

# Satellite pay-TV Growth

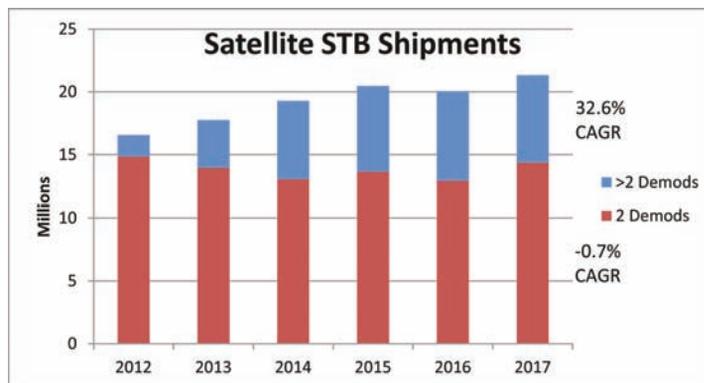
Experts at Unitron Group explain how the company is leading the global transition of satellite ODU Products from analogue to digital.

**Major trends in the satellite market, coupled with advancements made by leading Integrated Circuit (IC) solution providers are driving a global transition from Analogue to Digital products, making 2015 an exciting year for the Direct Broadcast Satellite (DBS) Outdoor Unit (ODU) market.**

The satellite market is expected to continue as the largest broadcast market over Cable, and IPTV, with nearly 500m households in 2017, according to IHS. With 4% CAGR between 2012 and 2017, the pay-TV satellite sector is well positioned to expand in its leadership role. Being the leader is not without challenges, as both the Cable and IPTV markets are fighting to gain market share. New features such as 'second screen' apps, enhanced Digital Video Recorder (DVR), and a transition toward server/client in-home architectures are expected to increase in deployments over the coming years. According to Infonetics, the top three business drivers for delivering Multiscreen Services are: ability to improve customer loyalty and reduce churn, consumer demand to view content across multiple devices, and to address the competitive threat from other pay-TV providers and OTT services such as Netflix, Amazon, Hulu, Apple and others.

The ability to support Multiscreen Services requires changes to the Set Top Box (STB) technology and architecture. STBs are increasing the number of video streams, or demodulators, it can support and the traditional one video stream per STB is quickly shrinking in favour of boxes that support >2 streams. This transition is driven not only to support Multiscreen Services but also to allow for lowering of the total Subscriber Acquisition Cost (SAC). A larger

single STB (sometimes called a Server, Gateway, or Media Centre box) with the capability to support multiple video decode/transcode streams is cheaper than having a distributed video stream network with each viewing location having its own video decoding capability. Media Centre devices are used to record and store content at a single location and then send to low cost Client STBs via Video Networking solutions, such as Multimedia over Coax Alliance (MoCA), Power-Line Communication (PLC), HomePNA or even Wi-Fi. This architecture is commonly referred to as Server/Client topology. According to IHS both the Satellite single tuner STB and Dual Tuner STB, or DVR, shipments will experience negative CAGR between 2012 and 2017 while >2 tuners STB shipments grow at nearly a 33% CAGR over the same period.



## Satellite Pay-TV Background

For Satellite Operators, it is not a simple task to add additional video stream support within a home. Pay-TV Satellite Operators use satellites placed in Geostationary Orbit (GEO) to enable a fixed antenna location on the home. At a distance of 35,786 kilometres (22,236 miles) above the Earth, this orbit has the same rotational period as Earth and thus appears motionless, or fixed, to the ground antennas on customer roofs. The ability to have a fixed antenna makes



Satellite broadcast practical and the lowest cost method per household to supply a video service. Satellite Operators do not require additional infrastructure build-out to add a new subscriber; the video signals are already

available as long as they have a line of sight to the satellites' overhead. Cable and Telco Operators require expensive infrastructure build-out to pass additional homes, which is why you seldom see these services in rural areas where the cost cannot be amortised across a large number of homes like it can in an urban area.

Because the signal source has to travel over 22K miles before reaching the antenna dish on your house, Satellite Operators are very concerned about Power. To optimise the Power of the signal between the satellite and your dish, modulation schemes are used. A negative to this scheme is that additional Bandwidth (BW) is required to support the same amount of channels as compared to Cable TV. The benefit to the end consumer is that video received from a Satellite source versus a Cable TV source will be of a higher picture quality – HD looks great over

satellite, and just wait until they start broadcasting at Ultra HD or 4KTV resolutions!

To deliver this high quality service the amount of BW needed to provide a full range of content is usually in the 4GHz or greater range. All of this BW is broadcast directly from the GEO orbiting satellite to the antenna on the customer's home. The BW available from the antenna dish to the STB

inside the home is only 1.2GHz.

To accommodate this transition from a large input BW to a small output BW, the satellite signal is broken into bands. For a 4GHz BW input the signal is usually broken into four bands of ~1GHz. Each band contains a group of transponders that contain the individual video/audio channels. The DBS industry has developed communication standards that allow the applicable band to be switched down the cable to the STB. The band that is switched down the cable depends upon the location of the transponder containing the channel the customer wants to view.

