

UMTS NETWORK AUDIT FOR MTNL, INDIA'S FIRST 3G OPERATOR

Delivering services and technical evaluations to operators

Qualcomm Corporate Engineering's ESG partnered with MTNL, a leading operator in India, to address challenges with their 3G network while maximizing capacity and maintaining a high-quality user experience.

SITUATION:**Serve wireless data needs with the country's first 3G UMTS network**

MTNL, a government-owned operator established in 1986, began its first 3G deployment in 2009. The company wanted to ensure its subscribers had adequate coverage, fewer dropped calls and the ability to make calls and send/receive data reliably. MTNL also wanted to prepare for increased bandwidth requirements and scale its network to meet increasing data demand and maintain high customer satisfaction.

CHALLENGE:**Managing a multi-vendor network and migrating from GSM to UMTS**

MTNL faced two challenges - managing a multi-vendor network and creating a seamless transition to 3G UMTS wireless technology. The operator turned to Qualcomm ESG for expert, unbiased advice on evaluating 3G UMTS wireless network performance, verifying efficiency, and preparing for future growth.

Qualcomm ESG understood that being the first to deploy a new wireless technology would require the operator to overcome a steep learning curve. Also, the number of vendors involved added to the complexity of designing a standardized network plan and optimization criteria.

SOLUTION:**Comprehensive network audit and unbiased recommendations**

Qualcomm ESG reviewed MTNL's 3G UMTS network design and dimensioning inputs from the infrastructure vendors and conducted an end-to-end network performance audit for the cities of New Delhi and Mumbai.

The network audit included, but was not limited to, the following:

- ▶ Review of network constraints, UTRAN and core network high-level dimensioning (channel element, backhaul, RNC, MSC, SGSN and GGSN)
- ▶ Audit and assessment of MTNL's current network performance
 - benchmark drive test and post-processing of data logs
 - inter-RAT performance for both voice and PS
- ▶ Comprehensive RF network design: comparisons of ideal and site-specific constraints with both single and multiple carriers, including sensitivity analysis for antenna height and other network variables

COMPANY

- MTNL
- New Delhi & Mumbai (8M subscribers)

SITUATION

- ▶ Provide adequate coverage resulting in fewer dropped calls and the ability to make calls and send/receive data reliably
- ▶ Ensure continued customer loyalty, satisfaction and growth

SOLUTION

- ▶ End-to-end network performance audit, RF network design for single and multiple carriers
- ▶ Review vendor assumptions, budgets and compare with industry's standards
- ▶ Provide recommendations based on global best practices and a comprehensive report
- ▶ 3G knowledge sharing session with MTNL engineers



CASE STUDY

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In addition, ESG provided global best practice suggestions for UMTS 3G network and RFP design to help MTNL improve its voice and data network coverage and user experience. The audit results also enabled knowledge sharing across all of MTNL's technical teams involved with the 3G rollout.

RESULTS:

Working across three continents as a virtual extension of MTNL's technical team, Qualcomm ESG met project deliverables to aid MTNL with its GSM-to-UMTS technology migration.

Qualcomm ESG performed in-depth RF design and dimensioning analysis for networks in New Delhi and Mumbai to ensure adequate indoor coverage and superior network quality, particularly in high traffic and hotspot areas (see Figure 1).

Qualcomm ESG expedited project deliverables by using a proprietary network dimensioning tool to perform sensitivity analyses and review "what if" scenarios, saving MTNL time and money as it considered the recommendation to expand the coverage and capacity of its 3G UMTS network. Having this knowledge empowered MTNL to enhance overall 3G network performance, increase network capacity and deliver superior service quality to their end users.

Figure 1: Estimated 3G Indoor Coverage



Figure 2: RF Design & Sensitivity Analysis



¹ Bafna, Sanjay. "MTNL Enrolled One Lakh 3G Mobile Subscriber In Delhi and Mumbai." Tracking Developments In Indian Telecom Industry. Telecom Talk, 14 Nov. 2009. Web. <<http://telecomtalk.info/mtnl-enrolled-one-lakh-3g-mobile-subscriber-in-delhi-and-mumbai/12872/>>.