



## **A “MAJOR PLAYER” IN BUILDING THE CYBER SUPERPOWER**

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# A “MAJOR PLAYER” IN BUILDING THE CYBER SUPERPOWER

China Unicom shares the mission of building industrial power and strives to be a major player in building China as a cyber superpower. The Company has continuously deepened the construction of information and communication infrastructure, constantly enriched communication products and services, and actively improved network quality and customer experience, in an effort to boost China’s information technology development and laying a solid foundation for the country’s high-quality development. By providing customers satisfactory and high-quality telecommunication services, we enable more consumers to share the benefits of technological advances and enjoy better service experience.

## Measures adopted in 2019

- Marking the first year of the 5G era, the Company kicked off 5G commercialisation and introduced the 5G brand logo “5G™” and 5G tagline—“Let the Future Grow”.
- Continued to promote “speed upgrade and tariff reduction” by further reducing the average mobile data tariff by over 20%, the average broadband tariff for SMEs by 15%, and the data roaming tariff between mainland China and Hong Kong and Macau by 30%.
- Launched Phase I of the China Unicom cross-region products and services commercial trial on 6 November 2019 and fully implemented mobile number portability services on 27 November.
- Persistent to push forward the centralised construction of the all cloud-based smart networks to build a smart and highly effective Internet with better integrated data-carrying efficiency.
- 1.41 million 4G base stations and 5G base stations covering more than 50 cities as of 2019, covering 93% of the population.

## Actions to be taken in 2020

- To provide users with comprehensive smart home solutions and to introduce more pan-smart terminals through multiple products and channels to create an integrated smart home ecosystem of China Unicom.
- To continue to advance the implementation of mobile number portability services and simplifying cross-region mobile products while promoting cross-region services in first-tier, second-tier cities and towns together.
- To fully improve Internet-based services to provide customers with rich and diverse online services conveniently.
- To optimise the information security accountability system and improve technical and operational management capabilities to firmly safeguard national cyber security and to protect the legitimate rights and interests of users.
- To consistently promote the centralised construction of the all cloud-based smart networks based on 5G networks, and to actively participate in promoting universal services and network poverty alleviation by strengthening the construction of network infrastructure in remote and impoverished areas.

## NARROWING DOWN THE DIGITAL DIVIDE

### Optimising network experience

Upholding the original pursuit of providing “premium networks”, China Unicom endeavoured to build premium networks to satisfy customers, paving the way for the full introduction of rich and diverse services and applications, especially high-speed, large-bandwidth, low-latency network services, offering fast and high-quality service support.

#### Enhancing mobile network perception

As of the end of 2019, 1.41 million 4G base stations were built, covering 93% of the population, 84% of administrative villages, and 95% of application scenes. The all-network VoLTE coverage rate reached 94% (96% in urban areas). In terms of 5G construction, the Company has cooperated with China Telecom to co-build the world’s first co-shared 5G network. In 2019, 5G services had been commercialised in 50 cities, with the total number of 5G base stations reaching 62,000 (among which approximately 20,000 co-shared 5G base stations from China Telecom). According to the statistics of the Broadband Development Alliance, China Unicom delivered an industry-leading download speed of 25.2 Mbps.



Test flight of a China Unicom 5G drone and a photo taken by the drone

### ◎ Expanding broadband network coverage

In 2019, investment in broadband and data networks amounted to RMB8.4 billion, adding 12 million broadband ports, with broadband FTTH ports reaching 190 million, accounting for 85% of the total. In 2019, 4.39 million new broadband ports were added through cooperation with private capital, with the total number reaching 39.42 million, accounting for approximately 18% of all broadband ports, up 2 percentage points year-on-year.

### ◎ Promoting universal service construction

In an effort to fulfill social responsibility and enabling more people to enjoy high-quality network services, China Unicom, as always, spared no effort to provide universal telecom services by accelerating the construction of telecommunication networks in poverty-stricken areas, with the aim to speedily eliminate the “digital divide” in rural areas.

As of the end of December 2019, the fourth batch of universal services was completed, with 2,055 administrative villages participated. The scale of 4G base stations built included 2,076 base stations in administrative village and 22 border stations. The fifth batch of universal service had 2,859 administrative villages in 58 cities of 15 provinces participated. The scale of such 4G base stations built included 3,075 base stations in administrative villages and 176 border stations.

China Unicom had completed the construction of 521 base stations in administrative village in 2019. In the future, China Unicom will continue to build more base stations to “deepen coverage” and ensure “full mobile signal” in rural areas.

