



# Satellite *TECH*Briefs



**Satellite Technology for OTT Applications**

# Satellite Technology for OTT Applications

by Elisabeth Tweedie

Whichever way you look at it, the transition from viewing video on a TV set, at a time dictated by the network, cable or satellite operator, to viewing video anytime, anywhere, any device, any content (ATAWADAC) of the user's choosing continues to gain momentum. In other words, over-the-top (OTT) viewing is increasing in importance. Not only this, but video is becoming two-way as many users are also uploading their video content to social networking sites: TikTok, Instagram and Facebook for example.

Data from the 15th Digital Media Trends from Deloitte's, Technology, Media and Telecommunications Practice published last year, indicates that 82% of US consumers pay for a subscription video-on-demand (SVoD) service, subscribing to an average of four different services. In addition, 62% of them watch an advertising-supported video-on-demand (AVoD) service. This compares to the 67% of US viewers, that have a traditional (cable or satellite) pay-TV subscription.

Historically, Netflix, Amazon Prime and Hulu have been the dominant OTT players. Now, some of the studios – Disney for example, are offering their own OTT service and viewers have far more options to choose from. One downside of the number of high-quality streaming services now available, is that subscribers are showing very little loyalty, and are likely to cancel a subscription and switch to another service, if they're attracted to the content being offered there. However, they are equally as likely to return to a service,

when things change.

Globally, revenue from over-the-top (OTT) streaming services is forecast to grow to US\$224 Billion by 2027, an increase of 66% from the 2021 total of US\$135 Billion. Subscription video-on-demand (SVOD) and advertising supported video-on-demand (AVOD) accounts for 92% of the total.

Total number of SVOD users is estimated to be 1.88 Billion, or 43.2% of internet users, in 2022 and is projected to grow to 46.6% of internet users or 2.15 Billion by 2025. Total number of OTT users is expected to reach 3.93 Billion by 2025. There are several key drivers behind this growth. Firstly, the obvious one of being able to view content whenever and wherever convenient, and on multiple devices. Secondly, the quality of the content available. This year, for the first time, a streaming service (Apple+) took the Oscar for best picture, with CODA. Netflix, has a production budget larger than the majority of studios, spending US\$21 Billion in 2021. Couple this with the fact that some of the major studios, such as Disney now have their own OTT service and the attraction becomes clear. Thirdly, OTT is much cheaper than a cable or satellite subscription. Although many users subscribe to several OTT services, with monthly prices around US\$10 per service, even subscribing to four different services leaves the user with a monthly bill that can be US\$50-100 less than a cable TV subscription. And finally, the user is paying for what s/he wants. Most cable and satellite services come in "bundles" so many users find themselves paying for

