Telestream
Whitepaper

Meeting Postproduction Challenges In a Transformed Video Marketplace

Expanded Workloads & Accelerated Schedules Call for New Solutions

Contents

telestream

Introduction

Disruptions roiling the premium video marketplace are transforming postproduction processes with rapidly expanding workloads and tight time constraints that can only be accommodated through highly automated enhancements to workflow efficiency and quality control.

Not so long ago, postproduction of motion pictures and television shows embodied a sequential set of traditional editing tasks essential to preparing master files for distribution to motion picture theaters, DVD producers, broadcasters and pay TV operators. Timeframes for getting things done were pegged to theatrical release and seasonal broadcast schedules.

Today, requirements stemming from the advent of massively scaled Internet streaming services reaching across borders worldwide and a new generation of video formats pegged to variations in pixel density, luminosity range and color gamut have vastly expanded postproduction workloads. Content producers must prepare multiple versions of each file mapped to formats, language variations, censorship rules, metadata requirements and all the other criteria set by each affiliate across an increasingly crowded field of distributors.

At the same time, fixed release schedules have been supplanted by scheduling dictated by a perpetual rush to push new content into distribution pipelines as quickly as possible. As workloads expand, postproduction timeframes become ever shorter.

These are heady times for postproduction professionals. The outpouring of new content from an expanding crop of over-the-top (OTT) video service providers and traditional content producers who are leveraging Internet streaming to bypass legacy service constraints is driving more business for creatives, editors, colorists and others in the production pipeline than ever before.

But it's a bonanza that comes with a set of performance criteria that can't be met through adherence to old ways of doing things. Postproduction teams need tools that will allow them to execute expanded workloads much faster, which requires implementation of highly integrated workflows utilizing automation to streamline operations, eliminate duplication of mundane tasks and apply advances like the Interoperable Master Format (IMF) to deliver completed files in accord with the latest industry practices.

With heavier workloads, reduced timeframes and more distributors to work with, there's been no change in the fundamental need to ensure that every task is executed in accord with each distributor's requirements. But old approaches to file-based quality control (QC) are inadequate.

Today the QC system must support:

- Automation-accelerated testing and analysis;
- Scalability to higher volumes of concurrent processing without slowing testing on individual assets;
- Automatic access to supplemental processing capacity to avoid system overloads;
- Greater frame accuracy, speed and display diversity in the playout of content, metadata, closed captions and subtitles for manual review;
- Confirmation that finished masters can be transcoded to meet the requirements of all the major Adaptive Bitrate (ABR) streaming modes;
- Application of file-based QC to preparations of 4K UHD and HDR-formatted content;
- Flexible integration with cloud-based resources and workflows.

In addition, postproduction personnel must have access to tools supporting quality analysis that can facilitate the new requirements in frame-by-frame coloration and luminance adjustments with the processing of HDR-formatted content. And such tools must also enable accurate down conversion of HDR content to versions suited for playback on SDR displays.

As shall be seen in the discussion that follows, it's now possible to satisfy all the requirements for successful execution of workloads in the new postproduction environment. In the final section we'll describe how this can be done utilizing postproduction workflow efficiencies and QC solutions provided through the Telestream Vantage platform.

But, first, we'll look at the trends contributing to the reshaping of postproduction processes as well as the challenges they pose. The discussion then turns to what must be done to meet those challenges, followed by the overview of the solution set developed by Telestream.

Market Trends Reshaping Postproduction Workloads

The world is witnessing an unprecedented explosion in the creation of original long-form video entertainment. It's a virtuous whirlwind where the early successes of OTT original programming pioneers, including most notably Netflix, spawned ever more commitments to original content on the part of OTT competitors, which, in turn, triggered a surge in commitments to new programming from traditional TV producers for both their legacy TV outlets and the direct-to-consumer (DTC) services they've launched in increasing numbers over the past two years.

Consumer Demand

Today, as the differences between legacy and OTT services are increasingly blurred, consumers are as likely to subscribe to one as the other type of service. Worldwide, the global OTT subscription count, at 613 million as of YE 2018, was up by 100 million from the previous year and topped the cable subscription total by over 50 million, according to the Motion Picture Association of America [i].

Frequently consumers opt for multiple OTT services with or without a traditional pay TV subscription. In the U.S., where close to 75% of broadband households were taking at least one OTT service, more than half of those homes were signed up for two or more OTT services in 2019, according to Parks Associates. [ii] Among pay TV households, the OTT penetration rate for at least one service stood at close to 52%.[iii]

Globally, among people who view video of any type online, the average number of OTT subscriptions per viewer stands at 1.2 with OTT viewing hours averaging 6.8 hours per week, according to a report from CDN operator Limelight Networks.[iv] (See Figure 1.)