China Unicom Qinghai has long been marching on the journey of “National Universal Telecom Services and Information Poverty Alleviation”. In the fourth batch of universal service pilot projects, it undertook the task to assist 530 administrative villages in 18 districts and counties in 8 cities and prefectures to achieve 4G wireless network access. Since 2016, it has constructed universal telecom networks in Qinghai covering a total of 2,300 administrative villages (including 1,120 poverty-stricken villages), accounting for 39.29% of the 5,854 administrative villages of the province involved in the overall initiative, representing a significant contribution.

China Unicom Xinjiang Hami undertook pilot construction projects for universal telecom services in 18 remote administrative villages in Hami City, Balikun County and Yiwu County, enabling 3G and 4G network coverage in these regions. This effort greatly promoted the balanced economic and social development in the regions involved and helped narrow the digital divide between urban and rural areas, thus boosting rural revitalisation.



### ◎ Advancing network evolution

While maintaining the development and advantages of the existing networks, China Unicom continued to fully explore future-proof intelligent network architecture and evolution strategy, comprehensively improving its future-facing network operation capabilities.

- Newly built mobile networks were all deployed in a virtualised and cloud-based manner, and the newly constructed Internet of Things network was 100% virtualised. The Company continued to promote SDN upgrade and develop cloud-network integrated products, realising flexible adjustment and self-delivery of services in operation.

- China Unicom Industry Internet (CUII) posed to enhance the overall data-carrying capacity, continuously providing more diverse and intelligent WAN cross-cloud connection and networking solutions, as well as strong network support.

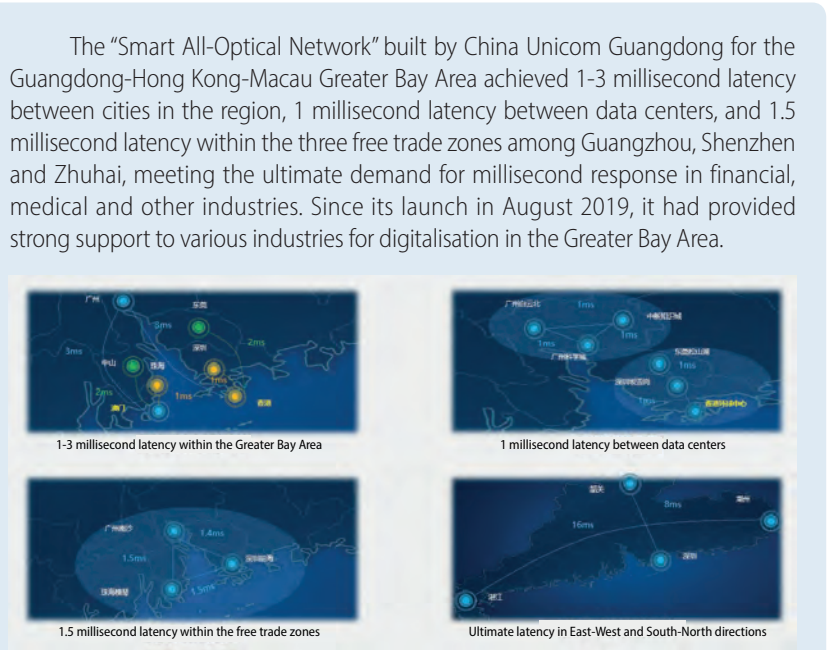
- The Company prepared the progressive plan of CUBE-Net 3.0 and published the White Paper on China Unicom’s Compute First Networking (CFN) and the White Paper on China Unicom’s Intelligent Metropolitan Area Network Technology.

- With a focus on the research and application requirements on open optical networks, the Company met with relevant OTN industry standards, formulated architecture and interface standards of OTN management platform, independently developed an OTN/WDM-CPE management platform, conducted tests on existing networks, and promoted low-cost deployment of integrated OTN.

- The Company completed the research and design of the overall reference architecture of white-box base station, and established an Open Test and Integration Center (OTIC) with China Mobile and China Telecom to expedite the growth of the white-box base station industry.

The average latency of the China169 backbone network maintained a leading position in the industry for 46 consecutive months.

The Company actively expanded the interconnection bandwidth of the points of interconnection. As at the end of 2019, domestic interconnection bandwidth had reached 7,911G. China Unicom completed the IPv6 transformation of all Internet backbone direct connection points, increasing the domestic IPv6 interconnection bandwidth to 7,662G. The capacity of the domestic backbone networks reached 288T, and international outbound bandwidth amounted to 2,460G.



Schematic diagram of ultra-low latency living circle illustrated by China Unicom Guangdong

independently developed an OTN/WDM-CPE management platform, conducted tests on existing networks, and promoted low-cost deployment of integrated OTN.

