China Mobile gets ready for Universiade

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Communications guarantee for major events

After achieving successful communications guarantees for major events such as the 2008 Beijing Olympic Games, 2010 Shanghai Expo, and 2010 Guangzhou Asian Games, China Mobile has accumulated rich experience in the field. The moment Shenzhen, one of the most prosperous cities in South China, was named the host city of the 26th Universiade, China Mobile kicked off preparations in areas such as communication, information, services, and security in order to ensure unhindered communications during the event.

Major events such as sports competitions, exhibitions, and festivals tend to experience peaks of voice and data services. Since a lot of subscribers get together for a short period of time, continuous and ultra high throughputs pose great pressure on service-bearing networks and core node equipment. Meanwhile, the special significance of major events and the requirement for critical and highly real-time services also pose tough challenges for existing network equipment in terms of availability, reliability and security.

For major events, operators generally provide communications guarantees in the pre-, during- and post-event phases, along with proven and process-based ways of guaranteeing the same. While enhancing its communications guarantee, China Mobile has also come to realize the deficiencies in the traditional ways of guaranteeing for major events.

Firstly, operators have network equipment supplied by multiple vendors, which results in different sets of network management equipment, making collaboration difficult. As a result, it is impossible to monitor and adjust network KPIs during major events in a timely manner. Secondly, network KPIs are unable to satisfy the need for guaranteeing communications for major events in terms of the accuracy of real-time KPI monitoring. Thirdly, traditional ways of management based on equipment and networks have no precise means of monitoring and managing specific service types and subscriber groups. Assessment results from an indicator system based on network KPIs are different from customer perception. Therefore, they are unable to reflect end-user perception and the use of services by subscribers, thus making it impossible for operators to provide them high-quality communications services.

While providing high-quality services to customers, guaranteeing communications for major events has also become an arena where operators worldwide compete and show their strengths. China Mobile knows well about the significance of guaranteeing communications for major events. For this reason, it decided that it needed to quickly resolve the deficiencies of traditional ways.

Innovative signaling monitoring system

For the 26th Universiade to be held in Shenzhen in August 2011, China Mobile is expected to provide a communications guarantee for twenty million subscribers across the city including important arenas and transportation hubs, thereby guaranteeing high-quality communications services throughout the event. The operator is cooperating with Huawei to explore innovative practices. For example, it aims to provide the communications guarantee in an innovative way that is oriented toward end-user perception by using a signaling monitoring system.

To realize a signaling monitoring system that can be oriented toward end-user perception, it needs a set of assessment system standards based on customer perception. To that end, China Mobile worked with Huawei and finished researching a customer perception assessment system in June 2010. It completed two phases of verification by the end of 2010, and formulated standards for the signaling monitoring system based on the assessment system.

The signaling monitoring system based on the customer perception assessment system collects various signaling and protocol data in ways that do not affect network operations, such as high-impedance cross-connection, port mirroring, Ethernet Splitter (TAP), and optical splitter. It then performs message decoding for signaling and protocol and conducts CDR synthesis, thereby reproducing the whole process of service continuation. It also collects statistics of various network and service indicators, enabling the network maintenance personnel to understand and analyze network and service operations. The signaling monitoring system features accurate data, fine granularity, and a variety of extended applications, making it a powerful tool for guaranteeing communications for major events.

Unified monitoring of the entire network

To solve the difficulty of bringing about collaboration between multiple-vendor equipment management and satisfying the need for adjusting network KPIs in a timely manner, the signaling monitoring system features a design independent of existing
network equipment. It performs unified collection of signals of the entire network through standard interfaces such as Mc and C/D/E, making it free from limitations from vendors of existing network equipment and facilitating unified management. It also has no effect on the operation of existing network equipment, while enabling unified monitoring of multi-vendor equipment. The signaling monitoring system collects statistics about service use in the dimension of single service use by subscribers, that is, they are network KPI statistics refined to the subscriber granularity. As a result, network KPIs support drill-down analysis to the subscriber level call detail records (CDRs), with added capacities of entire network unification and fine monitoring management and analysis.

