

Architecture Designed for Operator Transformation

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Operators must innovate with partners to break industry stagnation and support future business development. >>

Operating revenues throughout the telecom industry have plummeted. Internationally, Internet leaders have near monopolies in their respective markets with diversified services, profit innovation, and competitive pricing. This has eroded the traditional market share of telecom operators.

Video and the Internet of Things (IoT), however, bring important opportunities for future Information and Communications Technology (ICT) telecom development. Mobile data traffic from video streaming and communication, as well as growth in enterprise and industrial videos, has made video the second most-used medium for communication. The demand for both conventional connections and IoT-based industrial informatization is expected to increase exponentially, creating broad new opportunities for mobile operators and their industry partners.

Transformation in Waves

The information industry has experienced three periods of transformation.

The first occurred before 2000, when industry development remained entirely network-centric. During that time, network equipment vendors held some of the highest valuations in the industry. The second, be-

tween 2000 and 2015, focused on horizontal applications, enabling the emergence of the Internet giants. The third, currently underway, has industry operators contemplating how to capitalize on immediate and future opportunities.

Success hinges on whether operators collaborate with partners to achieve an all-around transformation that enables them to better forecast the future of their businesses, operations, architectures, networks, organizational potential, talent systems, and environment. During this process, the goal is for new domains, technologies, and ideas to emerge.

• National Opportunities

Economic, political, and social issues related to the Internet and Big Data are national strategy concerns of the major world powers. The U.S. Industrial Internet, German Industry 4.0, and China's Internet+ strategy, whose impact cannot be ignored, are all attracting worldwide attention.



Operator transformations must fit in the context of national strategies and develop core capabilities from the inside out. Most importantly, operators are able to position themselves to enter new high-profit areas and influence national policies.

- **Region-specific Deployment**

New technologies create new user requirements and new service methods that greatly impact the digital transformation of all industries. If operators ignore the timing of new developments, they cannot effectively utilize the interaction between technical innovation and digital transformation. All influences are region-specific, and there are no internationally applicable general-case solutions.

Huawei predicts that the technical development of operators will undergo five main stages between 2016 and 2020 — including aspects of Software-Defined Networking (SDN), Network Functions Virtualization (NFV), and Cloud Computing:

- 2016: Big Data
- 2017: The IoT
- 2018: 5G, Augmented Reality (AR), and Virtual Reality (VR)
- 2019: 3D printing
- 2020: Artificial Intelligence (AI) by industry

- **Industrial Internet Services**

For telecom operators, providing industries with digital services via the cloud is an important direction for business development. The market for cloud services is huge and multifaceted, with a multitude of varying requirements that cannot be ignored. For example, small- and medium-sized enterprises are more sensitive to price than service. They require technology services that are simple and inexpensive. Large-sized enterprises are not as price-conscious. They need End-to-End (E2E), all-in-one, high-quality cross-regional cloud services. Governments also require all-in-one cloud service platforms that support public services and eGovernment while ensuring information security to protect private data.

To increase competitiveness, operators must:

- Deliver one-stop solutions and services
- Own cross-regional cloud infrastructures



The organizational structure of operators must also become agile. Basic principles include bridging the gaps between markets, separating IT systems and networks, streamlining End-to-End operational processes, and strengthening interactions between business and resource enablement capabilities. >>

- Leverage their advantages across networks and data centers
- Provide services to multiple branches
- Satisfy the requirements of large enterprises
- Effectively integrate multiple systems, products, and solutions from different vendors
- Offer custom, localized service capabilities

- **Driving Digital Transformation**

Digitization is an important method for operators to achieve digital transformation before 2020. To be effective, operators must implement and continuously promote top-layer designs, which include:

- **Strategic Positioning**

Operators typically focus on three domains: pipe strategy, construction of digital enablement platforms, and building their full capacity as digital service providers. During this process, operators must align their basic architectures as well as business, operations, and R&D models to match those of Internet companies to increase innovation.

Huawei assists operators in analyzing the potential of modern ICT solutions for developing custom plans based on business conditions.

- **Business Planning**

Developing a business that increases market share, adds value, and increases revenue is the most important aspect of planning.

Operators must encourage resellers to launch applications on integrated platforms and make applications available to industries, enterprises, and end users through the appropriate channels. This will enable third parties to provide more diverse services and increase profits through revenue sharing.

During service planning, operators must utilize their core advantages of network access, service quality assurance, security, and reliability to differentiate themselves from Internet companies for the purpose of adding customer value.

- **Architectural Design**

Operators must concentrate on the architectural design for services, applications, specific implementation methods, and the future landscape of cloud data centers.

Data centers will incorporate platforms that are completely cloud-based for internal operation. Crucial aspects of this transformation include:

- Service support
- O&M efficiency
- Internal application platforms for enterprises
- Plan and deploy data center layers
- Network technology road maps based on the evolution of SDN and NFV
- Architectural evolution of Fixed Broadband (FBB) and Mobile Broadband (MBB) platforms

For service-level cloud improvements, these upgraded cloud data centers must collaborate with subsidiaries and branches. Additionally, improved operator performance is necessary to support the growth of market share for digital services over the next five to ten years.

- **Operational Management**

To develop core services and innovate business models while building open, converged platforms, operators must have high-quality, well-supported operations for front-end service development, business model exploration, and flexible revenue-sharing mechanisms. This expands industrial cooperation and ensures that the criteria for Huawei's Real-time, On-demand, All-online, DIY, and Social (ROADS) experience requirements are met.

By using Big Data technologies, operators identify their most-valuable customers and push services to different user groups for additional value. To extract valuable data, operators must fully utilize Big Data technology, improve business readiness and resource usage, and improve capability development and converged platforms.

- **Organizational Optimization**

The organizational structure of operators must also become agile. Basic principles include bridging the gaps between markets, separating IT systems and networks, streamlining E2E operational processes, and strengthening interactions between business and resource enablement capabilities.

The traditional practice is to maintain networks by segmenting them, but future approaches will manage overall ICT capabilities at each network layer. This is not a simple task, and it cannot be

accomplished overnight. There will be a transition from Computer Technology (CT) to ICT to future Digital Technology (DT). Operators must ensure that employee abilities and skills continuously adapt to new technologies and services.

- **Huawei and Digital Transformation**

Through communications, cooperation, and joint transformation practices with operators, Huawei has helped over 400 operators in different stages of digital transformation and has gained insights into the pain points that operators encounter.

Huawei is committed to developing a customizable, realistic methodology to facilitate the digital transformation of operators. To achieve this, the Technology, Industry, Maturity, Ecosystem, and Strategy (TIMES) system has been designed to conduct full analyses and observations on each aspect of digital transformation:

- **Technology** — development of appropriate yet innovative directions for operators utilizing new technologies and response strategies
- **Industry** — exploration of the new industries where operators can optimize industrial networks
- **Maturity** — accurately estimating completion of digital transformation using a multi-dimensional analysis of business, strategies, organizations, processes, networks, and technologies
- **Ecosystem** — creation of an external environment for successful digital transformation
- **Strategy** — analysis of future positioning based on national and operator policies

Recent data collection, interpretation, and analysis suggest that the five most important elements of operator success in transformation are: Business (25 percent), Digital strategies (15 percent), Organizations (12 percent), ROADS operation (12 percent), and Networks (10 percent).

With comprehensive global solutions, Huawei collaborates with entire industries to build digital business ecosystems. Global businesses already have embarked on a path to transformation, and Huawei is excited to cooperate with operators and industrial partners for mutually beneficial results. ▲



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