## Deepening speed upgrade and tariff reduction

To firmly implement the deployment of the national initiative of “speed upgrade and tariff reduction”, China Unicom adhered to the people-oriented development notion, set up a dedicated leading group, improved the person-in-charge accountability mechanism, and implemented “precise tariff reduction and standardised package setting” through measures such as enriching package content, increasing package value, and expanding data packages without increasing charges. By doing so, the Company further cut down the average mobile data tariff by more than 20%, the average broadband tariff for SMEs by 15%, and the data roaming tariff between Mainland China and Hong Kong and Macau by 30%. In 2019, the Net Promoter Score (NPS) of China Unicom’s mobile network tariff perception increased by 85.4% as compared with 2017 while there were increasing satisfied consumer demands, which accelerated the pace of high-quality development, and promoted the development of digital economy and information consumption upgrade.

### Mobile broadband tariff reduction policy

- **Data tariff:** increased efforts in promoting large-data products and expanding the use of supplementary-SIM cards, and reduced the average data tariff by expanding data packages without increasing charges while also promoted content offerings to increase package value, as well as promoted cost-effective product offerings such as discounted data packages and “Data Usage at Ease” packages.
- **Roaming charges:** Launched preferential roaming data packages to reduce roaming charges in Hong Kong and Macau while also carrying out promotional activities.
- **Poverty alleviation packages:** Introduced the 2019 guiding opinions on poverty alleviation packages to incorporate the development of such packages into the 2019 special tasks; required the targeted poverty alleviation packages in each province to offer at least 50% discount as compared to relative general packages, and encouraged regional branches with good conditions to introduce packages with greater special offers; improved the user experience over targeted poverty alleviation packages by ensuring that mobile packages have 3/4G Internet access and broadband packages has a downlink speed of at least 100Mbps in principle.
- **Standardised package settings:** Strictly controlled the product system and sorted out packages based on the four full-service product series.

### Fixed-line broadband tariff reduction policy

- Lowered the average tariff of broadband and dedicated Internet access for SMEs.
- Launched basic enterprise broadband products to meet enterprises’ basic needs for Internet access.
- Promoted comprehensive informatisation solutions for enterprises integrating “cloud + network + applications”, carrying out targeted speed upgrade and tariff reduction to assist the informatisation upgrade of SMEs.
- Stepped up the promotion of product tariffs and special offers to enable more customers to learn about and enjoy the special offers.

## Implementing mobile number portability

As an initiative that benefits the general public with extensive social impact and significant social benefits, “mobile number portability” is firmly supported by China Unicom comprehensively and the Company also firmly believed that it will further enhance information and communication services to better benefit the public while boosting the Company’s ongoing network improvement and service quality. China Unicom strengthened the overall responsibility to provide mobile number portability service, enhancing its overall coordination to practically and well doing the implementation of mobile number portability, so as to enable users to enjoy the communication freely.

- Actively organised and conducted research and surveys in five provinces and formulated a nationwide implementation plan for mobile number portability, while the Company adhered to the “user-centered” approach to improve the network, business, service quality in an all-round manner to make users’ experience more comfortable and satisfied.
- Organised a team of 2,000 people to make unremitting efforts in completing all the preparations for mobile number portability effectively and efficiently, and formally launched the nationwide mobile number portability service on November 27.
- Refined relevant rules to ensure well-regulated rendering and use of mobile number portability service.
- Organised group-wide training on mobile number portability in multiple steps and rounds to ensure that the relevant measures have uniformly been implemented by branches at provincial, city and county levels, and that front-line personnel could accurately understand and thoroughly know the policies and operational procedures for mobile number portability.
- Rolled out the online-to-offline integrated guaranteed mobile number portability service, allowing users to apply for the service at home.

To implement the requirements of mobile number portability and provide guaranteed precise services, China Unicom Gansu, China Unicom Fujian, and China Unicom Hunan organised rounds of training sessions specifically on mobile number portability, with the aim to offer better and more convenient services to the customers. The training sessions had received positive results.



Training session of China Unicom Gansu



Training session of China Unicom Fujian



Training session of China Unicom Hunan



## SHARING DIGITAL BONUS

### Ingenious brand building

China Unicom took the lead to launch its 5G brand logo “5G<sup>n</sup>” and the tagline — “Let the Future Grow” and constructed its 5G branding framework. The 5G promotional programme “Forerunner” was accredited the gold award at the China International Advertising Festival (CIAF) for its in-depth marketing. As the Winter Olympics approach, China Unicom, as a Winter Olympics partner, created 10 applications for three scenarios — watching, joining and hosting the Winter Olympics basing on the theme “China Unicom 5G Empowering Smart Winter Olympics”, and helped carry out a series of promotion, display and theme activities for the Winter Olympics. The hashtag “China Unicom 5G Empowering Smart Winter Olympics”, had made the front opening page of Weibo, with over 130 million times of top reads and over 62,000 comments of discussion, as well as ranking No.6 on the hot search list of Weibo.