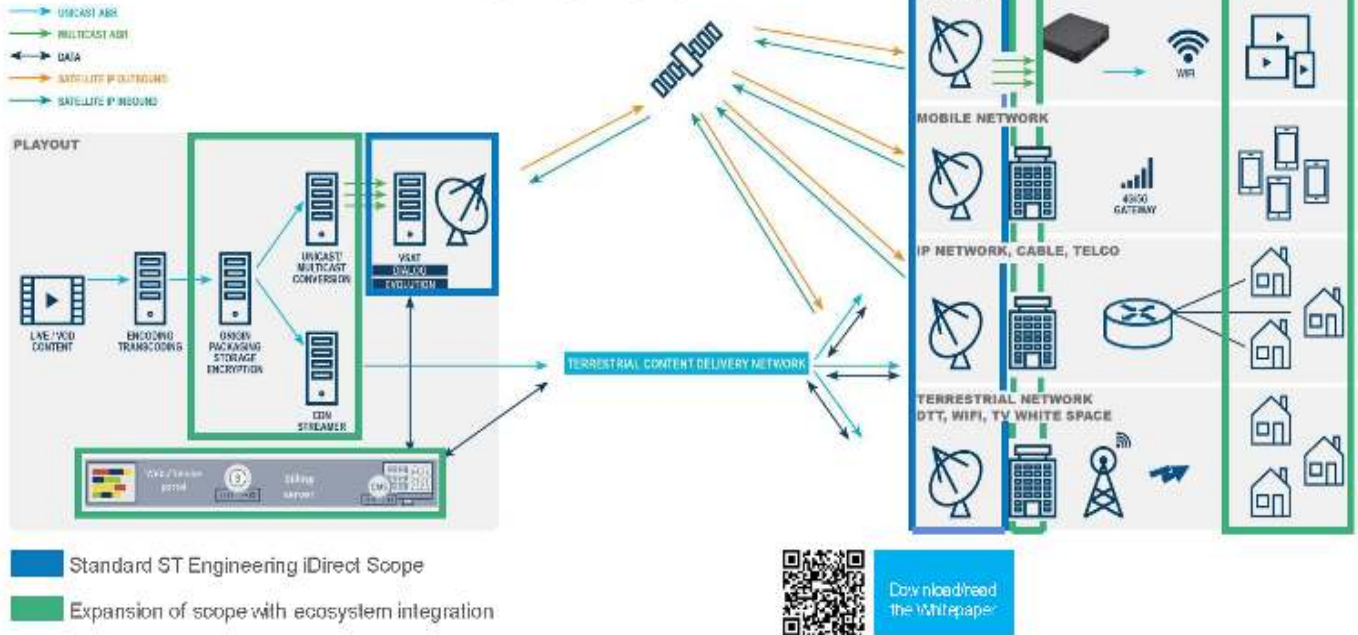
channels that they have no interest in.

The importance of mobile devices for watching streamed content cannot be over emphasized with 90% of users reporting that they use a mobile device to watch video, this is corroborated by YouTube which reports that 70% of its content is viewed on a mobile device.

This growth presents a huge challenge for many fixed and mobile network operators. With linear video, a single stream can serve an entire neighborhood, as any home viewer who is watching at a particular time, is watching the same content as everyone else tuned to that channel. With OTT video, every single viewer watches what he or she wants, whenever they choose, meaning that in one home, several different pieces of video may be being viewed simultaneously, so requiring far greater bandwidth to carry all those individual streams. Bandwidth, that in many cases is not available even in urban areas, and is nearly always lacking in rural and underdeveloped regions.

For the mobile operator in particular, the challenge is one of effective use of available bandwidth. Even with 5G, delivery of thousands of unicast streams is a major bandwidth hog. Whilst mobile devices have become fundamental to viewing video, video is not the only thing being carried, data and voice also need access, so prioritization is a significant challenge for the operator. Quality of experience (QoE) for the viewer is also a challenge. The sad fact is, that live content is nearly always subject to de-

# OTT DELIVERY TOPOLOGY



lays, so much so that according to one source, 72% of viewers said they fully expected latency issues when viewing live sports over an OTT stream.

## SKYflow

Historically, satellite has generally been viewed as unsuitable for OTT delivery. Thanks to the SKYflow ecosystem from ST Engineering iDirect and its partners from the Digital Video Broadcast group: Broadpeak, Quadrille, EKT and EasyBroadcast, this is no longer the case. SKYflow delivers native IP over satellite using generic stream encapsulation (GSE) or multi-protocol encapsulation (MPE). This is a first for the industry and one that places satellite firmly at the forefront of OTT delivery mechanisms. SKYflow is DVB-NIP compliant.

SKYflow is great example of what can be achieved when leading industry players come together to tackle a problem, and in so doing create an industry first, a world class solution, that is a total game changer,

bringing multiple benefits to both network operators and consumers alike.

Broadpeak or EasyBroadcast take the live content and convert it to HLS (HTTP Live Streaming, a format developed by Apple) and DASH (Dynamic Adaptive Streaming over HTTP). Broadpeak or Quadrille, converts it from unicast to multicast ABR. In parallel, EasyBroadcast generates the Content and Service Management back end that is pushed to the edge (on the Set-top Box) by Quadrille or Broadpeak.

