Embracing the intelligent era with Intent-Driven Networks

In an intelligent world, all things will be connected. Connections have infinite potential value and will ultimately deliver a vast new range of user experiences. ICT is the foundation of a fully connected society. However, universal and reliable connectivity is necessary to ensure a premium user experience. This is where Intent-Driven Networks come into play.
A premium user experience will enable new technologies to develop, endowing our networks with greater vitality. Cutting-edge technologies, such as cloud, big data, and artificial intelligence (AI), are already making an impact beyond just the Internet. They are transforming new IT and will go on to revolutionize communications, driving fundamental changes to the communications industry.

Huawei’s Global Industry Vision (GIV) predicts that by 2025, there will be 100 billion connections worldwide. The Internet will be available to 77 percent of the world’s population, 75 percent of homes will enjoy broadband connections, and 80 percent of people will have mobile phones. This enhanced connectivity will be the foundation for the intelligent world.

**Towards intelligent networks**

The popularity of broadband over the next decade will increase global GDP by about 4.5 percent, and erode the constraints distance has on economic activities. Today, fiber, copper, cable, and microwave technologies mean that networks can grow even faster. We already have the core of a global network, which is gradually being extended to every corner of the earth. The expansion of broadband coverage has been a major factor driving the incredible development of the ICT industry over the past 20 years. As one of the world’s leading ICT companies, Huawei’s mission is to build links between people and between things. Today, half the world’s population uses Huawei equipment in some form or another and benefits from the broadband services that our networks make possible.
During the rapid growth of broadband networks, cloud-based technologies led by SDN were deployed, first in enterprise networks and then in telecom networks. Doing so achieved central network control and management, and accelerated carriers' digital transformation. The core principles of network cloudification are automation coupled with vertically extending the value of network connectivity, so new services like 5G can be vertically extended. Huawei launched its all-cloud network strategy in April 2016, and proposed the transformation of carriers' ROADS experience by cloudifying devices, networks, services, and operations. By the end of 2017, Huawei had deployed more than 380 SDN networks for carriers and enterprises worldwide, covering data centers, campuses, and WANs, helping customers solve some of the challenges with digital transformation.

The pursuit to give users better service experiences is also the pursuit of autonomous networks – the ultimate goal of network development. However, there's still a huge gap between SDN and autonomous networks, which prompted our intelligent network concept.

**Intent-Driven Networks: For users**

Carriers now understand how crucial network intelligence is for service operations.

In the home broadband service field, carriers have limited awareness of the entire network, and network faults cannot be handled quickly. As a result, the quality of the broadband user experience cannot be guaranteed over the long-term. Increasing service quality requirements for enterprises and governments greatly increases the challenges to carriers’ networks, which is compounded by scattered resources. In the mobile service field, sudden traffic spikes affect mobile transport networks, which can be adjusted only after user complaints have been received.

All challenges for carriers with core service operations boil down to equipment-centric network O&M. Executives from leading carriers around the world recognize that their networks are not designed to revolve around users or services. Carriers must build an intelligent network that can sense user requirements in real time and dynamically configure network resources based on service operations.

At MWC 2018, Huawei launched its Intent-Driven Network solution. The solution enables digital twins to connect physical infrastructure to business needs. The network is driven by customers’ business intent and service policies. Huawei will help build a network that puts user experience front and center based on the following features: intelligence, simplicity, ultra-broadband capabilities, security, and openness.

**Seeing the future**

The Intent-Driven Network has five major features:

- **One, predictive analysis**: Using big
data and AI, the network can predict network issues, optimize network performance, and perform troubleshooting in advance. The network can also perceive the service experience of every user in real time. With self-learning capabilities, it can continuously improve its intelligence and ability to perceive issues with the network and with user experience.

Two, simplicity: The architecture, protocols, sites, and O&M are simple and able to achieve full lifecycle automation so the network is more agile and efficient. This helps improve the utilization of network resources and the flexibility of services.

Three, ultra-broadband: New UBB technologies can achieve massive numbers of connections, ultra-low latency, and ultra-high bandwidth.

Four, openness: The network can interconnect with various third-party platforms to build an open industry ecosystem.

Five, security: By identifying security threats in advance, the benefits of network intelligence and automation can be fully realized.

The Intent-Driven Network will be integrated into various service scenarios and help carriers build solutions for future business scenarios. At MWC 2018, Huawei launched a series of innovative solutions for agile private lines, 5G transport, premium broadband, and enterprise campuses. These new options will help carriers reshape their business models.

Huawei believes that enterprises and carriers will walk together into the Intent-Driven Network era and develop in parallel, driven by the ICT industry.

Partnerships and openness

Huawei is committed to bringing digital to every person, home and organization for a fully connected, intelligent world.

We work with our partners to build an open, collaborative, and win-win industry ecosystem. In the field of network innovation, Huawei works with upstream and downstream partners to promote innovation in the Intent-Driven Network industry. Huawei has established R&D organizations in eight countries and established more than ten network innovation centers with multiple carriers, including Vodafone, Deutsche Telekom, SK Telecom, China Mobile, British Telecom, and Telefonica.

We actively participate in formulating mainstream international standards. In the network field, Huawei has held nearly 40 high-end standard positions in standards organizations, including IETF, ITU, ETSI, BBF, OIF, and IEEE. We now lead industry standards in the access and transport domains, entered the first camp of IP technology standards, and we’re the main contributor to SDN/NFV technology standards.

To help construct the SDN/NFV ecosystem, we have built more than 10 SDN/NFV open labs. By the end of 2017, we had more than 40 partners in the SDN field and completed integration and test certification with more than 20 industry partners.

Huawei is seeking to build alliances to establish an industry cooperation platform. The Edge Computing Consortium initiated by Huawei and its partners has more than 150 members. Through open collaboration between the OT and the ICT industry, Huawei promotes sustainable development in the edge computing industry.

In the future, Huawei will work with its global partners to leverage strategic development opportunities that will be delivered when everything is connected. By building intelligent, simple, and secure Intent-Driven Networks that are open and feature UBB capabilities, Huawei will enable global carriers to build user-centric intelligent networks for the benefit of all.