China Unicom has continuously given its brand with richer connotation and deepening its brand image of being young and energetic, open and cooperative, innovative and eager. In 2019, China Unicom's brand story and brand communication case were selected into the pool of excellent promotional materials of central State-owned enterprises maintained by the SASAC and won the "Best Organised Enterprise" award in the brand story competition held by the SASAC.

China Unicom, the Beijing Organising Committee for the 2022 Winter Olympics and a group of high schools across the country jointly launched a three-party initiative to kick off the “Winter Dream Ambassador” recruitment programme with an aim to sow the seeds of the Olympic spirit among the youth and students on campus and popularise the knowledge and culture of the Winter Olympics, as well as to promote winter sports to the public and hoping to achieve the country's goal of “having 300 million people to stay active in winter”.



Winter Dream Ambassador Training



Winter Dream Ambassador Finals

As a decade-long strategic partner of the China Table Tennis Association and the International Table Tennis Federation, China Unicom has been committed to facilitating the popularisation and development of table tennis. In the first year of the 5G era, China Unicom leveraged its technology strength to empower table tennis and made a major breakthrough in broadcasting table tennis matches domestically and internationally, being a part to contribute to building the country's sports superpower.



5G interactive live broadcast of the national finals at the 7th China Unicom “Table Tennis at WO” Tournament

## Diligently-produced products

China Unicom continued to push forward the Internet-oriented transformation and building a value-oriented operation system for high-quality development. The total number of users served by China Unicom reached 460 million, including 320 million mobile billing subscribers, 250 million 4G subscribers, and 83.478 million fixed-line broadband subscribers. The integrated user penetration rate reached 58.6%, up by 7.9 percentage points year on year.

### Significantly expanded capacity for 5G packages with five-star experience on membership privileges

China Unicom's newly launched 5G packages, based on its current 4G packages, providing expanded capacity including more data, richer content offerings and better services. The 5G packages are divided into seven price levels at RMB129, RMB159, RMB199, RMB239, RMB299, RMB399 and RMB599, with data capacity ranging from 30GB to 300GB. Users who have previously made reservation with the 5G packages could directly enjoy monthly discount for 6 consecutive months, and loyal subscribers who used our services for at least 3 years would be entitled to a 30% discount. China Unicom's 5G package subscribers would also be entitled to exclusive membership privileges such as 5G video privileges covering VR, 4K ultra HD, AR, and ringback video, as well as music/reading privileges such as WO Reading and WO Music, and other discount privileges.

月费 (元/月)	流量 (GB)	语音 (分钟)	联通会员	网络服务	备注
129	30	500	4项 内容 权益	5G专享服务	套餐外每分钟0.15元 短信0.1元/条 套餐外流量3元/GB
159	40	500			
199	60	1000			
239	80	1000			
299	100	1500			
399	150	2000			
599	300	3000			

### Smart home Internet

In the field of home Internet, China Unicom continuously improved the "1+4+X" smart home product system, with a focus on the key services of "WO Family Video, WO Family Network Deployment, WO Family Fixed Call and WO Family Surveillance", in an effort to meet user demands for comprehensive informatisation services such as "HD video, intelligent networking, security surveillance and AI smart voice". Meanwhile, the Company deepened the construction of retail chain outlets to provide consumers more space to experience smart home. The Company coordinated various parties in the value chain and empowered the partners to build a smart ecosystem with win-win cooperation.

### Rich terminal supply

China Unicom has been persistently maintaining a mechanism of open and fair cooperation to share with suppliers, cooperating with more than 100 upstream and downstream terminal suppliers to iteratively optimise the entire terminal supply chain and steadily improve terminal operating efficiency, so as to ensure that users enjoy better quality terminal products and services from China Unicom's channels.

- Completed negotiations with 47 suppliers for cooperation throughout the year, the Company introduced hundreds of smart living terminals with a total sales volume of approximately 4 million units.
- Successively working with 26 chip, module and terminal manufacturers, ODMs, handset manufacturers, and Internet application providers to build a joint laboratory for 5G terminal innovation, a 5G R&D centre and a 5G application cooperative innovation centre. In addition, China Unicom's 5G experience centres were set up in 300 self-operated service outlets and 311 social channels and terminal manufacturers directly operated stores, to bringing 5G experience to more public users.