ST Engineering iDirect provides the encapsulation and modulation to facilitate Native IP over satellite. Where GSE is being used, the MDM6000 modem will do this. For MPE the MCX8000 modem will be utilized. A Dialog® hub is also employed. In case of bi-directional use cases, the Dialog® platform is uniquely positioned to deliver GSE directly to EKT's set-top box, or through VSAT terminals for a dual play offering of internet

and IP video over satellite, connecting multiple remote points of presence (PoPs).

At the receiving end, an EKT DSD5115 set top box (STB) does the demodulation and de-encapsulation, the multicast to unicast conversion and media streaming sessions (MSS) handling.

Software from Broadpeak™ or Quadrille provides content delivery network (CDN) capabilities and delivers the unicast ABR stream and EasyBroadcast's edge back end to OTT players and the HDMI stream to regular TV sets, which will use the player application from Easy Broadcast.

An optional return over VSAT for digital rights management (DRM) and CDN analytics is provided by ST Engineering iDirect using the VSAT modem.

The benefits go far beyond entertainment, it will also offer

educational institutions the ability to reach their students regardless of location, greatly expanding the potential market. Similarly, for healthcare providers, it will give them the ability to offer telemedicine services to many more households, including those without access to a computer, who will now be able to access content via the television set. Other markets that will benefit from SKYflow's inherent ability to reduce network costs, include government and defense, aeronautical, maritime and land mobility.

Native IP over satellite creates the potential for delivering content to mobile devices without running out of bandwidth and solves the problem of delivering to multiple screens in a home. It also significantly improves the quality of service (QoS) by a delivering high quality, consistent video stream.

For the existing operator it offers the possibility to scale rapidly and cost-effectively, so facilitating expanded service footprints. For the new operator it lowers the barriers to entry and enables them to provide a high QoS from day one. Hybrid satellite/terrestrial networks facilitate offloading of content when the backbone gets congested.

As well as being particularly suited to the delivery of live-streamed content, Native IP over satellite also facilitates the SVOD model by enabling smart prepositioning of popular content at the network edge.

For the consumer it offers an improved quality of experience (QoE) providing a fast start-up with low or no buffering.

SKYflow is not a theoretical ecosystem. DVB organized a highly successful streamed special event to demonstrate its capabilities. Looking to the future, it will be possible for



**The benefits of SKYflow go far beyond entertainment, it will also offer educational institutions the ability to reach their students regardless of location, greatly expanding the potential market.**

legacy operators to abandon MPEG-TS and migrate to slowly upgrading the base of installed STBs utilizing the DVB NIP standard to deliver OTT content using MPEG-TS MPE. For new operators or for those using VSAT standards, GSE will be the preferred mode of delivery for OTT.

### Remote Production

Delivering content is not the only way that ST Engineering iDirect is helping the video business. Before it can be transmitted to user, whether as a linear stream or OTT, a movie or a program has to be created. Usually part or all of the content is shot outside of the studio. Sporting events or concerts are obvious examples of this, but the majority of movies, documentaries and series also include scenes that are shot offsite.

Historically this remote production would involve a large outside broadcast truck equipped with Ku-Band satellite antennas and advanced kit to facilitate two-way audio and video, so that the production could be controlled from the remote master control room (MCR). The disadvantages of this are that it necessitates

highly skilled personnel in the truck to run the equipment, coupled with the fact that it's not always feasible to get a large truck to locations where video shooting takes place. Smaller satellite newsgathering (SNG) vans usually equipped with Ku-antennas are also used for short-duration shooting of local events.

