Signaling Network Planning with the CaSCAD Tool

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The signaling network planning still plays and will play significant role in design and development of future networks of Russia. Firstly, that is motivated by the essential needs of the ultimate growing of the GSM and IN networks and their evolution to NGN. Second major problem lies in the domain of the national multiservice network creation.

Besides traditional signaling the denoted problems deal with other signaling protocols, such as SIP and BICC. The SS7 protocol stack implements interface functions between gateway entities SG, MGC and MGW of the multiservice network architecture. That is why signaling network should provide interworking with other types of signaling and support reliable transport possibilities for all cooperating networks.

Our presentation describes the aspects formulated-above and proposes the planning tool that efficiently supports the design and validation of the SS7 network routing plan at the MTP3 level. The tool incorporates the planning methodology based on graph theoretical methods. These methods have been developed during the recent years within the projects destined at the dimensioning and planning of the large-scale SS7 networks of Russian operators.

The term "large-scale" means that a network enumerates hundreds of SPs and scores of STPs. In such a network the routing tables at the MTP3 level may contain more than 10000 rows and that is why a planner should obtain tools and appropriate methods that provide the correct design and validation of the routing data. The solution of this problem is possible with use the computer tool called "CaSCAD" (Common chAnnel Signaling CAD), which is intended to be used by network operators and planning organizations. We need mark the theoretical methodology laid in the foundation of the tool. This approach has great influence on the CaSCAD performance. The methodology provides the routing plan calculation based on simple, but special derived algorithms of the graph theory.

The CaSCAD tool and methodology have been already used for planning the Russian large-scale signaling networks. These networks are the Russian SS7 toll network (national level of the network hierarchy) and the SS7 network of the Moscow region (local level). Each network enumerates more than 100 SPs and up to 16 fully meshed STPs.