### Innovative pan-integrated products

In order to meet the demand for services arising from huge population traffic and movement, China Unicom launched Phase I of a commercial trial for its cross-region products and services on 6 November 2019, further enriching cross-region service offerings by adding non-local e-invoice issuance and non-local international roaming activation/deactivation. As of the end of December, the Company handled a total of 617,648 orders for cross-region services nationwide (including previously introduced services such as cross-region replacement of SIM cards).

Meanwhile, China Unicom continued to hold the Internet-oriented mindset to refine the operation procedures and optimising the rules for registering for the integrated services while promoting simplified service sign-up procedures. Currently, branches in 19 provinces have already adopted the simple interface for the handling of integrated services, shortening the duration of service sign-up at the counter by 40% and the handling duration by 50%.



China Unicom's cross-region products

## ◎ Differentiated products benefiting the general public's livelihood

China Unicom's 116114 hotline continued to introduce additional services for the benefit of the people, providing daily life service information including healthy community and remote medical consultation services, vehicle moving, law, employment, education, agriculture, psychological counseling. As of the end of 2019, approximately 28 million information inquiries had been handled, providing legal consulting and other services for millions of individuals and corporate users nationwide, including vehicle moving services for nearly 15 million users.

## ◎ Considerate quality services

### ◎ Improving customer perception

Guided by customer experience as the main goal, China Unicom focused on addressing obstinate issues and constantly improved service quality to enhance customer perception.

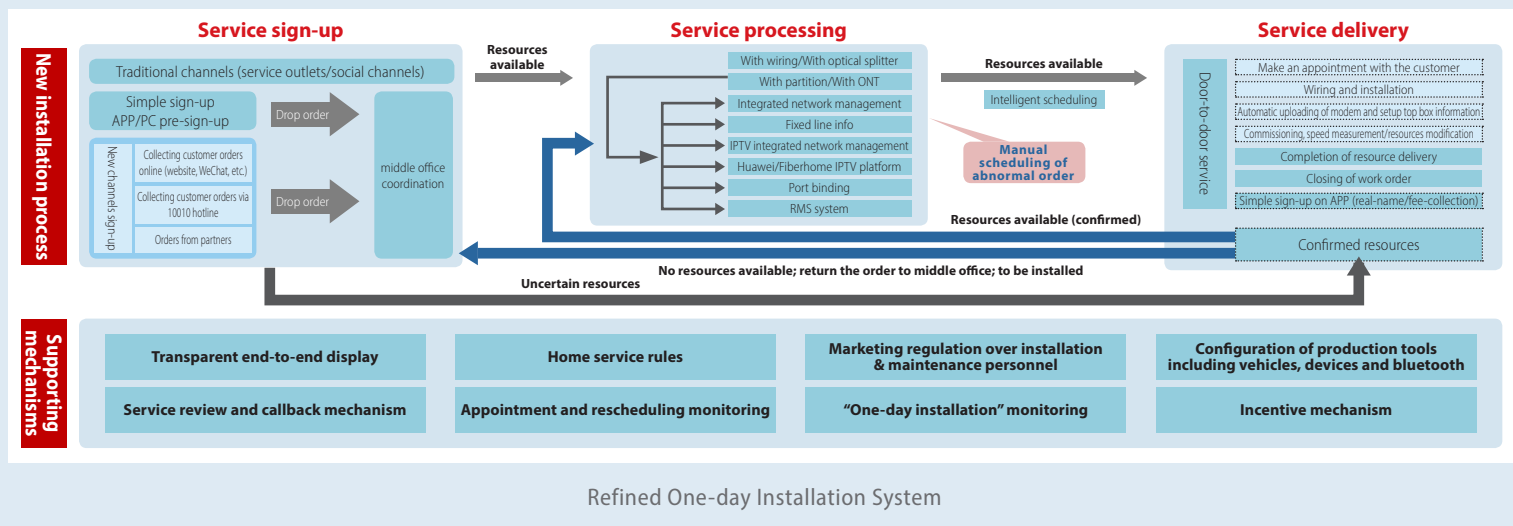
- The Company improved the system for real-time evaluation of customer perception, evaluated service quality based on the customers' voice, and established a customer perception evaluation barometer. It also refined the product experience management system through all newly launched products being examined and tested by the product experience centre of the customer service department, while products that failed to pass the test shall not be put on sale. Brand experience and communication were strengthened to fully enhance customers' brand awareness.

- An omni-channel interactive system with coordinated and consistent services was established to solve the critical and persistent issues in offline channels and to improve the readability and user-friendliness of online channels. After screening and optimising the key problems of offline channels, the complex problems concerning integrated services were reduced by 45% and 96 user scenarios were improved.