In recent years cellular bonding – where multiple 3 and 4G cellular channels are bonded together to provide sufficient bandwidth to transmit high definition video in IP format, back to the control room – has replaced satellite transmission in many cases. Transmitting via cellular bonding requires less skilled operators and also less equipment, so the actual unit sent on-site is generally smaller. However, the main disadvantage of cellular bonding, is simply the fact that it is cellular. Cellular networks are subject to congestion, particularly at major events or sporting venues when the live audience will also be using those networks to share their own video and photos of the occasion. This congestion can cause significant degradation of the content. Also, in more remote locations, there may not even be sufficient cel-

# Rami Moussawi, Senior Product Manager ST Engineering iDirect

*What are the key trends that you see in the satellite broadcast market?*

The standout trend that we currently see is the rise in popularity of streaming services. The likes of Netflix, Hulu, Disney Plus, Amazon Prime and many more are revolutionizing how we watch TV and consume content. OTT services are replacing traditional viewing behavior, allowing viewers to stream content on any device, at anytime, anywhere. The global appetite for direct to device streaming shows no sign of being satisfied anytime soon. More choice, new content types and more personalization put service providers and distributors in a prime position to capitalize on technological advancements made in the satellite communications sector.

Satellite can provide unrivalled cost economics for end users and reach territories where internet access is patchy. And new developments and research mean that the introduction of IP over satellite allows the delivery of pure data transmission, with video as a prime example. Developments in IP networking, Over-the-Top (OTT) services and satellite capabilities are converging into exciting ecosystems like SKYflow – ensuring that the new age of content delivery is fully taken advantage of.

The other significant trend we see is an increased use of the cloud in the film and broadcast world. A significant breakthrough in these industries is the use of remote production – or Remote Integration Model (REMI). This allows live content to be captured from a remote location and managed from a master control room. As long as there is reliable access to the cloud computing, a production crew can work and collaborate effectively with the rest of their team anywhere in the world.

Cloud computing is an incredibly powerful tool in any producer's portfolio. For example, it can allow remote sound or video editors directly to pick the files from the cloud, allowing for simple and easy access no matter where the location is. From feature film productions to news crews and sports broadcasting, cloud access is the powerful enabler of productivity. This leads to an increased demand for satellite connectivity



**Rami Moussawi**

as part of a blended all-IP solution, especially in remote areas. Satellite's reach and reliability mean that it's a perfect fit for connectivity to the cloud.

Another main trend is that broadcasters are embracing more IP technology. We've previously seen a rise in popularity of the use of competing technologies in the form of cellular bonding. However, in countries that have patchy access, the cellular network cannot be relied upon and therefore satellite is still the best means to secure and safe access to bandwidth. Satellite remains a very important access technology for broadcasters where cellular coverage is not always available, especially in remote areas. This type of technology is particularly important for satellite newsgathering, for example.

*Can you give us a brief overview of your key product*

*offerings for the broadcast market?*

ST Engineering iDirect offers a wide portfolio of products for the broadcast market for distribution and contribution as well as turnkey broadcasting solutions.

As a market share leader of 80% in DTH, our large installed base proves that end-users and professional users benefit from our efficient technologies and mature product range. Just like other businesses, broadcasters are also faced with increasing pressure on operating margins, while also having to retain high expectations in service availability and reliability (Service Level Agreement compliance). Our technology allows broadcasters to evolve with the changing technologies, offering solutions that are flexible and scalable, and at the same time guarantee bandwidth efficient, OPEX friendly transmissions.

Today's news crews require access to many applications, including Voice-over-IP (VoIP), video clip transfer, web and archive browsing, email and social media. All these applications require a reliable bi-directional IP "multiservice" communication link of a sizeable bandwidth, which allows news crews to operate as if they were in the studio. As the event may not be planned ahead of time, it is often unclear which type of IP connectivity will be available and reliable during the entire duration of the coverage.

By offering broadcast turnkey solutions we are able to design, develop and deliver state-of-the-art hybrid satellite /terrestrial network infrastructures which support the contribution and distribution of news material in multiple live and file formats. These media networks connect broadcasters and media service providers all together. This enables services to be operated in a much smarter way, leading to benefits like reduced OPEX and CAPEX but most importantly, it provides a timely response to the changing and growing needs of customers.

We also constantly strive to stay ahead of the curve. We are one of the pioneers of the SKYflow ecosystem which is a set to be a true game changer for OTT service providers. It's set to benefit a range of industries, not only the broadcast world.

