

# DiviCom® Electra™ 5000

## Application Brief



### Introduction

Harmonic's DiviCom® Electra™ 5000 encoder delivers the ultimate compression flexibility for existing and emerging applications. With two CBR/VBR broadcast quality video encoders per one rack unit (1-RU) chassis, the Electra 5000 can encode a single channel in multiple formats, multiple channels in a single format or multiple channels in different formats. This enables a wide range of services—including standard definition TV, advanced picture-in-picture (PiP), high-quality PC streaming and mobile video—to be delivered over wired and wireless networks to multiple devices. As a result, operators can more easily build and scale their digital infrastructure to offer a more compelling video service.

Basic Electra 5000 configurations simultaneously encode two full resolution channels using either MPEG-2 or advanced codecs (MPEG-4 AVC or SMPTE VC-1) while advanced versions provision a mix of advanced codec resolutions. And, the Electra 5000 platform does not have the same performance limitations as existing systems. Each high resolution MPEG-2, MPEG-4 AVC or SMPTE VC-1 stream is encoded on an independent encoder so the highest quality can be maintained for each output. Low resolution streams are also encoded on a separate encoder so that the quality of these streams is maintained without impacting the quality of the high resolution picture.

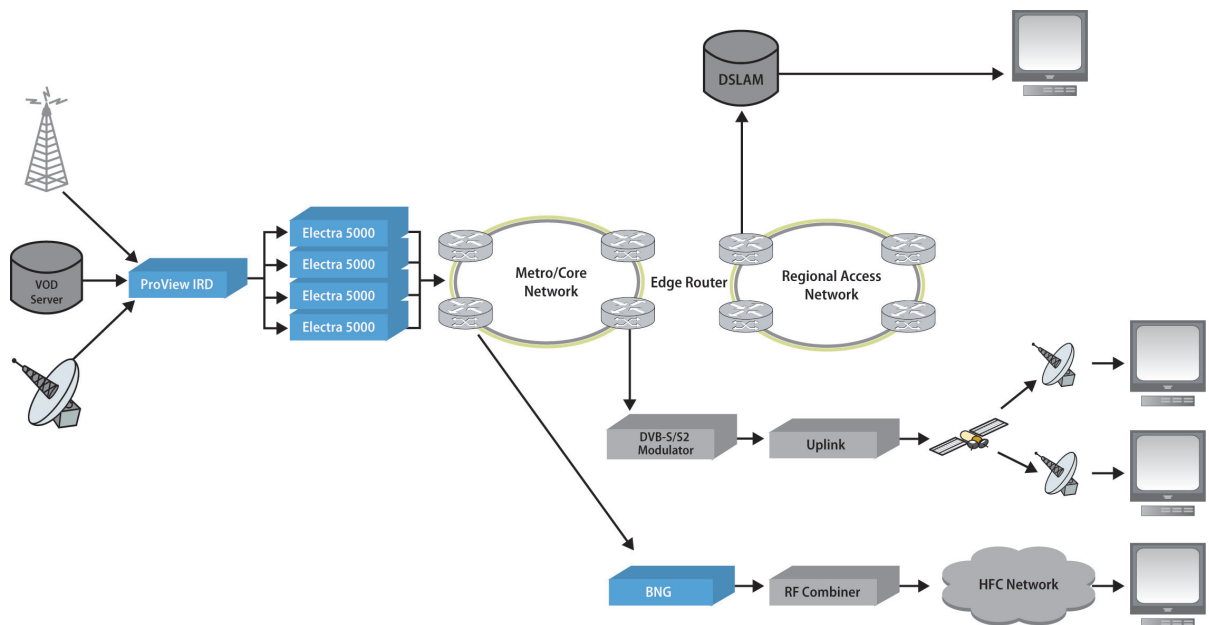
## Multichannel Encoding

Electra 5000's advanced VBR encoding combined with Harmonic's DiviTrackIP™ closed loop statistical multiplexing solution gives service providers the ability to deliver the highest quality MPEG-2 or MPEG-4 AVC video while gaining significant operational advantages and cost benefits. With DiviTrackIP, satellite, terrestrial or cable operators can configure any Electra 5000 channel at any geographic location to be part of any multiplex, effectively creating a highly flexible "virtual headend", with the additional flexibility of being able to upgrade to advanced codecs in the future to gain further efficiencies.