- The centralised sharing capacity of the building of the platform was strengthened, providing professional support for front-end applications, and continuously optimised service handling procedures, thereby cutting the steps and duration of service sign-up by more than 50%, as well as lowering the duration of service sign-up at service outlets to less than 10 minutes. A smart customer service intensive operation system was built to achieve the interactive customer service delivery between personal service and digital platform and through swift and optimised procedures, along with unified standards, duration to solve users' issues could be minimized, which would comprehensively improve customer service perception.

- A supervisory system to promote problem-solving was established, achieving significant results brought by the major inspection by the State Council and improving the satisfaction in both the frontline staff and customers.

China Unicom Heilongjiang reviewed and refined the organisational structure, management mechanism and production tools process of broadband installation, enabling the delivery of installation service within 24 hours and posting transparently the whole installation process online. Users could check the installation progress at any time, and also comment on the services of the smart home engineers. With such efforts, "one-day broadband installation" was fully realised and improved broadband customer perception.



## ◎ Innovative Internet services

China Unicom has actively developed Internet services and keeping up with the Internet development trends and customer needs. China Unicom has set up service channels on various Internet platform including WeChat, Baidu Baike, Zhihu and Douyin. Meanwhile, through a series of measures such as search engine optimisation and the opening of robot capabilities, the Company continuously scaled up the Internet services and handled 1.21 billion service orders through tier-1 channels. In particular, knowledge about China Unicom on Baidu Knows had been read over 300 million times, whereby China Unicom was rated TOP 1 partner of Baidu, exceeding Xiaomi and Huawei.

## ◎ Improving service quality

China Unicom pushed forward the rectification and resolution of key issues in the principle of drawing lessons from one case to another. The Company stepped up the efforts in rectifying and addressing key issues on the occasion of the major inspection by the State Council.

- With problem-solving as the notion, issues such as the Company's system, procedures and rules were fully reviewed, achieving to deal with each kind of issues by addressing one issue of a kind.



- The Company continued to push forward the rectification and management of key issues nationwide through solving the issues as via systematisation, reorganisation of procedures, and stressing focus to solve with the different rights between new and old subscribers, deduction of value-added service fees and repeated visits to the service outlet.

- The event “Doubling the satisfaction as it was the initial intention” was carried out with high targets as initiative, problem-solving mechanism was consolidated through comprehensive appraisal and special evaluation.

- A complaint-driven problem-solving mechanism was established integrating closed-loop resolution, professional coordination, early service warning, management accountability, and rectification to address the root causes of problems. In 2019, the Ministry of Industry and Information Technology received 219.1 valid complaints per million subscribers, down by 50.3% year on year.

### ◎ Actively responding to complaints

In 2019, China Unicom continued to strengthen the matrix-like complaint management system by improving complaint management and control, and achieved significant results in this regard as evidenced by the fact that there were no complaints filed about abusive charges in the entire year.

- With an aim to improve customer perception, the Company raised the criteria for closing complaints, shortened the cycle of handling complaints, and strictly implemented the principles of first one taking the responsibility system, empowering front-line staff to offer service remedy and immediate commitment, thus improving both the quality and efficiency of complaint handling.

- A “double closed-loop” complaint handling mechanism for single problems and similar key issues to resolve one kind of problems by addressing a complaint of the kind had been adopted.

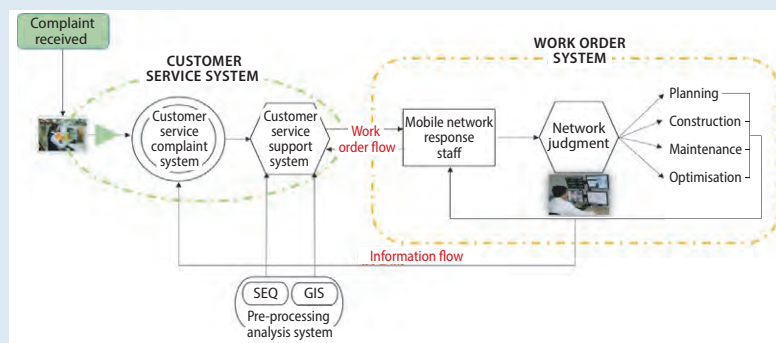
- To prevent complaints, the Company carried out the “Three-All” corporate culture discussion activity to screen out more than 30,000 issues affecting customer perception, adopted a transparent resolution process and put key issues under the supervision of the Group, effectively solving a host of long-standing and difficult issues affecting customer perception.

- In 2019, the total number of complaints made through the 10010 hotline was 20.776 million, down by 22.0% period over period, representing a monthly complaint rate of 38.5 complaints per 10,000 users, down by 23.7% period over period. The rate of resolution of complaints stood at 98.1%, up by 0.3 percentage points period over period.