*Can you tell us more about the SKYflow ecosystem?*

***"...Satellite can provide unrivalled cost economics for end users and reach territories where internet access is patchy. And new developments and research mean that the introduction of IP over satellite allows the delivery of pure data transmission, with video as a prime example..."***

Yes. The demand for access to first-class content anytime and anywhere is being tackled by a consortium of companies that have created an ecosystem that allows the first end-to-end, multi-vendor demo of the B2C use of Native IP - demonstrating origination, transport, reception and consumption of live OTT video over satellite.

To enable service providers and telcos to deliver content to satisfy the many use cases that require satellite delivery of OTT services – be it media and broadcast, or the plethora of other use cases beyond them including helping educational institutions, healthcare, and mobility markets – we, along with our partners, have created a breakthrough multicast ABR ecosystem.

At a time when the broadcast sector is seeing unprecedented change, with digital firmly on the scene, the classic challenge of latency issues around internet media has been a barrier to satellite formatting. Now, the arrival of new technology allows the industry to dramatically reinvent OTT outreach and completely change the status quo.

Combining the power and bandwidth of satellite with huge viewer convenience and flexibility, the ability to send OTT video content over satellite represents a completely new - and highly significant - industry landmark. It's also one that is fully DVB-NIP compliant, meeting the new standard being developed by DVB. The delivery of native IP over satellite creates a range of possibilities for mobile and multi-room viewing, education video distribution and network cost savings.

The ecosystem has redefined satellite's role in OTT delivery and will enable service providers and telcos to deliver content to any device in any location, satisfying

## EXECUTIVE SPOTLIGHT

the many use cases that require satellite delivery of OTT services.

### *Can you highlight some of the ecosystem's benefits?*

From the satellite perspective, existing video service providers can enjoy an open door to OTT business models. Meanwhile, newer entrants can see value in satellite to offload congested backbones and expand the footprint - and satellite transmission is fully compatible with the standardization currently underway across diverse telecommunications networks.

Mobile network operators will be able to complement their 5G services with satellite connectivity to offload terrestrial networks at a large scale. They will be able to take advantage of satellite's inherent multi-casting/broadcast functionality for all new use cases, such as connected cars, while preserving a high-value wireless spectrum for latency-sensitive services. Alternatively, they can use satellite's longer range to complement the buildout of 5G in remote areas where developing terrestrial networks for enhanced broadband services is simply too cost prohibitive.

That massive outreach can go straight to billions of connected devices in people's hands, meaning that network boundaries will be pushed further than ever before to enable new types of applications and services across almost every industry. All this market growth is only set to increase - and of course, traditional barriers to content options no longer apply.

The use cases are widespread, too, and go beyond simply entertainment. Educational institutions can reach their students, almost regardless of location, the technology effectively brings education to everywhere in the world. Healthcare providers can offer telemedicine services, reaching households across very broad demographics - for example, there may not be access to a computer, but the via the television, families can enjoy vital information and content.

For Government and Defence SKYflow can help the avoiding of gaps in critical data and end-to end access regardless of context, place, urgency and application. For the aeronautical sector, it is a near ideal solution to the most challenging issues of global coverage and range. For land mobility and maritime, SKYflow offers freedom from endless connectivity searches and flexible access to

channels 24/7.


### *What role do you see satellite playing in the broadcast market going forward?*

The broadcast market is entering a new era. There is so much innovation happening across the board. The digital revolution has taken broadcasters to a completely new level, allowing them to do so much more and to reach their audiences in new and exciting ways. The move to IP has allowed this and has given broadcasters tools to become so much more efficient.

Satellite has been too often overlooked in the broadcast world, still considered to be an expensive option and more latent, but it is time to start busting some of these myths. Satellite is a huge asset to any broadcaster's portfolio, and it has an enormously bright future in the sector.

The advent of the SKYflow ecosystem is yet another illustration of how the unique attributes of satellite can ensure ubiquitous coverage and reach areas that other technologies never will. OTT service providers need satellite to grow both in geographical and business terms.

