VIAVI Solutions

Case Study

Multitechnology Performance Engineering

The Background

With the advent of LTE capable smartphones the roll out of LTE is gathering pace around the world. The capabilities of LTE networks are set to revolutionize the user experience of applications such as mobile gaming and video-intensive applications. However, a customer will not be served purely by an LTE network, rather they will be served by the LTE layer of a heterogeneous network consisting of multiple technologies. Their experience will be highly influenced by the service they are delivered when they inevitably drop back to the UMTS/ HSDPA layer and, in many cases, the GPRS/EDGE layer, as shown in Figure 1. The transitions between the technology layers, likely will be fundamental to the overall experience, and these relationships will constantly change as the rollout and evolution of the layers continues.

Achieving unprecedented performance levels

Traditional network data-driven techniques are not sufficient to address these multitechnology challenges. Understanding intertechnology handovers merely at a cell statistics level does not give any insight into the impact on user experience, or the steps required to resolve issues.

By focusing on the customer and geolocating every segment of a subscriber call or session, ariesoGEO allows the operator to understand the true customer experience across all layers and gain unprecedented insight into how the layers are interacting.

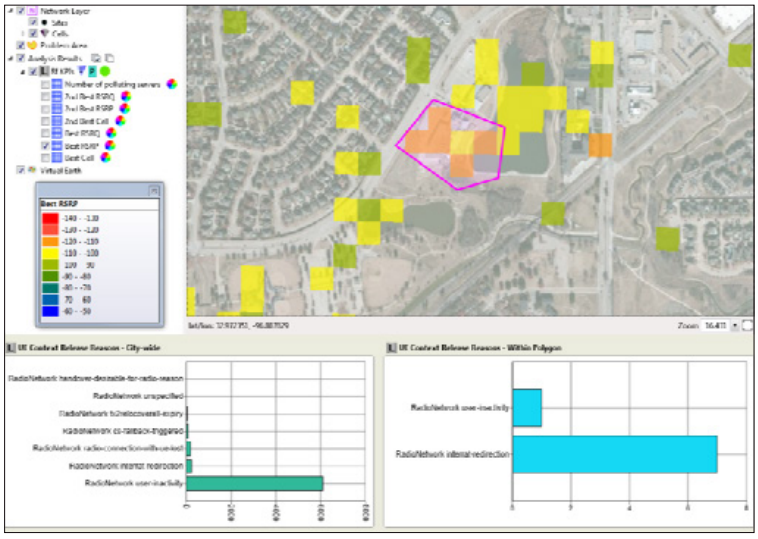

Figure 1. Poor service causing LTE customers to shift to UMTS

Stop drive testing

Early deployments of new technologies have traditionally relied on extensive drive testing to understand the network performance. As well as the very high cost of such testing, it does not represent real traffic. With ariesoGEO, every customer with an LTE capable device becomes a drive test team. By analyzing real calls, ariesoGEO reveals the performance on the network where it really matters without the cost of drive test teams, as Figure 2 shows.

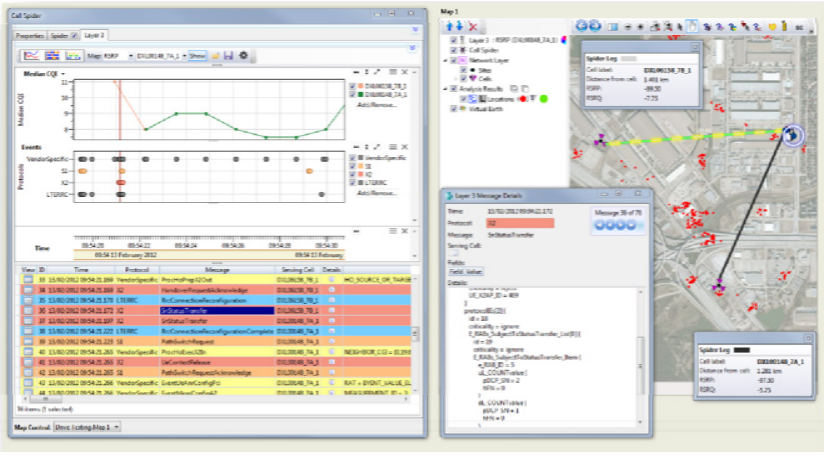

Figure 2. Real call analysis with ariesoGEO

Growing the network for real traffic

With limited resources, operators must focus their LTE rollout to places where customers are actually using the new services. Then as data grows, they must ensure that expansion keeps pace to preserve the initial experience. Using geolocation technology that leads the industry, ariesoGEO can locate traffic hotspots across all technologies, typically down to building level. By supporting all technologies and collecting data 24/7, all customers' traffic patterns can be identified. The advanced analytical techniques help them to understand this traffic, revealing insights, such as device mix, that are critical in making load management and offload decisions, as Figure 3 shows. Harnessing the power of this technology allows operators to deploy capital with surgical precision.

