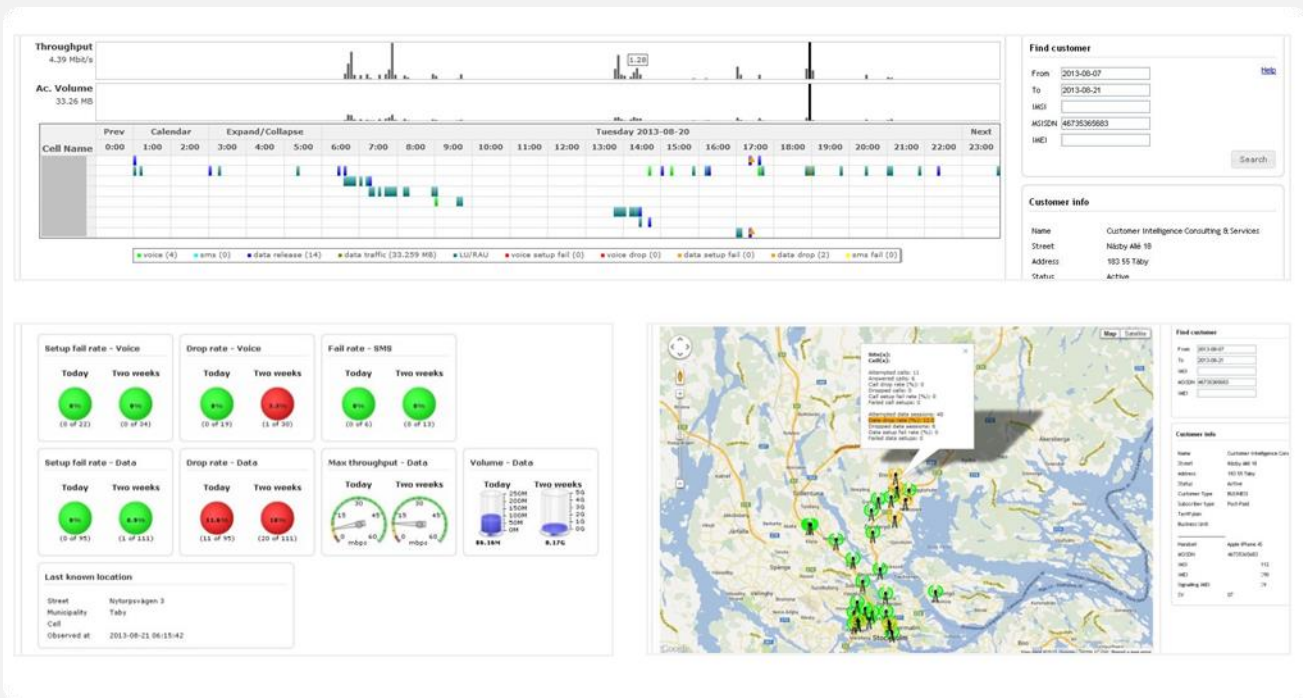

Figure 5: SubSearch application example

SubSearch means customer service is given the tools to have an intelligent discussion with every customer in regard to service quality which enables major cost reductions to be realized because operators can now see directly if customers complaining have more than one problem, and handle those in the same support handling procedure. This reduces the number of interactions and therefore costs required for a successful outcome and in the process increases overall customer satisfaction.

Crowds for Instant Reporting on Performance and Usage

Crowds

Crowds enables the operator to follow a specific happening that requires special technical effort. For instance, a major sporting event, music festival or political congress will often need to be specially monitored, perhaps due to the risk of extremely bad publicity if user experience is in some way inadequate. With Crowds you can monitor the event, get real time statistics related to delivery quality, strengthen network capacity based on info gathered, and ensure that you provide the best possible end user experience.

Figure 6: Crowds application example

In addition you will get valuable marketing information regarding handsets used and customer behavior. Real time information enables Real time action!