The Surge in Original Content

Multiple OTT subscriptions underscore the appeal of unique original content, which is what distinguishes most of the leading OTT services from each other. The power of that appeal was reaffirmed by a recent report from Parks Associates, which found that Netflix, with by far the greatest amount of original content among its competitors, had greater subscriber retention power than others, with 64% of its U.S. subscribers saying they'd find it difficult and 47% saying it would be "very difficult" to give up the service.[v]

The original production trend is touching every part of the globe. In the U.S., taking movies as well as TV and streamed video content into account, Variety reported the total spent on original productions by U.S. firms in 2019 came to $121 billion, led by Disney's $27.8-billion investment, a significant share of which went to product for its recently launched Disney+ online service.[vi] Looking at programming created solely for TV or OTT distribution, Variety found that Netflix accounted for 371 original series or single shows, which equaled nearly a third of the 1,178 new titles produced by all broadcast and cable networks.[vii]

Both HBO and Netflix expanded the volume of original content produced in 2019 by 50% over 2018, Variety said. With Apple committing to a $6-billion investment in original programming for the newly launched Apple TV Plus and NBCU's Peacock, AT&T's HBO Max and other OTT services coming online in 2020, the aggregate investment was sure to keep climbing.

Meanwhile, there's clearly a spillover effect from the investments Netflix and other U.S.-based OTT giants are making in locally produced content in other parts of the world.

Average Weekly Time Spent Viewing OTT Video

U.S.	India	Singapore	Italy	U.K.	S. Korea	France	Germany	Japan	Global
8.55	8.43	7.62	7.35	6.49	6.38	6.05	5.52	4.80	6.80

Average Per-Household Subscription Counts

1.7	1.6	0.9	1.3	1.3	1.1	1.1	1.1	0.9	1.2

Figure 1

Source: Limelight Networks

For example, a report from Ampere Analysis says the top five French broadcasters, responding to the availability of 15 programs developed by Netflix for French audiences, significantly raised spending on original content to over 40% of a total €5.4 billion content investment in 2019 with 106 new local shows in the pipeline as of mid-2019.[viii]

In Southeast Asia, where Netflix has invested in 180 originals[ix], regional SVOD provider HOOQ has committed to having 100 original productions in its lineup by Q2 2020, including 12 new TV series and seven films.[x] Local programming in Europe's Nordic region developed by regional OTT competitors like Viaplay and C-More has become the key to fending off inroads from Netflix.[xi]

But whatever the initial impact from U.S. providers might have been, original programming has acquired a life of its own just about everywhere now that providers understand its significance to their audiences. For example, China has emerged as second only to the U.S. in spending on original programming, with $4.5 billion earmarked for OTT outlets and $6.4 billion for broadcast and pay TV distribution in 2017, according to IHS Markit.[xii]

In the U.K., Sky has committed to a doubling of its original content investment with launch of a new production facility to serve all its European outlets.[xiii] And in another especially noteworthy case, Eastern Europe's OTT market leader MEGOGO has gone so far as to launch its own production studio to generate 300 hours of programming in its first year of operations with ambitions to ramp to 1,000 hours by 2022.[xiv]

Growing Volumes of UHD- & HDR-Formatted Content

Early momentum from the OTT side has been a driver to growing availability of UHD- and HDR-formatted content in legacy TV services as well. In the latter arena, UHD channel counts have risen significantly, according to the Ultra HD Forum and other sources. And HDR production is gaining traction in TV broadcasting as well, most notably in big sports productions like the Super Bowl, European soccer and the Olympics.

Among OTT providers 4K UHD formatting is now commonplace in original productions, often with HDR enhancements. In an especially noteworthy challenge to Netflix and Amazon, the leaders with hundreds of UHD/HDR titles between them, Disney+ has made a strong commitment to these formats that is sure to accelerate the momentum across the sector.[xv]

The Transformation of Postproduction

The Internet-driven surge in worldwide demand for original content has major ramifications for postproduction processes. In this new environment, adherence to old ways of doing things poses risks to successful execution of workloads that no one needs to take, given the tools that are available to support operations better aligned with new requirements.

Tighter Schedules

One major aspect of the new reality involves the loss of certainty about the ebb and flow of demand for new content and a corresponding shrinkage in time allotted to complete projects. For example, in the past, production on a TV series would start ahead of set launch dates, leaving plenty of time for postproduction on pilots, assessment of reactions from user groups and fixing of production and postproduction schedules for each episode.