China Unicom Shandong had an interactive meeting with grass-roots personnel. By communicating with users and collected complaint data to conduct analysis and case study, it gathered the key factors affecting NPS, and then targeted measures could be taken to improve customer perception.



China Unicom Shanxi built up a “complaint-driven mobile network front- and back-end integrated” management system through network-side big data mining, process reengineering and management innovation. In the process of handling a complaint, the cause of failure has been identified, and information on terminal, failure on terminal, and network perception have been provided to the front desk department to facilitate the communication with the customer. By doing so, China Unicom Shanxi greatly shortened the duration of service handling and improved the rate of resolution of online work orders, thus realising rapid response to complaints and enhancing customer perception.



Order work flow

China Unicom Beijing fully integrated system resources and built a complaint monitoring and early warning system, representing a 3-dimensions complete early warning system that enabled real-time monitoring and early warning covering overtime, repetition and repeated reminders, manual warning with repetitive complaint and increasing force, as well as manual warning with service risks. In doing so, customer situations were real-time monitored, and relevant departments would push forward to resolve the root causes of key issues, thus improving customer perception and service efficiency.



Real-time monitoring and early warning module



### ◎ Improving customer reputation

China Unicom continuously strengthened brand experience and communication to comprehensively enhance customers' brand awareness, sending positive messages to attract users.

- A series of service measures were launched such as renaming the 10015 hotline as the consumer rights protection hotline, and giving the guarantee to response the solution within three business days.
- The NPS (customer satisfaction) evaluation was conducted in 2019, with the NPS for mobile increased by 7.2 points and the NPS for broadband services increased by 8.1 points. As to mobile network, the NPSs for network, business and service increased by 7.4, 10.3 and 23.4 points respectively, reaching the industry-leading levels.

### ◎ Guaranteeing transparent billing

In accordance with the "Law of the People's Republic of China on the Protection of Consumer Rights and Interests" and other laws and regulations on the protection of customer rights and interests, China Unicom has strictly regulated the billing and charging practices, and has been protecting customers' right to know about the services they consume, and has also been strengthening the awareness of know-how on products and services among consumers.

- Increased publicity leveraging both traditional media and new Internet media which integrated with self-owned channels resources such as service outlets and mobile app were able to disseminate various information on products and services to consumers in a timely, accurate, and easy-to-understand manner.
- Special control over illegal marketing activities such as bundling sales and unauthorised changes in user packages were closely monitored and serious penalties would be implemented should there be user-unauthorized sign up, trial service, change, and service subscription.
- Focusing on promoting various nationwide-uniform packages which stressed on the simple and clear tariff structure and standard, thus reducing the number of products.
- Form-free templates to ensure that users well understand about the services they subscribe had been continuously optimised.

## 🏠 Building solid channels

### ◎ Improving the efficiency of self-operated service outlets

China Unicom advanced and pushed forward the operation of its self-operated chain outlets, and created a new type of service outlets with digitalisation, premium experience, complete product categories and providing more superior services and better service experience to customers.

- Efficiency of service outlets were comprehensively improved, and smart living chain stores were carried out while service outlets went more digital, in the efforts to provide customers more comprehensive services focusing on user experience.
- Service capabilities of servicing team at business outlets were improved. Through moving simple services to online channels, optimising processes and empowering salespersons via training, as well as improving staffing number, it built great servicing teams for chain outlet operation.

### ◎ Building an integrated online and offline channel ecosystem

China Unicom optimised its integrated online and offline channel ecosystem based on the life routines of its customers to make services available to them anytime and anywhere, covering all touchpoints and application scenarios.

- Centralised management of e-channels continued to push forward, putting all 212C products under centralised management.
- The optimised and integrated marketing model which iterated Buy By Code 2.0 and Internet-based smart mid-platform continued to advance and fully pushed forward the construction of a large delivery network, achieving a number of key online functions

## 🌐 CREATING A CLEAN CYBERSPACE

### 🏠 Implementing "real-name registration"

China Unicom has strictly implemented real-name registration according to the requirements of the Ministry of Industry and Information Technology. Currently, 100% of the Company's telephone users have gone through real-name registration.

- The dynamic portrait comparison technology was fully employed in all physical offline channels from 1 December 2019, strictly implementing the standard practice of real-name registration, while also stepped up the review of real-name registration information for new subscribers, improving and strengthening the control over cooperative channels.

In order to enhance customer service perception, China Unicom Yunnan introduced "Five-star Customer Privileges" which comprised of six privileges including premium network service, priority access to manual customer service, VIP access at service outlet, free service migration, free SIM card replacement, and exclusive privilege day, further enhancing the service perception of high-end customers.

- Multi-level services, including five-star privileges programme offering six privileged services, were offered.