NocMap for Network Operations

NocMap enables the Network Operations Centre with a customer-sensitive operations management tool. Plot service quality metrics on a geographical map in close to real-time, quickly see the severity of problems including how big the affected area is and the number of affected subscribers. NocMap delivers the ability to make the correct prioritization when deciding how to address issues and addressing the difficulty in correlating equipment alarms to service impact. Unnecessarily long Mean Times to Repair are removed, saving time and money and while improving customer satisfaction. NocMap helps with Impact analysis, so that bad quality experiences can be handled professionally afterwards with individual communication or reimbursements.
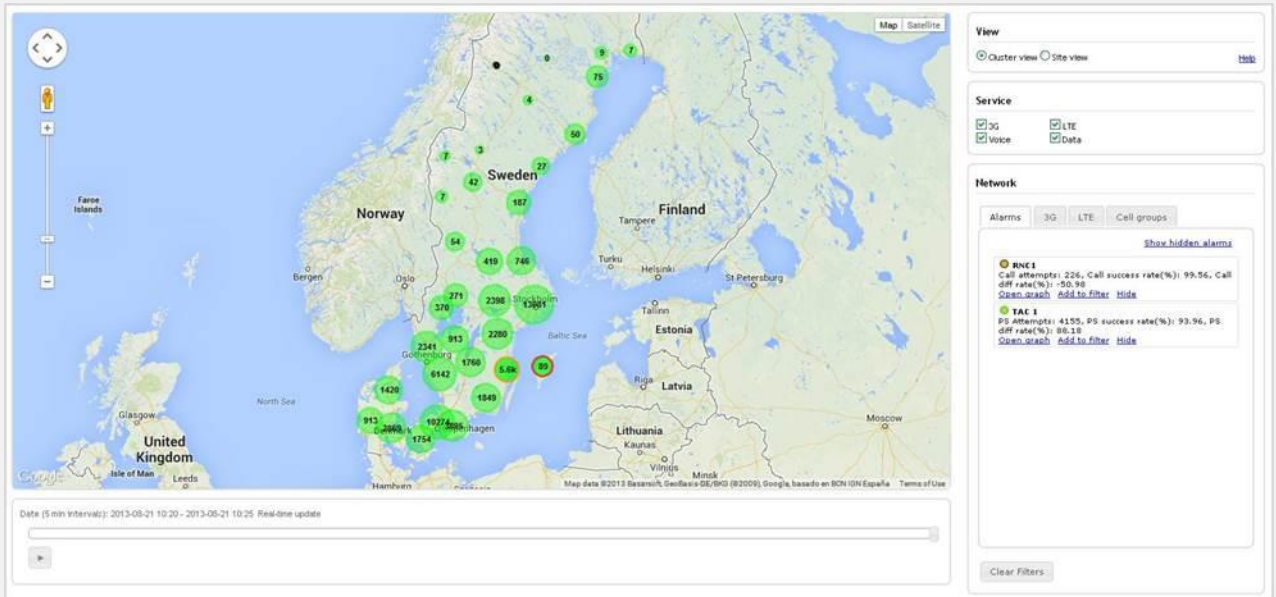

Figure 7: NocMap application example

Succeed with DigitalRoute and CICS

In today's highly competitive market where quality of the service matters more than ever before, CICS applications built on MediationZone from DigitalRoute put service providers in the driver's seat. Subscriber-centric monitoring is important. It increases perceived quality and thereby reduces churn. But to achieve this, call trace data must be collected from multiple sources in the radio and core planes and then merged and enriched. The correlation of several records belonging to one session requires correlating Radio Measurement reports from network elements with call setup records and is a particular challenge. In addition to the sheer volume of records involved, LTE network design is now introducing a flatter topology with more intelligence held in base-stations. As a result the number of points from which to collect quality records is increased by a significant multiple.

> *CICS/DigitalRoute applications are excellent and prompt in the presentation of online CEM data.*
>
> Said Kaj Ahlkvist,
> OMS Manager

Key aspects of DigitalRoute Service Assurance Mediation functionality include:

- Pre-verified integration with equipment, systems and databases from leading vendors. New interfaces are added through configuration.

- Open graphical workflow engine enabling rapid adaptation of deployed solution.

- Alarms and audit functions based on conditional criteria and user-configured thresholds e.g. number of events collected, service parameters etc.

- Usage counting enables advanced KPI calculation and analysis with a minimum of impacts on network management and analytics.

- High-performance, high-availability and unlimited scalability through a distributed environment executing on commercial off-the-shelf hardware.

CICS applications built on MediationZone are uniquely placed to address Use Cases that demand specific solution characteristics and functionality. Together, CICS and MediationZone enable operators to benefit from a new OSS paradigm.

Real-time Service Assurance provided through:

- ✓ Geographical impact maps
- ✓ CEM on subscriber level
- ✓ CEM on corporate account level

Capitalize on existing investments:

- ✓ Utilize existing probe systems as an effective BI source
- ✓ Runs in existing virtual cloud environment
- ✓ Excel and web based Uis

Increase productivity and minimize revenue loss through:

- ✓ Reduced lead time from fault to accurate alarms
- ✓ Increased customer care efficiency
- ✓ Effective corporate account SLA management

Software as a service -- reduces project and product risk.

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