While some semblance of traditional seasonal scheduling in broadcast programming remains, the need to feed the OTT market is persistent year-round with no predictability as to when the next uptick in workloads will occur. And while set theatrical release dates are still a major aspect of filmmaking, postproduction scheduling must be flexible enough to accommodate all the films entering the pipeline for OTT distribution that may or may not be tied to theatrical release dates.

At the same time, everything must be accomplished faster than ever before. Notwithstanding an expansion of tasks in postproduction workloads, as discussed below, the immediacy underlying the need for new content as providers battle for competitive advantage has significantly reduced the time available to get the job done.

Today's postproduction operations also require the flexibility to engage specialists operating as independent contractors wherever they are without having to maintain full-time staffing for peak load situations. Cost-effective, expeditious utilization of such professional support is a prerequisite whether the content is being developed out of a traditional production center like Hollywood or in places where facilities are insufficient to meet demand for locally oriented content.

Expanded Workloads

Postproduction workloads are no longer limited to the tasks related to editing and synchronization of video and audio tracks; color grading and corrections; addition of visual effects (VFX); closed captioning; metadata insertion; generation of masters for storage and hard copy distribution to theaters, and mezzanine encoding for playout to broadcast stations and pay TV affiliates. While all of these requirements are still in play, the need to supply the OTT market has vastly expanded the postproduction workload.

Each OTT distributor has its own unique set of requirements for incoming A/V files, including which types of formats are required – SD, HD, UHD, UHD with HDR – and, within them, what the basic quality parameters are for each. Mandated video parameters can vary with regard to bit depth, color profiling, framerates, HDR modes, upscaling HD to UHD and downscaling UHD to HD and HDR to SDR. Audio must be mastered to meet individual distributor requirements ranging from basic stereo to immersive audio tied to different versions of Dolby Atmos.

Distributors also have requirements for structuring VFX, QC reports, subtitle placements, text overlays, metadata and other ancillary elements. Where metadata is concerned, along with requiring fields tied to content descriptors and formats, distributors want to be able to work with schema that support input of data enabling richer search, recommendations and personalized advertising and the dubbing of trailers, poster art and other ancillary streams associated with content assets.

Distribution of OTT services across national borders has imposed still another set of requirements. Distributors may require content versions dubbed in multiple languages or, more often, they want multiple subtitle tracks tightly synchronized with the program. Differences in regulations, especially regarding censorship rules, require editing of versions for different destinations.

UHD/HDR Post production Challenges

UHD and HDR, which as noted earlier, are gaining momentum in legacy TV as well as OTT services, add significant new dimensions to postproduction workflows. Critically, with more resolution, higher dynamic ranges and wider color gamuts, much of the margin for error in postproduction has been eliminated.

4K UHD

The presence of 4K UHD in OTT distribution has grown to where most original productions are being shot in that format, providing a much denser 3840 x 2160 palette to work with compared to 1080p HD. This adds many new dimensions to the post process.

For example, working with UHD content introduces a new framerate insofar as non-cinematic UHD content is shot at the 23.98 framerate dictated by OTT distributors, as opposed to the 24 frames per second used with the DCI cinematic mode and the 29.97 framerate used in NTSC production workflows.

Editors must also be able to support conversions to 4K UHD from 35 mm film, DCI and 1080p HD and refinements like film grain filtering, artifact removal and color re-grading that aren't necessary with less finely rendered HD video. Complicating matters, such quality specifications may vary based on whether a distributor lowers the quality threshold for up-converted HD content versus content originated in film or 4K or raises it for service tiers tied to early release windows or other premium features.

Additionally, quality variations may depend on the bitrate thresholds set by distributors, which presently range anywhere from 15 Mbps to 25 Mbps for transmitting HEVC-encoded 4K content. And content providers must be sure to adhere to whichever HEVC profile the customer prefers – Main, which supports 8-bit color with a sampling depth of 256 levels, or Main 10, which is designed for 10-bit color processing with 1,024 sampling levels. Variables tied to these HEVC profiles also include chroma subsampling levels at 4:2:0, 4:2:2 or 4:4:4.

HDR

HDR introduces still another level of complexity in postproduction with quality parameters that go beyond the spatial resolution benefits of 4K by breaking with long-standing Standard Dynamic Range (SDR) specifications. The various HDR modes all have in common support for a much wider color gamut and much greater contrast dynamics with deeper levels of black in the darker pictorial elements and far greater luminance in the brightest white and color elements.

