TypeCasting

As video becomes just another kind of digital data, what's a broadcaster to do?

Ray Baldock
Director, Product Marketing
Grass Valley Group

If the worldwide adoption of digital technologies sparked by the advent of the microprocessor was a revolution, there's something to be said for waiting for the smoke to clear—especially if you're a video or broadcast professional. The efficiencies, productivity gains and new business opportunities made possible by cheaper storage, faster chips and fatter networks are quite real and poised for significant growth as digital technologies become the foundation of content production and distribution.

Yet broadcasters still face daunting digital choices—choices that have far less to do with government-driven mandates than fundamental technology shifts that are remaking their industry. Simply put, video is transitioning into a data type, and the barriers to its ubiquity are falling quickly: per-megabyte storage costs continue to plummet, processor speeds keep climbing and bandwidth is expanding faster than Moore's law ever predicted.

In light of these technology improvements, it could be said that broadcasters now have the opportunity to become *Digicasters:* providers of high-caliber content that easily accommodates itself to any digital transmission network, protocol or output format. Whatever the video product, a broadcaster should expect to deliver

high-definition (HD), standard-definition (SD) and Internet-ready versions to over-the-air transmitters, cable head ends and Web servers simultaneously. They should also expect to feed that digital stream to an ever-evolving array of physical devices, from set-top boxes and stadium scoreboards to palm-sized PCs and perhaps even desktop videophones.

In this embryonic video-as-data environment, the future as much about being online than on-air. Broadcasters and video professionals who understand and exploit this conceptual shift have the most to gain. For there are, indeed, great opportunities.

Just 'cause it's digital video doesn't mean it's *good* video

The rending of traditional broadcasting, with its isolated islands of acquisition, production, editing, post-production and transmission into a digitally integrated industry in which video moves as easily as e-mail has some sobering implications. It doesn't take an FCC license to shoot and edit video and put it on the Internet. What's more, the ability of that licensee to guarantee a stable audience or market share is being swiftly undercut by an expansion of digital channels delivered by cable, terrestrial fiber and digital satellite systems—and will be eroded further as the Internet, through technologies such as high-speed XDSL or cable modems and research projects such as Internet 2, matures to carry full-motion video.

Yet while it's easier than ever to create, edit and distribute video, the *quality* of the end product remains a bar that only a select group can clear. Not

surprisingly, broadcasters and video professionals make up the bulk of this group. They have unrivaled experience and expertise in creating, packaging marketing and transmitting compelling content. What's more, in today's mature consumer culture, superior video quality and audio fidelity are baseline assumptions.

So as video ubiquity meets wider and wider digital pipelines, the challenge for today's broadcasters is three-fold: continue creating great content; customize that content for a variety of audiences, venues and devices; and have the internal and external infrastructures necessary to instantly access and distribute that content worldwide to a variety of destinations (i.e. PCs, television sets, and other display devices).

The prerequisites for achieving this kind of success are tools, technologies and systems that meet higher consumer standards *and* create efficiencies that let organizations devote even greater resources to developing the content for delivery through multiple digital mediums.

The one most wired will win most often...assuming the wiring is reliable

As a data type, video has characteristics that make its processing and transmission far more complex than simple text, from bytes and syntax to gigabytes and phase correlation. What's more, producing complete programs is a Herculean logistical exercise that often involves locating, obtaining, reviewing and integrating images, graphics, effects and audio from a variety of original formats into a final product. To meet the needs of a diverse audience and multi-medium delivery, a video production center needs instant access to digital video and audio

assets and the ability to brand the output appropriately for each audience. It also needs tools that streamline the mechanics of content creation and distribution; the system must also provide an overall level of reliability that ensures uninterrupted, ‘round-the-clock operation.

Ensuring access to a digital asset requires two things: a search tool sophisticated enough to locate, retrieve and display it, regardless of its location or the application with which it was created; and a network that links every digital repository of an organization into a unified, fat-pipe network topology.

With the rise of the Internet and the World Wide Web, search engines are certainly familiar metaphors, and broadcasters have much to gain by leveraging their familiar interfaces and industry-standard protocols. A Web-like video/audio search engine, for example, could eliminate a multitude of custom interfaces used by different library systems. To be truly useful, however, this kind of engine needs a comprehensive, flexible intelligence that can find an asset regardless of its location or the application that created it. Further, it needs to leave the application’s underlying database intact, letting video professionals worry only about finding the right tools for their work environments—not whether those tools will work in those environments.

Digital access also needs to be as fast as it is comprehensive. Fortunately, bandwidth is quickly becoming a commodity, overcoming the physical and economic limitations of transferring video efficiently and rapidly. With capacity plentiful, video professionals can concentrate on creating storage networks that

eliminate all practical limitations to accessing digital assets. Whether it resides on a server, optical jukebox, desktop PC or some other form, the common denominator for any video or audio asset will soon be digital. The sooner an organization eliminates its reliance non-digital storage, the faster it will be able to maximize the value of its assets.

A successful wide area network for storage—or *storage area network*—needs to support both distributed file access as well as file-sharing technologies that enable production teams to work in parallel using some or all of the same digital assets. A news network, for example, should be able to take breaking-story footage and simultaneously create a two-minute story, a thirty-second summary and a teaser for both pieces. In this environment, a conventional network file sharing implementation using Internet Protocol (IP) would offer simultaneous access and the scalability necessary to support multiple content-creation teams.

Just as a storage area network supports parallel processes, so too must production tools pull double duty. Ideally, studios and mobile production and edit suites should all be able to provide both HD and SD versions of a program in a single session. And with the appropriate content decided, tools and storage devices should be easily configurable for production in either SD and HD formats.

However, not enough can be said about the reliability necessary in a digital video production operation. With the high cost of quality programming, the functional integrity of a production environment is essential. Let's face it, two seconds of black and the viewer has surfed away; a five second error in rejoining

the network could mean a commercial make-good with potentially hundreds of thousands of dollars gone forever. Many so-called mission critical systems don't approach the reliability needed by broadcasters. In addition to high levels of system redundancy and asset availability, broadcasters also require outage-prevention technologies, including remote diagnostics and monitoring as well as the ability to hot swap critical components at the first sign of trouble.

Finally, to offset high production costs and continue to grow their businesses, video production facilities should also examine new opportunities in digital commerce. With additional bandwidth available via cable modems and XDSL, and the video proven as the most effective selling tool, Web sites too will eventually use full-motion video to sell everything from home-repair tools to financial services. Thus video professionals must build relationships with the leading influencers of digital commerce. This group includes familiar faces, such as network providers, equipment vendors and content suppliers, as well as up-and-comers such as manufacturers looking to integrate video screens into everything from microwave ovens and mini-vans to supermarkets and cinemas. Whatever the output medium, video professionals need to be confident they can communicate with it.

Conclusion

The explosion of video creation and distribution opportunities could understandably leave many broadcasters and video professionals feeling as though

hordes of new competitors were about to sweep over the high cost barriers that once kept their operations and markets secure. There is legitimate reason for concern: not recognizing the need to become an integrated digital operation has the potential to leave many unplugged from a wired world of economic opportunity—or cut off or even obviated by it.

Yet those who know video most intimately are in the best position to exploit its potential: they are expert in creating breathtaking content, then packaging, branding and marketing it creatively. Their future success requires only that they continue to do great work, create more of it and, most important, leverage the digital *lingua franca* of worldwide commerce to display it on every screen lining the global market.