Where terrestrial networks become congested, satellite steps in. Where terrestrial networks cannot reach, satellite can. Where the ability to multicast is not available, satellite prevails. Where terrestrial connectivity is not available, satellite provides the infrastructure no matter where it's needed.

The media landscape may evolving, but satellite has the agility to move with it – anywhere. 

lular channels to bond to provide the bandwidth needed.

The advent of Ka-band high-throughput satellites (HTS), that can support IP networks, as well as provide higher throughputs with lower power requirements than those needed for Ku-band has opened up the options available for remote production. But it's not an either/or situation, blended networks consisting of bonded cellular and satellite can be used. This means that the transmission will automatically switch to satellite when the quality of the cellular network degrades to a point where it is inadequate for video, and the opportunities for remote production are vastly expanded. In addition to lower costs, driven by more efficient use of the space segment, the equipment needed for Ka-band and HTS has a smaller footprint than that needed for more traditional Ku-band transmission. This is particularly important, as by definition it increases the portability of the equipment and so opens up the potential to shoot video in more remote locations, that would otherwise be inaccessible.

Blended networks are particularly useful in remote locations where adequate cellular bandwidth for video is just not available. This was demonstrated recently by ST Engineering iDirect's partner Dejero, which used the Newtec Dialog<sup>®</sup> hub technology to support a commercial production company in the Canadian Rockies, where cellular coverage was patchy. Using the blended technology video was flawlessly streamed to offsite clients, with no latency or other issues, so facilitating real-time direction and feedback for the onsite crew.

Technology is not the only thing that changed. The global pandemic gave impetus to a change that was already starting to happen – that of remote working. So now it is not uncommon for sound and video editors to be at home rather than together in

a central location. This is where delivering the video to a cloud, is really advantageous. Anyone working from home can extract whatever they need and either work on files collaboratively in real-time with other team members or download for off-line working. ST Engineering iDirect, as a Microsoft Azure partner is well placed to deliver video to a public or private cloud.

### **Broadcast Modems for Even Greater Flexibility**

ST Engineering iDirect, as a world leader in the transport of video streams, offers a number of innovative technologies to improve the efficiency and reliability of the space segment. FlexACM<sup>®</sup> for example, is an award-winning solution, that allows double the throughput in satellite networks that are subject to variable link conditions. It can be used in point to point and point to multipoint uni and bi-directional networks. FlexACM<sup>®</sup> incorporates a range of technologies including Adaptive Coding and Modulation (ACM), Cross-Layer Optimization, Noise and Distortion Estimator (NoDE) and Thin Margin Manager (ThiMM). During fade conditions (heavy rain, dust storms etc.) ACM automatically uses more robust modulation in order to maintain the link conditions. When link conditions improve ACM automatically switches back to higher modulation and coding (MODCODs) to increase throughput back to maximum levels again. FlexACM<sup>®</sup> is available on Dialog hubs. ACM is available on Evolution and Velocity hubs.

Bandwidth cancellation is another technology contributing to efficient use of the space segment. By combining the forward and return transmissions in the same bandwidth, up to an additional 30% more capacity can be made available, giving the user the opportunity to add services or benefit

from OPEX savings.

Bonding of discrete space segments into one channel is another technology in ST Engineering iDirect's armory and one that will become more important with the advent of non-geostationary satellites (NGSO). As well as being able to augment a GEO connection with another GEO connection and with cellular data, NGSO capacity can also be added to the mix. For the customer not only does this provide increased capacity at a lower cost, it also increases the uptime by utilizing multiple, diverse paths with integrated session persistence to maintain the end user connection effectively providing an integrated back-up. Since this can be accomplished using just two "boxes:" the MCX7000 modem and the XIPLINK unit which integrates the router function with bonding/balancing and WAN optimization, equipment needs are at a minimum, so increasing the portability of the solution.

