

PRESERVING A MULTI-BILLION DOLLAR REPUTATION

A MAJOR OPERATOR LEVERAGED CERION'S WIRELESS EXPERTISE TO MAKE BETTER DECISIONS AND ACHIEVE MORE RELIABLE OUTCOMES

INTRODUCTION

As wireless carriers prepare for the Mobile Internet Tsunami introduced by new smart phone launches, they must ensure that the Radio Network Controller capacity is sufficient enough to prevent customer access denial. This paper demonstrates how traffic and signaling demand growth in conjunction with radio carrier coverage and capacity impacts must be accurately modeled so that customer accessibility issues can be avoided.

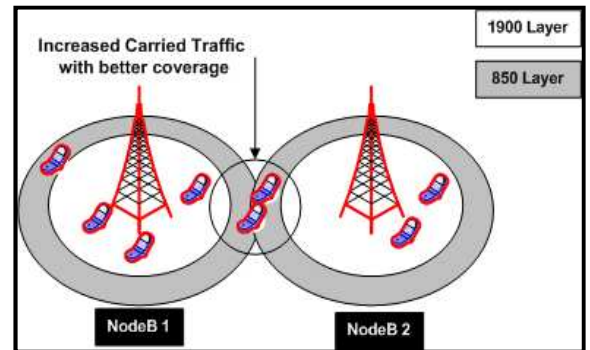
This study focused on a Tier 1 operator in a major metropolitan area prior to the launch of a highly awaited 3G smartphone. The immense popularity of the smart phone and its associated high mobile internet usage made this a high profile event. It was imperative that the network have sufficient capacity to meet customer expectations through superior user experience. In order to improve the RF coverage and capacity of the network, additional carriers were added in the central business district. 850 MHz second carrier was overlaid on top of the existing 1900 MHz carrier on a majority of NodeBs.

The operator's network engineering team believed that there was ample capacity in the network to support the planned second carrier launch and the new smartphone launch. Cerion was engaged to verify the UTRAN network capacity, evaluate the impact of the second carrier launch on the UTRAN network and provide necessary recommendations.

MODELING THE IMPACT OF SECOND CARRIER DEPLOYMENT

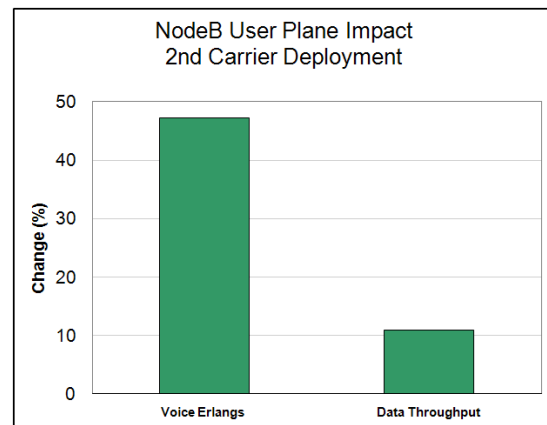
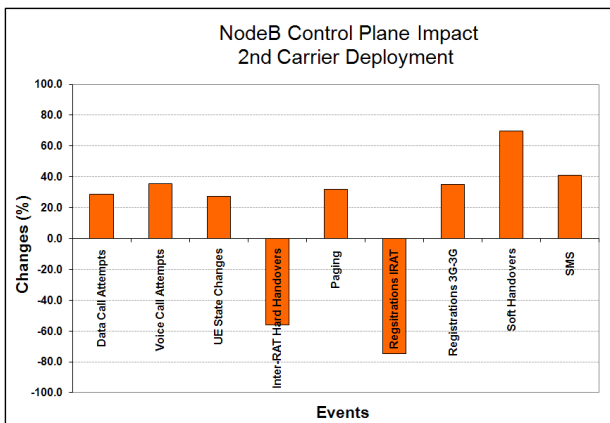
Generally, additional carriers are added to enhance the air interface capacity and/or coverage of the network. Adding carriers can cause an increase in the "carried traffic" by the network. This incremental traffic can be caused by:

- **Increase in footprint:** This especially is true when the additional carrier is at a lower frequency band. The lower frequency band (850 MHz in this case) has better coverage and penetration compared to 1900 MHz. As a result, the NodeBs tend to pick up additional subscribers and hence additional traffic.
- **Reduction in Blocking**
- **Reduction in 3G→2G Redirection**
- **Increase in Available Bandwidth**



DEEP DIVE ANALYSIS

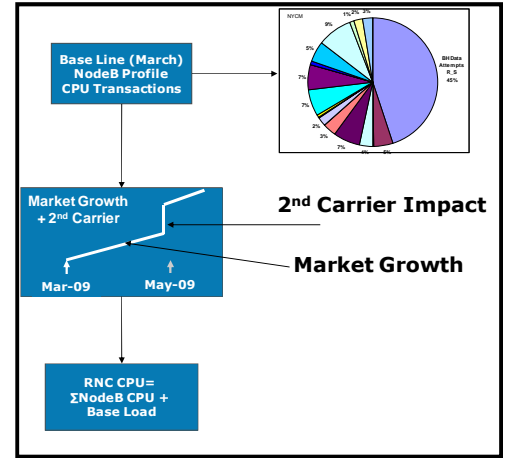
A deep-dive analysis was performed to estimate the potential traffic increase due the launch of the second carrier. Detailed studies on other markets revealed important behavioral information on how the control plane and user plane traffic was impacted by second carrier launch.



