

# Smoothing the rocky road to IP



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by Gary Olson, GHO Group



The future of video and television facilities is file-based and IP centric. Image courtesy Playbox.

Over the next two months, Gary Olson, president of the GHO Group, will provide a multi-part overview of the changing technology used in broadcast and production facilities. His thoughts will provide valuable insight into the types of decisions and solution selection you will soon need to make.

Anyone who has been in broadcast or the video business for at least ten years, has seen many changes. Whether you started with 2-inch tape VTRs, DigiBeta or servers, working with video has become both a sprint and marathon. To win at this race, engineers, managers and producers need help.

For that reason, [The Broadcast Bridge](#) and Gary Olson, president of the GHO Group have developed an important three-part series, on how to leverage new technology and build tomorrow's facility. In this series, Olson will explore and discuss the significant shift in the solutions, workflows and delivery platforms for those involved in content creation production or delivery.

Two of the best examples of how technology's changing landscape has affected the media industry are the increasing number of content delivery platforms and new producers of content.

No longer do just the conglomerate networks produce content. We now see original programs being created by new non-broadcast players like Netflix and Amazon. Traditional broadcast networks have even begun to deliver content direct to consumer devices via broadband and mobile. Live production is even being streamed directly to online and mobile devices by cellphone networks. This year's Super Bowl saw AT&T deliver game replays and exclusive content to the tablets of selected fans via LTE. Last year's Super Bowl had a similar demonstration by Verizon.



Most media and broadcast facilities remain in an SDI domain. Those who first make the leap to IP-centric workflows will sooner reap the benefits. Those who wait may find equipment less expensive and more versatile. Image courtesy Allied Electronics.

### **SDI is not yet dead**

Perhaps the most talked about changing technology in the broadcast field is SDI. One IBC vendor even launched the marketing phrase “SDI is Dead”. However, that mantra merely reinforces a famous quote from Mark Twain, “Rumors of my demise have been greatly exaggerated”.

While it is true that SDI is slowly moving into the region of legacy formats, it is not yet time to toss your current SDI gear into the dust bin. For the most part, media today is captured as files and stored on different forms of removable media. In part because of these incremental changes, moving forward, technology speaking, will be easier.

### **Go IP or go home**

One of the more interesting ongoing conversations in the broadcast community is how to solve the “Video over IP” problem. In my humble opinion; there is no problem. There are some challenges and issues that need to be resolved, but I believe it is mostly a perception issue.

At the recent 2014 CCW conference in NY, one keynote presentation highlighted that while media facilities are moving to IP, there remain many problems to solve. Then the discussion moved to the challenges faced in video over IP for contribution and distribution applications. What remained undiscussed is that broadcasters are already heavily IP invested.

Today’s broadcast facility remains a hybrid configuration. SDI is still received as an input format and is used as a delivery format. Carrier service providers like AT&T, Verizon and Level 3 along with interconnect switch service providers like Encompass and The Switch have been using IP-based video transport for years. These providers simply take and send SDI, internally managing all the IP conversion, so that the broadcaster may never see an IP signal.



Much of the early conversion to IP will take place in remote broadcast trucks like NEP's ND1 and other video production facilities. Image courtesy NEP.

### **Outside the studio**

Similar changes have occurred outside the broadcast studio. Here, producers and sports broadcasters have adopted alternatives to traditional production techniques and large format cameras. Today, video is often captured by small form cameras and even cellphones. Combined with many cameras' ability to stream live, new production techniques are enabled.

On the receive side, a broadcast signal may come not from a high-power transmitter, but from a CDN. Even if the remote content does not come directly as IP-encoded via CDN, IP may still be the primary interconnect between the remote site and the broadcast center.

### **Moving to the cloud**

While IP is often today an island within a broadcast site, it will soon expand to the entire facility and beyond. Software Defined Networks, applications and virtualized or cloud-based networking become the next steps.

An IP broadcast facility could be separated into several areas; applications, middleware, servers, network and storage. Media production already encompasses many of these solutions. Even before a complete adoption of an all IP architecture, broadcasters are looking at where they can use the cloud and how it can integrate into the broadcast facility.