### **MCX8000 Multi-Carrier Satellite Gateway**

The latest addition to ST Engineering iDirect's portfolio for the broadcast industry is the MCX8000 Multi-Carrier Satellite Gateway. This addresses all segments of video delivery: Direct-to-Home (DTH), Digital Terrestrial Television (DTT), (also known as Distribution to Towers), Distribution to head-ends and OTT delivery.

The gateway is a high-density, high availability, fully redundant modular system. It reduces downtime and simplifies operations with two hot-swappable modem modules that can easily (no special tools required) be added or removed without affecting the operation of the other slot. The gateway also incorporates a hot-swappable power supply unit and



# X2nSat and Dejero Leverage ST Engineering iDirect's Mx-DMA MRC for Cloud Media Production and IP Newsgathering

## The Challenge

As studios look for ever more compelling locations to film their movies and binge-worthy series, the capabilities to be able to film anywhere, yet collaborate with an entire, geographically dispersed team, has become a necessity. For public safety agencies, the ability to relay information from remote regions, deliver live broadcasts, tactical video

internet connectivity for critical communications, X2nSat was looking for a connectivity solution that was both efficient and cost-effective. It was vital that this solution could meet the demands of their customer base that operate in remote, often hostile conditions, and require ultra-reliable connectivity to enable a range of applications, yet at an affordable cost.



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and other data-intensive applications is a necessity. The requirements of both sets of users are catered for by X2nSat, a North American service provider that delivers cutting edge solutions to its customers that include broadcasters, NGOs, emergency response organizations and users that require remote connectivity, anywhere in the world.

A partner of Dejero, a provider real-time video and networking solutions that provide resilient, uninterrupted

## The Solution

X2nSat selected ST Engineering iDirect's breakthrough Mx-DMA® MRC return technology on the Newtec Dialog® platform to power their Smart Blending Technology developed by Dejero. Featuring blended cellular and Ku-band satellite communications, the Smart Blending Technology is a resilient connectivity solution that allows the delivery

## CASE STUDY

of live broadcasts and enables transmission continuity and disaster recovery by broadcasters and public safety agencies.

Tapping on Mx-DMA MRC's efficiency and bandwidth capabilities, Dejero's Smart Blending Technology intelligently combines cellular connectivity from multiple mobile network providers with Ku-band satellite communications from X2nSat to reliably deliver the bandwidth needed for critical communications from the most remote locations and facilitates real-time tactical video and other data-intensive applications required by public safety agencies.

ST Engineering iDirect's Mx-DMA MRC technology is an award-winning, patented multi-access waveform that incorporates the scalability of MF-TDMA with the efficiency of single channel per carrier (SCPC) into a single return technology. It enables service providers to cover a myriad of use cases in a single return link sharing capacity across multiple terminals and applications without making tradeoffs between speed, efficiency and scale, lowering their total cost of ownership.

### The Outcome

The combination of the Dialog platform and Mx-DMA MRC allows Dejero to utilize a portable satellite terminal and dynamically amalgamate the available cellular networks with a satellite signal over a single return link, reducing operational complexity and enabling the benefits of statistical multiplexing to deliver high quality connectivity in rural locations. Dejero is able to cover all remote production scenarios over a single platform, maximizing bandwidth and operational efficiencies, including news gathering, sports and live event coverage and temporary remote connectivity. It enables teams operating in the field to get on with the task in hand without worrying about where their connectivity is coming from whilst eliminating the need for service providers to choose between speed and efficiency and scale and cost.

"We at Dejero are impressed by ST Engineering iDirect's commitment to deliver powerful solutions that are cost-effective, reliable and leverage the power of

***"We at Dejero are impressed by ST Engineering iDirect's commitment to deliver powerful solutions that are cost-effective, reliable and leverage the power of Mx-DMA MRC technology, Along with our partner, X2nSat, we see huge value in this latest solution which will enable the bandwidth efficiency and cost-effectiveness to better support our customers."***

**--Yvonne Monterroso, Director of Product Management at Dejero**

Mx-DMA MRC technology," said Yvonne Monterroso, Director of Product Management at Dejero. "Along with our partner, X2nSat, we see huge value in this latest solution which will enable the bandwidth efficiency and cost-effectiveness to better support our customers."