The tuner inside the STB tunes across the entire input BW to decode the transponder containing the video channel they would like to view. When a user wants to watch a video channel located on another band, that band is then switched down the cable and the tuner tunes to the new transponder frequency and decodes. The user only wants to see the single video channel, but to see the

individual channel the entire band needs to be switched down the cable. In this scheme, each demodulator requires a unique cable from the Outdoor Unit (ODU).

The ODU is a collection of electronics attached to the dish antenna, called Low Noise Block (LNB). The LNB incorporates the switching functionality and traditionally will have a single cable run to each demodulator in the home. An alternative version is a LNB that feeds into a Multiswitch ODU that then has a cable run to each demodulator in the home. As the number of video channels (transponders) and demodulators are increased in the home the cable complexity to deliver this content increases accordingly if using traditional methods.

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**Single Cable Solution Supports Satellite Pay-TV Growth**

Unitron Group is a leader in providing technology solutions to simplify the traditional delivery of satellite video into and throughout the home. One-Liner Technology (OLT™) or Single Cable Router (SCR) solutions enable multiple video streams to be delivered throughout the home on a single cable. These solutions take in the entire satellite input BW, but only output the transponder containing the desired video channel, not the entire band as in traditional DBS installs. Each STB tuner in the home only looks at a fixed frequency on its input spectrum and the OLT ODU switches in the desired transponder. Because the tuner is fixed it enables multiple transponders, or channels, to be stacked next to each other, with each channel supporting a unique tuner. Up to 12 transponders/channels can be stacked across the 1.2GHz of BW available into the home using analogue OLT solutions. The main constraint limiting the number to 12 is the analogue technology requires discrete filter elements that must be spaced ~102MHz apart to avoid interference issues.

The top Pay-TV Satellite Operators in the world use single cable technology for its multiple benefits. OLT enables DIRECTV's SWiM™ (Single Wire integrated Multiswitch) system, as well as multiple

other Operators across the globe as they increase the number of demodulators within the home without increasing the installation complexity. Drastically simplified and lower cost installations are realised by reusing the existing cabling within the home, providing a superior customer installation experience compared to traditional installations. Instead of multiple cables from the STB to the LNB or Multiswitch, a single cable installation is possible. Adding a DVR to an existing or new viewing location is as simple as plugging in the STB, no new wires required, no holes in the wall, no return calls to repair installation issues. Additionally, now that all video locations are connected via a single cable, Home Networking solutions such as MoCA or WiFi can be used to provide



Unitron Group Digital Wideband SCR Multiswitch and LNB



communications standard between the STB and ODU. CENELEC EN50607 was recently ratified and enables single

multiroom DVR (mDVR) features, connect to a Broadband network for Over the Top (OTT) services, or stream content from a larger gateway/server STB to a small low cost client box.

With the rapid increase in the number of demodulators within a single STB as well as an overall increase in the number of demodulators in the entire home the OLT solution needed to evolve. Unitron is not only a leader in analogue OLT solutions but is one of the first companies to deploy a digital OLT solution. Recent major advancements in IC technology allow for digitalisation that is cost and power efficient enough for the consumer market. What was once only capable in the analogue domain is now possible in the digital domain without any of the analogue constraints. The OLT functionality remains the same; the entire satellite BW is input into the ODU where it is now immediately converted to digital.

All of the filtering and switching to select the desired transponder is performed in the digital domain allowing for output channels to be stacked much closer together. Whereas in the analogue OLT solution spacing between transponders/channels was ~102MHz, now with

digital OLT the channels can be stacked with 0MHz spacing if desired. This significantly increases the number of demodulators than can be supported off a single cable feed. Besides improving on the output efficiency, by converting to the digital domain, other external circuitry, such as microprocessors and communications circuits can be integrated more easily. This has an overall effect of lowering cost and power compared to previous generations of the product for high demodulator count systems.

In support of this technology advancement the industry is updating the

cable communications of up to 32 demodulators, a major improvement over the eight currently specified in CENELEC EN50494.

**Technology And Need Aligned For The Future**

The users wish to enjoy more content across a wider range of screens is enabled by digital implementation of OLT technology. Unitron Group is capitalising on satellite ODU industry advancements to make what was once only feasible in the analogue domain now both power and cost efficient in the digital domain. Satellite Pay-TV Operators are taking advantage of this technology shift, creating differentiating solutions to immediately support their customers changing demands. 2015 is an exciting year to be in the Satellite infrastructure business and Unitron Group is already looking to the future to ensure alignment with the latest demands. Please contact Unitron Group

directly for information on their industry leading catalogue of digital ODU products or visit our booth at ANGA COM 2015 in Cologne Germany (Booth B41 Hall 10.2).

Troy Brandon  
[www.unitrongroup.com](http://www.unitrongroup.com)  
[www.johansson.be](http://www.johansson.be)  
[sales@unitrongroup.com](mailto:sales@unitrongroup.com)  
 Unitron NV, Frankrijklaan 27,  
 8970 Poperinge-Belgium