These competing approaches to HDR are characterized by variations in contrast ranging from 2,048:1 to multiple factors above that Measuring in stops, where each stop represents a luminance increase by a power of two, the dynamic range of SDR, at about seven stops, represents a contrast ratio of 128:1. HDR, at the baseline value incorporated in the HDR10 standard, is about 11 stops, which represents a contrast ratio of 2,048:1, or about 16 times that of SDR.

The contrast ratios enabled through enhancements used with templates supported by Dolby, Philips and others go up from there with aspirations eventually to approach human perceptual limits. With everyday experience in the natural world, the maximum contrast ratio registered by the human eye in a given instant with minimal adaptation is about 20 stops, which equates to a 1,048,576:1 contrast ratio.

Luminance ranges in TV display technology use the nit measurement, roughly representing the brightness of a candle, with current low- to mid-range models operating in the 300 to 500 nit range, well above the SDR 100 nit level but well below the 1,000 nit maximum set by the HDR10 standard and far below the 4,000-nit range supported by the first version of Dolby Vision, which is designed to eventually go all the way to 10,000 nits.

But nit ranges are not a determining factor when it comes to support for HDR in today's displays. Even TV sets with nit ranges well below 1,000 are commonly equipped to execute multiple transfer functions that can support HDR, which has taken one of the primary barriers to HDR adoption off the table by making displays compatible with multiple HDR modes.

But, from a postproduction perspective, the nit range to prepare for is the one supported by HDR10. Consumers are now being prompted to be alert to the difference in HDR rendering that comes with higher nit ranges as many manufacturers use the "Premium HDR" label to identify TV sets in the mid-price ranges with 1,000-nit displays.

Where color gamut is concerned, the goal is to set a benchmark for production that minimizes the amount of color lost from original camera capture, such as occurs when producing content that maps to the legacy BT. 709 standard. The ITU has developed BT. 2020 as the successor to BT. 709, thereby providing a standardized wide color gamut (WCG) palette for use in video imaging that comes closer to the limits in human perception.

Where, with 8-bit encoding, BT. 709 encompasses 16.78 million colors, BT. 2020 with 10-bit encoding offers 1.07 billion colors. With 12-bit encoding the BT. 2020 color count tops 68.7 billion colors (Figure 2).

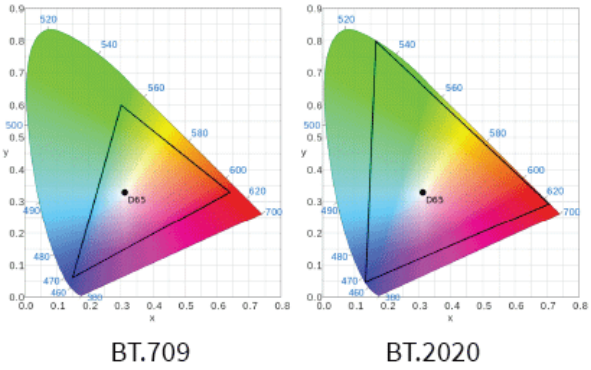

Figure 2

These 2-dimensional depictions of 3-dimensional pixelized color spaces show how much closer BT. 2020 is to human perceptual limits compared to BT. 709.

But insofar as most TV displays don't support the full range of BT. 2020, the most commonly used WCG is the color gamut specified by the Society of Motion Picture and Television Engineers (SMPTE) DCI P3 standard, which is the color range that cinema projectors are pegged to and which is widely supported in UHD displays. With 10-bit encoding DCI P3 encompasses a range of 756.6 million colors.

Most HDR modes rely on use of 10-bit encoding while Dolby Vision requires 12-bit encoding. The latter, as well as HDR10+, entails sending two payloads, one a baseline picture conforming to BT. 709 to accommodate viewing on SDR sets and the other a metadata overlay conveying enhancements to be executed by display systems that can support BT. 2020. Backward compatibility with SDR has also been addressed by two other HDR modes, Hybrid Log Gamma (HLG), a BBC invention now part of the broad-based ITU BT. 2100 standard, and the Philips/Technicolor SL-HDR1, neither of which requires use of a second metadata stream.

With no industry agreement on the best approach to HDR, content providers need to be equipped to support different playout profiles suited to the requirements of their targeted distributors. For example, Netflix, which requires that all its original films be produced in HDR, requires that any content formatted in HDR for distribution to its customers be delivered as Dolby Vision masters, which it then converts for delivery in both the DV and HDR10 formats while using the DV mode for backward compatibility with SDR displays.

In contrast, Amazon requires HDR masters be formatted to HDR10 with separate masters in SDR.

