



**C**arriers know that video is no longer just a value-added service that complements broadband – instead, it's a key service that carriers are placing at the center of their future transformation strategies for business growth.

With its O12 strategy, China Telecom Sichuan aims to leverage its Fusion video service to attract subscribers. Meanwhile, Telefónica, which has a large customer base in Spain, pledged its commitment to establish itself as a video company by 2020.

## The ticket to a bright future

Carriers can learn a lot from over-the-top (OTT) providers. The omnipresent Tencent app WeChat has become one of the company's core products, forming a key part of its connectivity strategy because of the app's powerful capability to connect users, even though it doesn't generate profits. However, Tencent views WeChat as its channel to the mobile Internet.

Due to the rise of OTT, carriers are seeing reduced revenue from core voice and data services. Video, with its capacity to connect users, will become a basic service for carriers, on top of traditional voice and data, because of its future role as a chief medium of communication in the

coming information society. 4K/8K video has already brought about an explosive increase in value for carrier pipelines. Ultra HD video has given carriers a perfect strategic opportunity to avoid being turned into dumb pipes and reverse low revenue growth. For carriers, video is without a doubt the ticket to a bright future over the long term.

When it comes to stimulating consumers' insatiable appetite for consumption, user experience is king. But, the traditional way of running services can't meet the demands of future experience-centric requirements. This is where video will help – it will act as a connector to experience-based operations. Carriers will be able to integrate video with key network elements to provide the ultimate experience for users, connecting them and ensuring business success.

Future predictions hold that video will penetrate all industries, including entertainment, telecom, and the already booming video application industry. Carriers will be able to use video to help services penetrate into different ecosystems, with video as the glue that binds carrier capabilities and different industry ecosystems together.

Video will activate and maximize the value of carriers' network assets. Globally, growth in operator data services is slowing year on year, so carriers have sailed into the red

ocean by competing on price with mobile and fixed-line broadband services. 4K/8K has given them a new way to assert their value – by delivering a video experience, they can once again offer differentiated value.

## Hybrid video

To provide video as a basic service, carriers need to build five supply chain systems: product, technology, content, new services, and O&M.

If the service positioning of a video services changes, the infrastructure that supports the service will also need to change, as illustrated in the table.

Carriers that view video as a basic service will need to build a stable, reliable, and secure service system that is experience-focused and based on an advanced architecture that guarantees sustainable development, ensures rapid service launch, and enables carriers to improve their operating capabilities.

## Better experience, better competitiveness

Huawei's customer design center commissioned industry analysts Ovum to survey users from China, the US, France, Indonesia, and Brazil to find out requirements for video experiences. The top three factors

are interaction quality, content quality, and playback quality.

### Interaction quality

Ovum's survey discovered that users spend the most time viewing schedules and switching between programs, and are most concerned with system response speed. This meshes with two well-known theories: the three-second theory and the 700 ms pain-sensing theory.

Three-second theory: When a user is browsing content or using a function, the user will stop using the service 100 percent of the time if the wait time exceeds three seconds.

The 700 ms pain-sensing theory: People have a 700 ms touch endurance time, and only a system response within this time is deemed to be quick enough.

A system should keep within these thresholds to retain users

Huawei's video solution provides zero-wait interaction to ensure the best performance, covering EPG browsing (< 0.5s), channel change (< 0.7s), and playback (< 1s).

### Content quality

When used in relation to users, content quality refers to content richness and content grade.

When constructing their own content supply chains, carriers must ensure content grade from the outset and build in various quality criteria for different screen resolutions. In response to

the industry need for a unified quality measurement system for video, Huawei worked with ITU to build the next-gen video quality measurement system, U-uMOS to help carriers with risk management and content quality control.

Because they lack content, carriers need to build new content supply channels to quickly enrich their content. Huawei's Digital inCloud video aggregation plan provides a one-stop solution to help carriers quickly build digital ecosystems.

### Playback quality

Outlined in the organization's Y.1541 technical report released in December 2011, the ITU-T defines good playback quality as a system that shows no problems during four hours of playback, with a packet loss rate of less than 0.1 percent and image jitter of no more than 50 ms. Huawei trials show that it would be very expensive to build a network that meets ITU-T standards. Therefore, to ensure an excellent user experience, carriers and video service platform providers must consider new technologies that can provide a great user experience even when network quality is middling.

Huawei's FEC+RET technologies help carriers lower network requirements by maximizing packet-loss-rate tolerance to 1 percent and network-jitter tolerance to 1,300 ms.

## Openness, integration, and rapid service rollout

When video becomes a basic service and a future user connector for carriers,

they act as super-aggregators. This means the openness and integration capabilities of basic service platforms will be crucial to guarantee the longevity and vitality of products and services. Quick integration into different industries and a fast response time when user requirements change will be the main challenges carriers face when running video services. The key to overcoming these challenges will be to build a future-oriented open service platform architecture.

The core features of this type of architecture are as follows: module decoupling, independent and expandable service features, cloud deployment that supports the linear expansion of massive numbers of users, an external integration framework that enables third-party ISVs/DSVs to develop EPG/UI/OTT clients.

## Systematic O&M for scaled service development

Systematic O&M capabilities can be differentiated from traditional services in three ways: automated device management, visualized fault demarcation, and smart operation design.

### **Automated device management:**

Network-wide device management and automation tools – such as one-click remote OS installation in batches,

one-click remote software patch upgrades, and one-click periodic inspection – will vastly improve daily O&M efficiency. Carriers need to develop capabilities in this area.

### **Visualized fault demarcation:**

Video is a whole-process service. When a user-reported fault cannot be quickly identified, various engineers must provide on-the-spot services, sharply increasing O&M costs. An end-to-end visualized fault demarcation system can provide the solution. After a fault is reported in the Call Center, the system will give with the possible causes. This enables precise ticket dispatch, improving O&M efficiency.

**Smart operation decisions:** As data is critical to intelligent decision-making, a data analysis platform focusing on video and big data enables content and user labeling for a better understanding of services, content, and users, thus refining the video service and improving profits.

## Secure and reliable services

Providing secure and reliable services for massive numbers of users is a long-term requirement for operators. Compared to OTTs, carriers' services are safer and more reliable, which is vital for users when choosing video service providers. However, with operators providing video services

for potentially millions of households, large-scale service interruptions are bad for users and also operators' reputations and brands. They should therefore consider service reliability when constructing a video service platform that will be used by millions of people.

Service reliability is measured based on the following video service features:

- Backup of the video source.
- Regional disaster recovery mechanism of video services.
- Multi-level disaster recovery mechanism of video services.
- Upgrade by service unit in multiple time windows to avoid affecting service use.
- Security mechanism, including the OS security hardening mechanism and non-encryption mechanism for sensitive user information.

## Ultimate visual and VR experiences with 4K video

With the 4K industry chain maturing, 2016 will see the large-scale commercial adoption of 4K video services, bringing cinema-grade audiovisual experiences to consumers' homes. With the rapid development of virtual reality (VR) and augmented reality technologies, 4K video will soon provide the ultimate immersive VR experience and become a true force for connecting people. 