ZTE Intelligent Wireless Network Solution

We are entering a new intelligent era. Under the development of new technologies like AI, cloud computing, big data, 5G and Internet of Things, we will truly realize the Intelligent Connection of Everything.

In previous industrial revolutions, people have liberated their physical strength. In the upcoming intelligent revolution, our intelligence will be liberated once again, productivity will rise dramatically, the mechanism for wealth creation will be overturned, and the value chain will be remade, leading the industry ramp up on the value chain. Traditional telecom operators face fierce challenges in the new intelligent era, such as complex network reconstruction, diversity of new business, customized user demand, opening capability, ecosystem remodeling, rising cost, new technology and cross-border competition etc. In order to better understand customers, business and network, network intelligentize is the only way for telecom network evolution.

As the world's leading integrated telecommunication solution provider, ZTE cultivates in all the core areas of 5G, with the rich experience and in-depth understanding of industry development in 5G, ZTE will actively drive AI technology with telecommunication technology converged, to carry out the innovation research and practice of automation and intelligentization technology such as 5G wireless, cloud, slicing, transmission, operational service, and actively participate in the formulation of standard organizations and make contribution to the open source technologies.

On uSmartNet intelligent network solutions, ZTE is committed to provide complete capability for telecom network, such as data awareness, intent insight, intelligence analysis ability, help telecom operators to comply with the trend and facing the challenge, to create with "network autonomy, predict the future, on-demand move, intelligence operations" ability of intelligent network in the future. 5G network will be built on the architecture of cloudization and service-oriented, to meet the long-term development requirements facing the future:

1. Separation of CU/DU in RAN side. CU can support cloud or special hardware deployment and flexibly adapt to the requirements of each scenario;

2. Based on the service-based architecture (SBA), the converged core network of 2G/3G, 4G and 5G is realized, which can meet the requirements of smooth evolution, coordinated development and long-term coexistence;

The new 5G network architecture achieves the decoupling of software and hardware through virtualization technology. In the core network, the separation of user plane and control plane is completed. On the access side, the functions of CU and DU are defined. More important, in 5G network, the new architecture adapt to the access of new diversified mass businesses and support the development and deployment of the intelligent network.

Considering the challenges of wireless network development and the demand for intelligent introduction, the integrated development of artificial intelligence and telecom network, the overall introduction and presentation in 5G network, will be ubiquitous. The intelligent network is realized by introducing algorithm models and intelligent engines at different levels of the network. 5G network based on cloud and

service architecture has obvious differences in characteristics among different network levels.

The higher and more centralized it is, the higher requirement of cross-domain analysis scheduling ability it is. For example, for the scheduling and management of E2E slices and global cloud resource coordination scheduling, the centralized intelligent Engine VSE (VMAX Smart Engine) should be relied on to carry out centralized training and reasoning of overall strategy.

The lower level, closer to the end, focus on professional subnets or single network intelligence ability enhancement, such as access network, core network introduced LSE (Lite SE) enhance the intelligent capability of subnet or sub slice, such as network management strategy, intelligence operations, or for edge equipment, MEC, 5G gNB, introducing the RSE (Real – time SE) on the edge of the real-time, quasi real-time intelligence.

AI algorithm model and various intelligent engines can be introduced and deployed based on different hardware computing environments in 5G network. At the same time, through combination of engine, model component and application algorithm, and combination of different network functional entities, intelligent enabling of 5G network can be realized.

ZTE has built its own wireless AI platform, adopting common hardware and popular algorithm architecture, creating intelligent engines suitable for different scenarios, providing an open capability model, and constructing rich applications for users and businesses. The platform including engine layer, model layer and application layer:

Engine layer:

Support intelligent engines of different levels, including centralized AI and big data intelligent engine VSE, lightweight intelligent engine LSE and real-time quasi-real-time intelligent engine RSE, visual modeling component AI Explorer and machine learning, deep learning framework, etc., support different deployment scenarios flexibly.

The model layer:

Support various wireless network common capability model components, such as alarm association model, capacity prediction model, user behavior model, traffic model, etc. Through the open interface, all models can be shared and the application layer can be flexibly supported.