As content creation and production increasingly become applications, many of them cloud based, engineers will need new tools to measure signal quality. The needed skill set is already changing, and engineers must get ready. No longer will it be sufficient to simply measure color levels or use a vectorscope. Instead, engineers will be analyzing files and data streams.

New standards like AVB, HEVC, SMPTE 2022 and AES67 are defining the performance parameters for signal delivery and transport within the IP ecosystem. Maintenance engineers must understand these

protocols and be able to identify and repair errors when they develop.



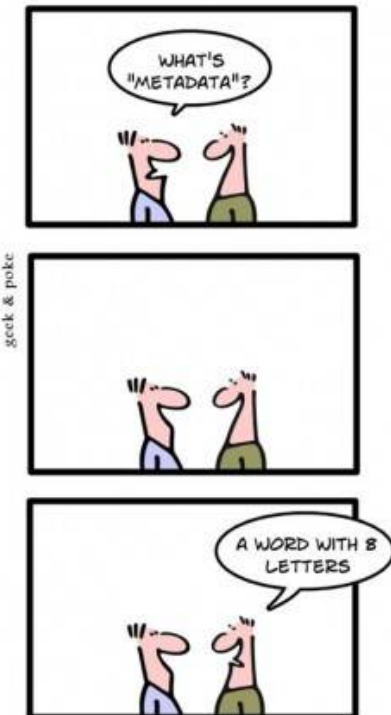
To maximize the value proposition of IP, engineers will need to design networks that can exchange information between the production and business systems.

### Working with the business side

While IP architecture is encompassing more aspects of media production from remote production to distribution and delivery, it is also increasingly being integrated with the enterprise side of the business. Traditionally, the production IP network has been separated from the enterprise network. Today, there is business value in their interconnection so both can share intelligence to enable good decision making.

This data sharing between networks requires proper rules and governance. This requirement is something new for broadcast and production systems, which previously were independent and proprietary. Now that these networks share a common IP base, management wants them interconnected to realize the maximum benefit. But that requires good governance.

### SIMPLY EXPLAINED: METADATA



Metadata has been often called "data about data". What it really does is enable businesses to make better decisions based on information,

not instinct. Image courtesy Geek and Poke.

## Metadata

Metadata is no longer a dirty word and it has become a critical component in the new ecosystem. Corporations realize that with the proper use of metadata, they can better monetize their content across multiple platforms while improving efficiency.

Metadata is generated at multiple steps, from a program's concept to its transmission and consumption by viewers. Metadata also plays a critical role in rights management, archiving and both internal and consumer-facing business intelligence. Metadata is the foundation of the entire media management logic chain.

On the receive side, programmers and delivery services retrieve valuable metadata from the consumer. So much data is collected from consumer-facing delivery systems that it is now considered a *Big Data* challenge.

How should this data be handled, managed and mined? There are predictive analytical technologies to help corporations better understand what the viewer wants to watch. That information needs to be fed back into the content generation side of a business to make creative decisions.



Consumers want their entertainment when, how and where they want it. Scheduled TV is no longer sufficient. Broadcasters must be able to deliver their content to everyone, everywhere on a demand basis.

## **New IP delivery platforms**

The home large screen is only one of many ways to consume media. Most delivery technologies, except OTA broadcast, are already IP based. Competing delivery platforms including OTT, broadband, 4G, LTE and 802.11ac have a huge appetite for bandwidth. In fact, the rearrangement of broadcast spectrum is a key component in that quest for operating space.

The term second screen is no longer an accurate description. There are Smart TV's, tablets, smartphones, phablets, PVR & DVR's and gaming consoles. The screen quality and resolution of small devices is astounding. Consumers increasing use those small devices to move streaming content onto their large home screens.

In light of these and other changes, broadcasters and content producers must re-examine their infrastructures and learn how to leverage IP technology into profitable solutions. With these changes, they can gain efficiency, produce higher quality imagery and enjoy versatile workflows.

This series of articles will try to minimize the pain and cost, while helping decision makers choose a path

towards an IP future that best meets their needs. Stay tuned, because part two will be presented on [The Broadcast Bridge](#) shortly.