**Precise monitoring in busy areas**

Given the uncertainty of subscriber behavior during major events, real-time monitoring/control over the network and, in particular, precise monitoring in busy areas, are required to effectively address the impact of high service traffic and sudden increases in traffic, thereby quickly locating abnormal sudden traffic, identifying causes of problems, and providing solutions in a timely manner.

The voice service traffic at arenas in busy areas will increase sharply to ten times what is normal during landmark events like the opening and closing ceremonies, while the number of short messages sent will be 30 times the usual number. Traditional KPI-based ways of collecting statistics take fifteen minutes due to their statistical granularity, so real-time network changes in busy areas will be submerged, making it impossible to reflect real-time quality, loads and voice services in those areas.

This signaling monitoring system features real-time signal collection (with a delay of merely scores of milliseconds) and automatic generation of network monitoring results refined to a five-minute granularity. The system can also group cells that cover busy-area venues and allow venue-specific monitor and management. Such measures can realize fast and precise monitoring of busy areas, uncover the network usage pattern, and initiate contingency plans if necessary.

**From network management to subscriber perception**

During the Universiade, China Mobile will focus its communications guarantee on about 1,000 VIP customers such as government officials, as well as officials, referees and journalists at the Universiade. To that end, it will conduct 24×7 monitoring and recording, while analyzing the quality of network perception, service characteristics, and the performance of devices used by those subscribers. An automatic warning will be provided for abnormal incidents occurring to the VIP subscribers. Instant notices to the network operation & maintenance staff will be sent via email and SMS.

This signaling monitoring system ranks problems of monitored subscribers and performs more specific drilling for top-ranking problems, along with analysis down to call detail records (CDRs) of subscribers and signal reproduction for call processes of abnormal incidents. It also associates correlated signals in combination with various filter conditions to assist subscribers in performing intelligent diagnosis and identifying causes of their problems, and to find and tackle, in a timely manner, network problems that affect subscriber perception. By doing so, it enables proactive operation & maintenance for particular subscriber groups, strong support for communications & monitoring for VIP customers and transformation toward service- and subscriber-perception-based guarantee from the traditional equipment-based network guarantee, thereby increasing end-user satisfaction.

In addition to the preceding advantages, the signaling monitoring system also supports the automatic detection of Very Annoyed Person (VAP) and Very Annoyed Cell (VAC), and conducts topical analysis for puzzling problems such as one-way audio and abnormal announcements. At the same time, it analyzes subscribers’ behaviors in combination with static subscriber data acquired from systems such as BOSS, thus providing accurate data support for marketing.

**We are ready**

Huawei’s signaling monitoring system integrates Huawei’s in-depth understanding of customer service perception and new standards, as it features a triple-layer, independent architecture, distributed storage and processing, and high-performance data query technologies, making it a leader in terms of system performance, stability, and standard openness. It satisfied all the test requirements of China Mobile in signaling monitoring system tests organized by the latter, making it the leader in terms of test results. “Huawei signaling monitoring system provides numerous monitoring and operation & maintenance methods otherwise impossible with traditional equipment. It will provide strong support for the Universiade. We hope that we will carry out deeper communication and cooperation with Huawei in terms of subscriber perception, subscriber behavior analysis, and operation support,” said Mr. Chen, Director of China Mobile Shenzhen’s Network Operation & Maintenance Department.

The countdown for the opening ceremony of the 26th Universiade has already begun, and a grand IT-aided Universiade will soon kick off. With Huawei’s professional service solutions based on signaling monitoring and rich experience in network guarantee, China Mobile will assist Shenzhen in holding a most successful IT-aided Universiade by providing its participants with convenient, quick, and smooth mobile communications network services.

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