Application layer:

Specific applications oriented to wireless intelligence which can be applied to a variety of application scenarios flexibly, such as intelligent prediction, RF fingerprint application, intelligent slice, Root Cause Analysis, etc.

Various AI capability combinations are integrated into ZTE's wireless products according to specific network deployment requirements, such as wireless base station, cloud core network, UME network management, CloudStudio, ZENIC, VMAX and BigDNA big data, MEC, etc.

Logic Architecture of ZTE's Intelligent Wireless Network
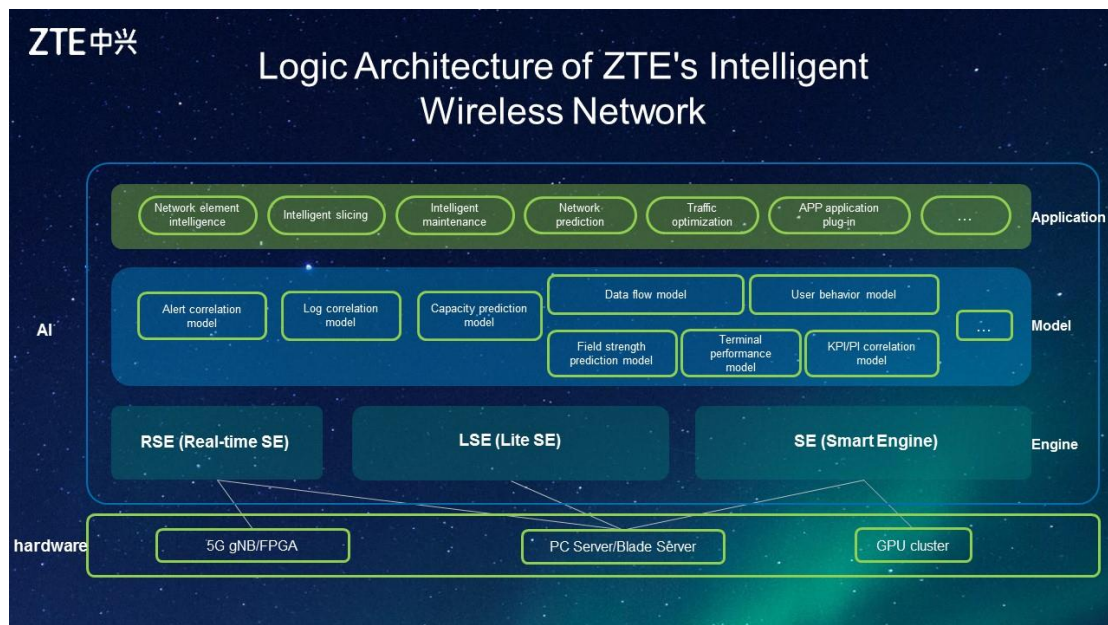
Intelligent wireless network evolution, will be a long-term process and be advanced step by step. ZTE think it's important to focus on valuable scenario firstly, considering the network current situation, the progress of cloud transformation, 5G and IoT technology maturity, operator network evolution strategy, etc., Wireless network intelligent evolution will be propelled steadily. Intelligent evolution can be implemented step by step from point to surface, from single professional partial function enhancement to cross-professional scenes in the same field, and finally to high-intelligent scenes of the whole network end to end.

ZTE uSmartNet intelligent wireless network solution, start from improving the user experience, reducing operating costs, deploying the service promptly, bring real value for our customers in various scenarios, such as, the Massive MIMO beam management, interference management, coverage optimization, load balance optimization, dynamic recognition and optimization, network capacity prediction, cell load forecasting, the intelligent slice, RCA positioning analysis, intelligent power saving, accurate user portrait, etc.

On the coming of the age of intelligence, the telecommunication network will be changed from mainly serving people to fully serving the digital society. With the integrated development of 5G, AI and IoT, telecom network will become a new generation of intelligent information center, providing key support for promoting the transformation of digital social industry and shaping new industrial forms, bringing new impulse to social development and economic growth, and promoting human society to enter the new era of Intelligent Connection of Everything.

Opportunities always go with challenges. In the area of intelligent wireless network, ZTE will continue its investment in research and innovation to provide all-round professional support for the wireless network construction and intelligent development of operators. ZTE persist the purpose of openness, win-win cooperation, will build an intelligent new ecology with operators and partners.