

The Client | A Large Telecom OEM

The Challenge | Base Station Controller is a critical system in a wireless network. It is the intelligence behind the access network in wireless. The challenges of developing a BSC were:

- The functionalities performed by a BSC were time critical (had to be real time).
- The BSC had to be carrier grade – highly reliable, fault tolerant and highly available.
- BSC had to be scalable. It should be able to control either a single BTS or multiple BTSs

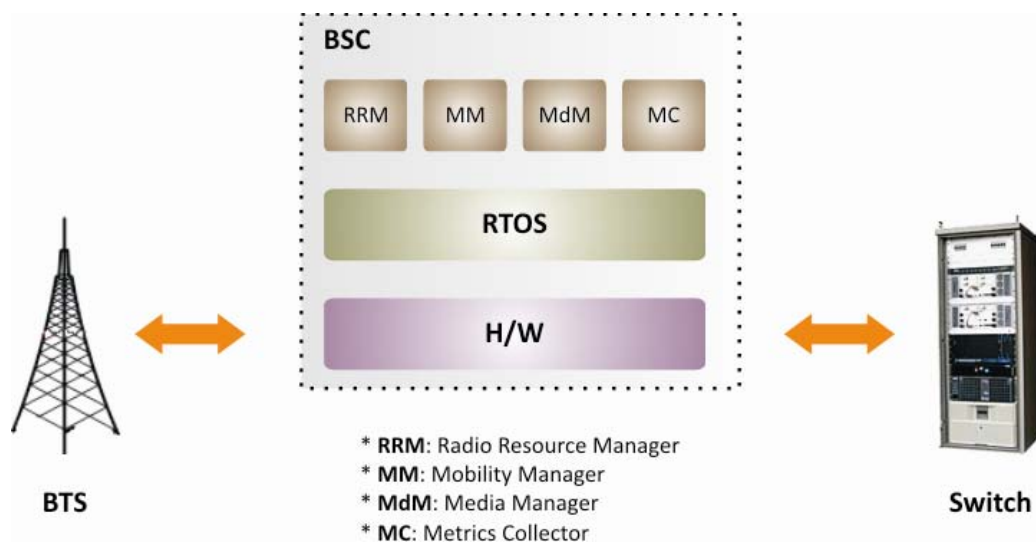
The Solution | The Base Station Controller provides the intelligence behind the BTSs. BSC controls single or multiple BTSs. The major functions of BSC were

- Radio Resource Management
- Allocation of Radio Channels
- Receiving measurements from radio terminals
- Control handover from BTS to BTS
- Handling of media (voice and data) from radio terminal to the network and vice versa

All the functions were time critical and had to be real time. The response time of the functions had to be predictable and fast. Thus, a Real Time Operating System was chosen for the BSC. Zansys developed the various functions on the Real Time Operating System. To achieve the real time response of the system, following were followed:

- Priorities of tasks were well defined
- Resources of the system were pre-allocated and were handled judiciously and efficiently.
- Pre-emption of lower priority tasks.
- Priority inversion during usage of shared resources in the BSC system.

For achieving robustness in the system, redundancy was incorporated in the architecture of the system. A fail-over mechanism was designed to make the system fault tolerant.



Engagement model with the client | Zansys directly reported to the program steering group, providing regular status updates so that they had visibility of progress and could make informed decisions. Zansys successfully ensured that the project was performed with quality and was approached in a manner suitable for the program's strategy and goal, even though there were huge resource and management demands.

Business Environment | Following was the scope:

- Architect, design, develop and test the Base Station Controller
- Build the solution from scratch
- Solution had to be a real time system
- Fault Tolerant Highly Available
- Solution had to be scalable

Benefits | The architecture and design of the BSC solution was such that:

- The functionalities were real-time
- The system was carrier grade. It was robust, fault tolerant and highly available
- The system was highly scalable and modular. It could control either single BTS or multiple BTSs.
- The system was able to handle immense traffic and still its performance was highly acceptable.
- The QoS of the system was well within acceptable threshold.

Achievement | The solution was successfully delivered to the client meeting the quality and time standards. The Base Station Controller has been running successfully at numerous network operators sites with good performance.