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— Wang Chuanbao, Deputy General Manager of China Unicom Beijing

China Unicom Beijing

Gearing up for the 2022 Winter Olympics with SmartLink

Developing private lines for industries verticals like government, BFSI, healthcare, and education is China Telecom Beijing's current top priority. The telco is consolidating its inherent geographical advantages to offer differentiated services based on its transformational strategies of digitalization, network intelligence, and Internet-based transformation.

By Wang Chuanbao, Deputy General Manager of China Unicom Beijing



China Unicom Beijing Launches SmartLink

In the wake of digital transformation driven by technologies like cloud computing, IoT, and big data, an entirely new B2B private-line market has formed. For China Unicom, its location makes this

market ripe for the picking: Beijing connects to nearly 40 percent of China's private line services, presenting a great business opportunity. As a partner of the Beijing 2022 Winter Olympics, for example, China Unicom has positioned private line services as central to its Smart Winter Olympics program.

To better serve government and enterprise

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customers, China Unicom Beijing surveyed its key customers to identify their requirements for bandwidth, latency, provisioning efficiency, dynamic adjustment, service operating status, and fault demarcation.

Moreover, the telco has continuously tracked new technologies for transport networks and implemented network upgrades and reconstruction. Applying advanced PeOTN architecture, powerful network capabilities, and Huawei's Network Cloud Engine (NCE), China Unicom Beijing unveiled its SmartLink private line service to a global audience at the end of 2018. Its goal is to provide government and enterprise customers with SMART services – Secure, self-Managing, Agile, Rapid, and Transparent – and, at the same time, build intelligent user networks.

SmartLink is the new private line service developed for the Beijing 2022 Winter Olympics, with intelligent features spanning every phase of government and enterprise private line services. In its pre-sales phase, SmartLink focuses on the customer experience. A self-structured sales model allows users to select the basic package

plus value-added services as needed, delivering a one-stop procurement experience. In the sales phase, SmartLink provides a logistics-style service provisioning experience, covering planning, configuring and debugging circuits and installing customer premises equipment (CPE). The entire process is visible and controllable, improving the efficiency of private line service provisioning. In the post-sales phase, SmartLink supports predictive O&M, helping to prevent private line service faults and maximize the availability of private line services. In addition, SmartLink provides self-help services, such as service status visualization and bandwidth on demand (BOD), to deliver better user control and a more flexible and agile service experience.

China Unicom Beijing has now launched the SmartLink private line service for its first batch of customers, including Beijing Supreme People's Court and TouTiao. Compared with traditional private line services, SmartLink offers the qualities of intelligence, transparency, customer self-service, and ultra-low latency, greatly improving user experience and increasing revenues from private line services.

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Mobilizing resources and reconstructing networks to build SmartLink

China Unicom Beijing has faced a stream of challenges during the development of SmartLink.

It is now adopting legacy SDH network evolution to mobilize resources: On its live network, nearly 100,000 private lines mainly carry SDH services. However, existing SDH resources fail to meet requirements for provisioning new private lines. China Unicom Beijing used Huawei's GNEEC Cloud tool to quickly analyze the legacy SDH network and identify the following problems:

Aging SDH equipment has high risks: 50 percent of the SDH equipment has been running on the live network for more than 10 years and is at the end of its lifecycle. There are no warranties, spare parts, or backup boards.

High O&M costs: The aging SDH equipment is low-capacity and low-density, but requires high levels of fiber resources and equipment room space.

Power consumption is also high.

Insufficient resources: Single fiber capacity is only 10 Gbps, which fails to meet customer requirements for new network construction and network acceleration.

China Unicom Beijing found that the configuration of large-granularity SDH services was unsuitable. Switching resources had become a bottleneck and line resources were wasted.

However, by adopting MS-OTN for migration and reconstruction, an all-optical base could be built for the aggregation-side MS-OTN+OXC, while E2E hard pipes would ensure low latency and high reliability. The access-side OTN was moved downstream towards enterprises, with network bandwidth increased by more than 100 times (N x 10G -> 8T), meeting requirements for at least 30 percent annual growth in private line bandwidth and the rapid increase in the proportion of large-granularity private line services.

China Unicom Beijing also plans to decrease power consumption by gradually replacing equipment room and fiber resources.

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After it reconstructed one of its core equipment rooms, the telco mobilized 70 percent of its equipment room and fiber resources and cut power consumption by 30 percent. During network migration, Huawei's GNEEC Cloud tool was used to quickly migrate SDH services to SmartLink, which delivers a better service experience for government and enterprise customers and boosts China Unicom Beijing's revenues.

Network automation and intelligence

It's difficult to deliver the millisecond-level latency and flexible service adjustment that services like securities and real-time synchronization of data centers require. However, China Unicom Beijing constructed its live network based on second-level latency and fixed bandwidth granularity. The telco is most concerned with how to evolve traditional private lines into intelligent private lines to meet requirements for transparent and visible private lines and self-service. This will also help its services stand out from today's homogenized private line market, and ultimately, attract more

customers.

China Unicom Beijing and Huawei deployed Huawei's NCE to achieve intelligent network management and control alongside agile service provisioning. The NCE's latency map function delivers on-demand service bandwidth and latency, increasing the additional value of private line services. During O&M, the NCE can visualize and manage network resources, service status, and performance indicators. Its standard northbound interfaces (NBIs) connect to the upper-layer OSS/BSS to realize online self-service applications, flexible bandwidth adjustment, and self-service queries on service status, providing an E2E all-online experience. AI-based big data analytics enables predictive O&M, which helps to preemptively identify and optimize private line service faults and improve network availability.

In response to insufficient coverage of new users and slow service provisioning, China Unicom Beijing shifted its policy from demand-driven network construction to "network first". It deployed the SmartCapex big data analytics platform to analyze

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the geographical distribution density of government and enterprise users to identify high-value areas, focus on key commercial buildings, and provide the basis for the advance deployment of private line network resources, supporting precise network planning and construction. Based on the sandbox and visualized platform, China Unicom Beijing anticipated key buildings based on OTN CPE/FO on the access side.

Additionally, China Unicom Beijing used plug-and-play OTN CPEs for client service access, enabling private line services to be provisioned on the same day, greatly shortening service provisioning time and enhancing the competitiveness of private line services.

Continuous exploration and innovation

SmartLink provides a better user experience for government and enterprise customers. It has improved China Unicom Beijing's O&M automation capabilities and enhanced its competitiveness in the private line service field. By serving the Beijing 2022 Winter Olympics, SmartLink will create



greater business and social value and help China Unicom set a new industry benchmark.

China Unicom Beijing is a pioneer in network technologies and continues to innovate digital and intelligent transformation to provide better services for VIP customers like governments, enterprises, and financial customers. [www.unicom.com.cn](#)