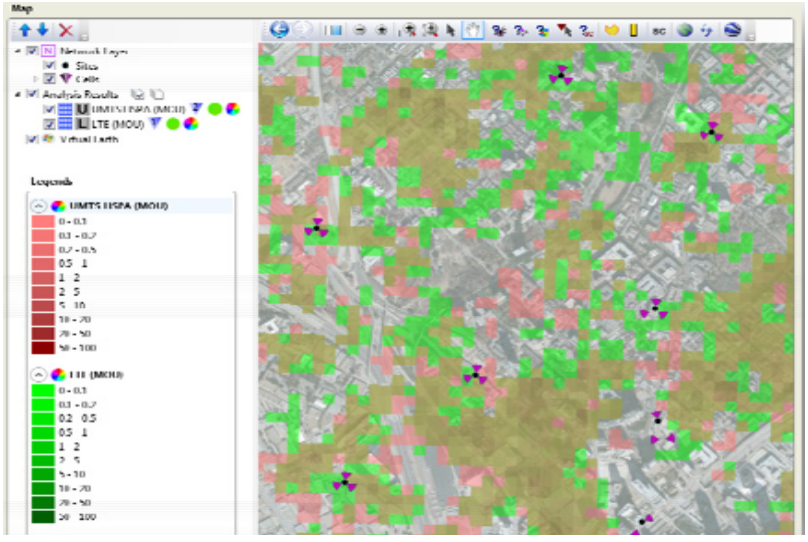

Figure 3. Traffic can be broken down by technology

Cut problem-solving time in half

By processing and storing every event of every call, ariesoGEO provides unprecedented insight into the precise root cause of problem areas of the network. Powerful analyses quickly sort the causes of bad experience to help engineers focus on the critical issues.

Detailed RF KPI maps enable them to clearly understand the RF conditions, not only of the LTE layer but also the RF conditions in the other technology layers, allowing immediate understanding of the service a user will experience on both sides of an intertechnology handover.

Access to this detailed information, shown in Figure 4, lets engineers to solve problems requiring multiple data collection tasks in hours rather than days, and all from a single solution.

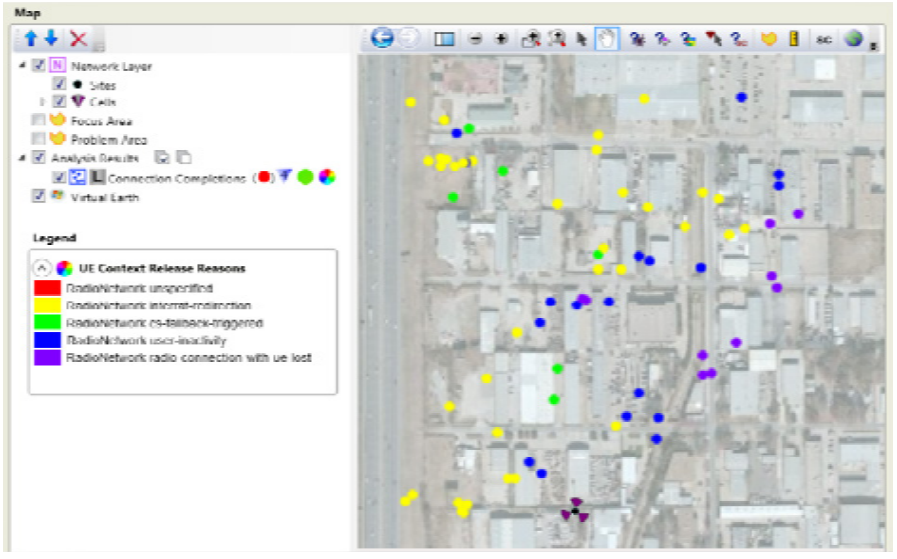

Figure 4. Root-cause analysis – dropped connections

Automating key optimization tasks

As networks evolve, neighbor relationships must be updated daily. With a proven track record in automatic neighbor optimization in 3G networks, ariesoGEO now delivers it across technology layers. Fully automating this task frees valuable engineering resources from routine tasks so they can focus on more critical areas.

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