Each Electra 5000 unit can be configured to support two CBR MPEG-4 AVC encoders, allowing telco operators to encode two premium quality channels in a single rack unit. Each channel can be compressed to significantly lower bit rates versus comparable MPEG-2 services, with support for advanced audio compression further improving bandwidth efficiency.

For operators who want to cost-effectively deliver video services in multiple formats, Electra 5000 will support simultaneous encoding of VBR MPEG-2/MPEG-4 AVC and CBR MPEG-4 AVC. Thus, the same video channel can be delivered via satellite or terrestrial broadcast in a DiviTrackIP statistical multiplexing pool, and can also be delivered via a DSL network. This multiplies the return on investment per video channel without compromising quality.

Figure 1. Multichannel Encoding with Electra 5000



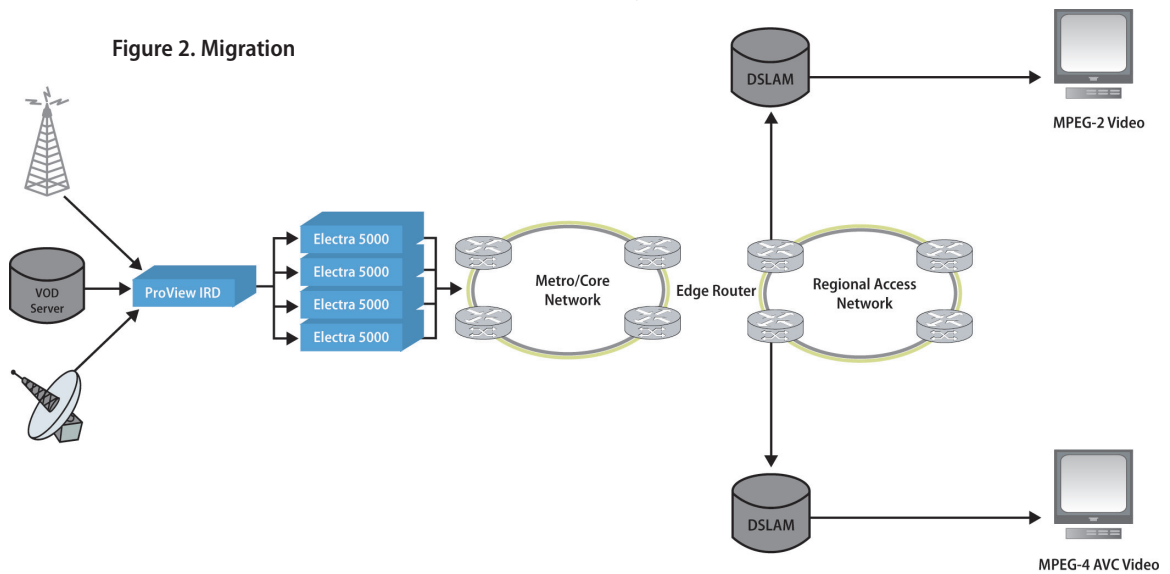
## Migration from MPEG-2 to MPEG-4 AVC Services

Electra 5000 is the perfect transition platform for telco operators delivering MPEG-2 video services today who want to transition to more efficient MPEG-4 AVC services in the future in order to increase reach, deliver advanced services such as nPVR and support multiple TV sets per household.

The Electra 5000 can support simultaneous encoding of MPEG-4 AVC and MPEG-2 CBR channels at the highest levels of quality, making it possible for operators to transition to advanced codecs with no service disruption and support both new and legacy set-top boxes during the transition. This is a significant benefit for telco operators, who can now move new subscribers to MPEG-4 AVC as quickly as possible, and at the same time provide high levels of service and quality to existing MPEG-2 subscribers.