China Unicom Guangdong upgraded the service equipment of business outlets, improved outlet environment through intelligent retrofit, specified the service standards, promotion and sales pitch at the business outlets, and conducted service skill evaluation and process optimisation to improve the services of business outlets and enhancing user experience in an all-round manner.



including cross-region delivery, integrated services sign-up, customer maintenance, value enhancement, and etc.

- Product standardisation strengthened to phasing out a number of 212C packages in batches, optimising the product tariff structure.
- High-traffic apps were developed to constantly improve service experience and better basic product functions. The Company actively explored new operating models and built an ecosystem of win-win cooperation among channels, users and provincial branches.

- The “Person-ID Consistency” review of existing subscribers continued and screening on real-name registration of IoT cards was conducted.
- The contract signing rules were heightened, publicity reminders and monitoring of abnormal network access risks were carried out and reinforced.
- The accountability mechanism for real-name registration was refined, and two rounds of third-party secret investigation were carried out.
- The Company actively cooperated with the Ministry of Industry and Information Technology on the joint debugging and online launch of the “Telecom User Registration Information Verification Platform”.

### Protecting user privacy

China Unicom actively implemented the requirements of the Cyberspace Administration of China and the Ministry of Industry and Information Technology regarding the legal collection and use of user personal information, and supplemented and amended the “China Unicom User Privacy Policy” and “China Unicom Customer Network Access Service Agreement” to fully protect user privacy.

### Cracking down on telecom fraud

In an effort to fulfill its social responsibility as a state-owned enterprise, to maintain the normal telecommunication order and protect the legitimate rights and interests of users, China Unicom firmly implemented the state’s policies on preventing and cracking down on telecom fraud.

- Screening of scam calls, harassing calls and spam SMS messages were carried out. In 2019, 50.38 million overseas scam calls and 1.16 billion spam SMS messages were intercepted and 936,000 scam and harassing phone numbers were shut down, leading to a decline in the overall number of cases as reported by users.
- Data security control has been strengthened to timely prevent the risk of data and personal information leakage, while four rounds of self-examination and rectification were carried out, and with technical testing and problem rectification for app with more than one million users being conducted, there was no major data security incidents identified in the process.
- Fully leveraged the advantage brought by big data technology resources, the Company developed models for abnormal equipment identification which found a large number of GOIP and similar devices, effectively helping the public security administrations to pin down fraud dens.

China Unicom Shanghai has set up a real-name registration system to strengthen risk control and fraud prevention. In 2019, it activated and conducted spot checks and supplementary review of photos under real-name registration for 4,273,800 subscription orders, and found 91,900 non-compliant orders. All non-compliant phone numbers were immediately shut down.

In August 2019, it was found in a real-name photo review that an agent of Pudong branch had illegally approved more than 40,000 cases, all of which had been shut down, thus eliminating the potential danger of fraudulent use of such numbers by criminals.

Beijing Unicom leveraged its capabilities in Internet big data analysis and targeted intervention to address the frequent complaints about medical institutions and disguised medical institutions deceiving patients and consumers by establishing a high-risk website library and setting up mobile phone pop-up reminders to assist the government to regulate services in the healthcare industry.



China Unicom Henan continued to build a new anti-fraud and anti-harassment phone management system integrating accurate identification of malicious phone numbers, rapid shutdown, rectification & supervision, and source accountability, which improved the accuracy and effectiveness of the fight against fraud and harassment, effectively protected user communication and property security, enhancing customer perception.

### Protection on network security

With the mission to be the protector of network security, China Unicom has constantly optimised its network security products and strengthened its service capabilities. For government and enterprise customers, China Unicom continued to improve the China Unicom Cloud Shield product series by increasingly enhancing DDoS scrubbing capacity to the comprehensive protection level of 3 Tbps by adding intelligent filtering techniques and capabilities in protection of IPv6 traffic. Furthermore, the Company officially launched domain name security products, and fully carried out research and development of various security tools covering web security, vulnerability scanning, DC security, and etc. These efforts helped guarantee the network security for important events as the NPC and CPPCC Sessions, the Belt and Road Summit, and the Military World Games.

For public customers, the Company continuously carried out network security promotion and education. Since the launched of the international call reminder and SMS notification service in January 2019, the Company had a total of 100.67 million call reminders, and 1.53 billion SMS and MMS security alert messages sent through mass texting.

China Unicom Tianjin developed the “Three-dimensional Security Electric Fence” to monitor and protect areas such as data collection, data access and data transfer, covering all network traffic of the China Unicom Tianjin mobile core network. Through this initiative, it achieved “data access protected”, “data encryption”, “data integrity” and “identity authentication” over basic network information, improving the network and data security of the platform system while lowering the security risk of data leakage.