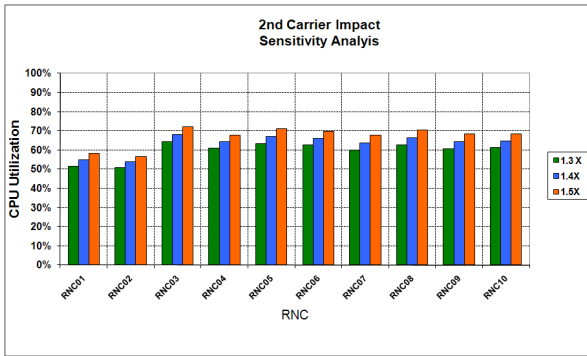
Our consultants, with the help of Cerion Optimiser™ suite of network planning tools, performed a multi-layered traffic estimation approach to predict the RNC capacity requirements. Cerion's comprehensive constraint analysis identified the control plane CPU as the primary constraint.

Methodology:

- Obtain the NodeB level control plane and userplane profile from Historical Statistics
- Baseline the busy hour contribution of each NodeB towards the parent RNC CPU using the above historicals
- Apply the market growth to this baseline NodeB profile.
- Identify NodeBs which were going to have a second carrier
- Estimate the additional control plane and userplane traffic expected on these NodeBs
- Estimate the effect of this additional NodeB user plane and control plane traffic on the RNC to come up with final RNC capacity requirements.



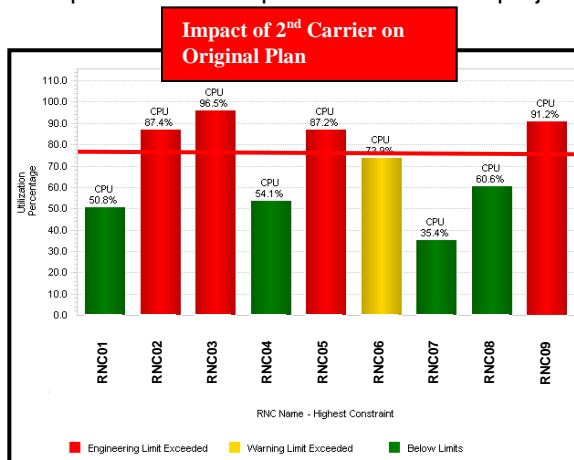
RECOMMENDATION AND SOLUTION



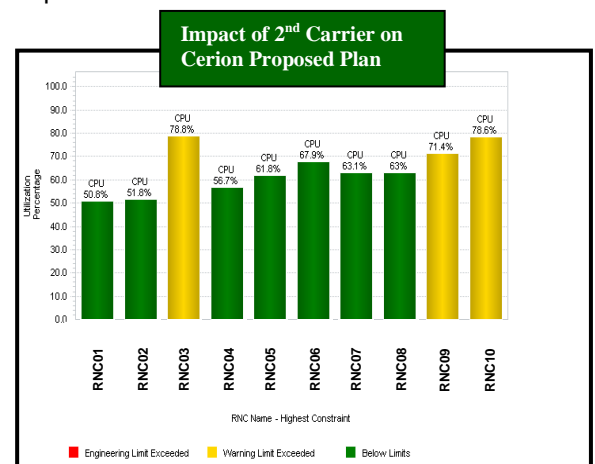
A shortfall in the original UTRAN capacity plan (by one RNC) was identified. Cerion then performed network optimization to balance the traffic and presented a low cost plan with minimal re-homes. To stress test the robustness of the design, a sensitivity analysis was conducted. The proposed plan was implemented within two weeks.

IMPACT

Leveraging Cerion's predictive network loading and optimization algorithms, our client was able to avoid a network accessibility issue that would have affected an estimated 42,000 customers. Post launch, Cerion verified the accuracy of its pre-launch load prediction. Cerion's projections were within 10% of post-launch Actuals.



Lost Traffic, Revenue (RNC Overload)



Value of Engagement:

- Avoided Serious Degradation in QoS
- Saved Loss in Revenue
- Avoided Emergency OPEX Expenditure

Helped Preserve a Billion Dollar Reputation