In addition, those telcos who operate both fiber-based (FTTx) and xDSL networks can use the Electra 5000 to simulcast the same channel in MPEG-2 over fiber where bandwidth is available, and in MPEG-4 AVC over DSL where further efficiency is required.

Figure 2. Migration



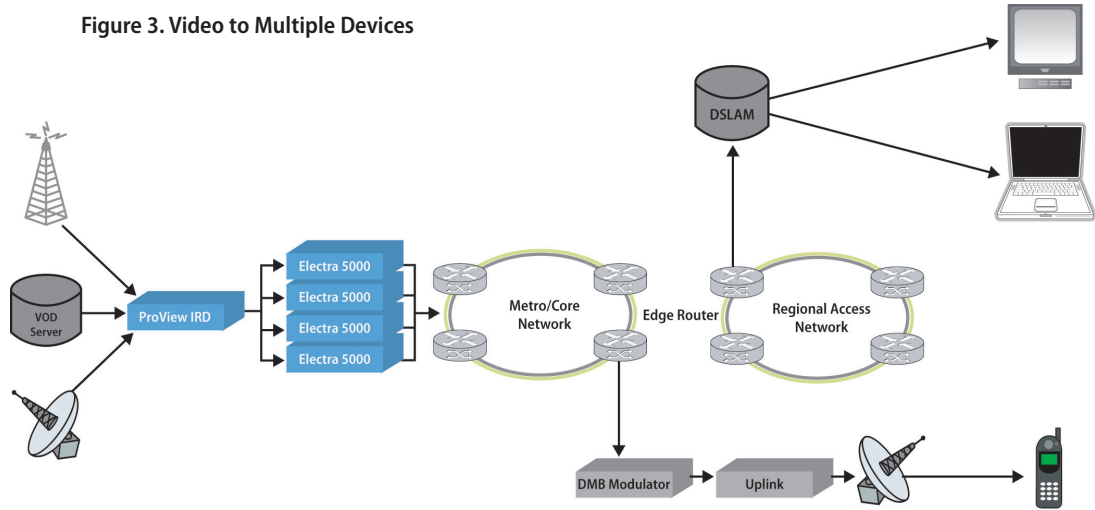
## Video Delivery to Multiple Devices

Satellite, terrestrial and telco operators looking to grow their subscriber base and open up new revenue streams can use Electra 5000 to deliver video to multiple devices including TV, PC and mobile devices. The same video channel can be encoded into multiple high-resolution MPEG-2, MPEG-4 AVC or SMPTE VC-1 channels and simultaneously encoded into multiple low-resolution channels. This "encode once deliver multiple" solution gives service providers the most cost-effective, reliable and scalable way to generate the maximum return from each video channel encoded at the headend.

For mobile video applications Electra 5000 is the most versatile encoder on the market. From the same headend, terrestrial, satellite and cable operators can encode content for their own networks and provide content for mobile networks. With multiple MPEG-4 AVC baseline channels per encoder and centralized control and redundancy management via Harmonic's NMX Digital Service Manager™, Electra 5000 provides a robust, high-quality mobile video solution at significantly reduced cost.

Electra 5000 enables brand new business models utilizing the existing service infrastructure. For example, service providers using traditional video delivery architectures can lease low resolution, customized versions of their channel lineup to wireless service providers, creating new revenue opportunities and improving return on investment.

Figure 3. Video to Multiple Devices



## Enabling New Applications in Switched Broadcast

In order to differentiate their video service from existing providers and grow their video subscriber base, telco operators must look for new and interesting ways to engage viewers. With a switched network, IPTV operators can develop interactive applications that support a more personalized viewing experience. These applications, such as picture-in-picture, electronic program guides and mosaic channels, increase viewership by providing a more personalized entertainment experience. With Electra 5000, multiple low-resolution channels can be encoded at the headend, reducing network load and application server requirements by several magnitudes, and enabling scalable and reliable value-added services.

Figure 4. Enabling Advanced Applications