"X2nSat has always kept the customer's experience top of mind. This technology allows us to bond all available cellular communications with our Ku-band satellite to offer our users cost effectiveness and peak performance from anywhere at any time," said Garrett Hill, CEO of X2nSat. "We are incredibly optimistic about what this means for our broadcast and public safety clients who understand the criticality of reliable connectivity." 🚀

**See live demos of ST Engineering iDirect's various solutions for broadcast applications at their booth #1.A49 at IBC 2022 in Amsterdam from September 9-12.**



**EMPOWERING  
CONTENT  
EVERYWHERE**

an integrated 1+1 redundancy switch.

The MCX8000 is also a multi-carrier device that can be configured to support up to 4 modulators per RU. The gateway is, of course, fully compliant with DVB standards including DVB-S2X. It is modeled on the M(DM)6100 and MCX7000 software suite capabilities. It provides up to four 80 Msps carriers. The transport streams embedded in the carriers can be output onto one of the eight optional asynchronous serial interface (ASI) ports or one of the four ethernet ports. The same data interfaces can also be used as input ports for the modulator. The MCX8000 is designed with future OTT video delivery in mind, supporting up to 200Mbps of MPE encapsulated data per RU. The gateway also includes an updated web-based graphical user interface (GUI) designed to provide a more intuitive configuration and management approach in-line with customer feedback received in focus groups.

DTH is a well-established means of delivering the broadcast signal to a household. It takes full advantage of the one-to-many capabilities of satellite. However, in many cases the available satellite bandwidth can be limited. Insufficient bandwidth means either an inability to deliver higher quality video, 4K or ultra-high definition (UHD) for example, or a limitation in the number of channels that can be carried. The MCX8000 squeezes the maximum throughput into the available bandwidth, using proprietary technology, so minimizing or eliminating this problem. It supports SMPTE 2022-7 Seamless Protection Switching, so providing a reliable transport stream delivery, whether utilizing DVB-S, DVB-S2 or DVB-S2X.


***“...Technology is not the only thing that changed. The global pandemic gave impetus to a change that was already starting to happen – that of remote working. So now it is not uncommon for sound and video editors to be at home rather than together in a central location. This is where delivering the video to a cloud, is really advantageous. ..”***

The MCX8000 reduces the amount of bandwidth needed for distribution to headends. The Content Delivery Network (CDN), is able to reduce traffic on the distribution backbone by receiving only a single copy of a program at the edge, as close as possible to the consumer. This is then converted into multiple copies for onward delivery to the consumer as and when requested. SKYflow will deliver the unicast content to the edge, which is then converted into multicast for onward transmission to the consumer when requested. This is particularly effective for live events and popular movies and series. Using unicast delivery has a significant impact on the amount of bandwidth needed to get that content to the edge. Storing content at the edge also minimizes start time latency and buffering.

The receiving device could be a professional receiver which may be located at a cellular tower, ATSC broadcast tower, on a plane or ship, or, customer premise equipment, located in a home or business. They can both be equipped to receive multicast

traffic and host a CDN.

As already mentioned, OTT continues to grow in importance and is now dominant in some parts of the world. The MCX8000 is ideally suited to help OTT operators keep delivery costs down and to minimize the amount of bandwidth needed.

Whether you are a content producer, OTT Service Provider or a Network Operator, ST Engineering iDirect has the solution for your most pressing problem: how to do more with less, whilst minimizing costs and maximizing quality. 



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# THE skyflow

NATIVE IP OVER SATELLITE  
ECOSYSTEM

LIVE DEMO

 **STAND 1.A49**  
IBC SHOW - SEPT 9-12

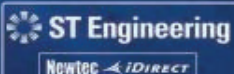
Distance and  
Remote Learning

Telco Video

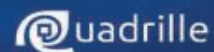
Traditional DTH +  
OTT Delivery

Enterprise video

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