Whatever mode is employed, postproduction processes must be geared to producing user experiences that meet distributor expectations. While much of the modeling that has gone into setting parameters for HDR has focused on human contrast sensitivity, postproduction should be based on a much broader perspective on visual response processes.

Along with responsiveness to degrees of contrast, developers must consider human perceptual factors such as:

- Light and dark adaptation – It takes longer for the human eye to adapt to changes in luminance at the bright end of the spectrum than it does at the dark end, which means technicians must be sure sudden changes in luminosity following a bright scene don't result in viewers' missing what's going on.
- How color is perceived under different conditions – As luminance increases so does the ability of the human visual system to discriminate between colors at ever smaller gradations, which means that at high luminance more bits might be needed to code color to avoid introducing noticeable errors.
- Responses to frame-rate flicker that might be introduced with expansions in dynamic range – This isn't a problem with higher frame rates, but the higher resolution supported by UHD can result in people seeing flicker when frame rates traditionally used with film or NTSC TV are in play.

New Dimensions in Quality Control

The vastly expanded complexities of executing postproduction workloads heighten the need for an approach to quality control (QC) that can ensure every task contributes to meeting the specifications set by distribution affiliates. While many content suppliers' post-production workflows already support an earlier generation of automated file-based QC solutions, the requirements have progressed to where a new level of flexibility and efficiency in file-based QC is needed.

More Elements to Monitor

QC processes must be far more scalable while performing tasks much faster for such traditional basics as ensuring the quality and synchronization of video and audio, closed captioning and language sub-titling and dubbing. The quality and synchronization of video and audio payloads must be validated across all the commonly used video and audio codecs and all screen resolutions with verification of the many types of container wrappers that are used to deliver each file to multiple distributors. Confirming the accuracy of the metadata used in conveying the syntaxes of all these elements and a growing list of other elements has added to the QC workload as well.

With the need to reach more diverse audiences, QC must be applied to verification of an expanded number of closed captioning, sub-titling and dubbing streams associated with each content asset. QC processes must also be able to validate richer compilations of metadata that have been implemented to enable advanced search and recommendations applications. And these processes must also be applied to validate trailers, poster art and other graphics elements associated with each content file.

All of this requires unprecedented levels of speed, scope and accuracy in analysis. And with those analytic capabilities, the QC system should be able to automatically set test plans for incoming files and activate automated corrections that can be applied throughout the post process to issues involving audio levels, video resolution, color accuracy, dead pixels, black frames, A/V synchronization and much else.

QC for 4K UHD Content

Ensuring 4K UHD content meets distributors' requirements requires QC processes that can determine that files meet customer specifications, whether they were originally shot in 4K UHD or converted from other formats.

It's also important to note that content suppliers will need to be able to use advanced 4K-capable QC to gauge the effectiveness of the 4K up-conversion processes available to them, such as upscaling, various types of scanning, film grain filtering, artifact removal and color re-grading.

Suppliers must be able to verify that quality requirements have been met at the customer's chosen bitrate threshold in accord with whichever profile of applicable codecs such as HEVC and AV1 the customer prefers.

In addition, the QC process must address questions of whether ancillary content elements, such as UI graphics, text and ads, conform to the 4K quality parameters.

HDR-Related QC

In the case of HDR, QC processes must be able to assess whether the production is in line with the requirements for maintaining a consistently good user experience as described in the previous section. This requires a sophisticated means of identifying issues related to light and dark adaptation, brightness sensitivity, how color is perceived under different conditions and responses to frame-rate flicker.

In addition, specialists need to be able to use QC to assess whether transformations of HDR-produced content for rendering in different HDR modes or for rendering on SDR displays align with director intent and the need for a good user experience. This requires automated mechanisms that can quickly identify points of non-alignment within each frame.

Keys to Addressing the New Postproduction Mandate

In light of all the above, it's clear that traditional approaches to managing workflows in postproduction must be restructured using the power of automation, software innovation, easily scaled access to resources with seamless integration for cloud-based collaboration and reliance on standardized modes of packaging and delivering output. Well-designed solutions mapped to these principals can eliminate duplication and misallocation of individual workloads while enabling once linear processes to be executed in parallel.

And they can bring to bear the comprehensive QC measures discussed above as tightly integrated adjuncts to every task.

More Efficient Workflows

The transformation starts with greater automation of non-creative tasks related to ingest and initial media processing. Manually intensive procedures can lead to inconsistencies in file naming, packaging and encoding, inefficient use of storage with duplicated and over-sized files and the burdening of specialists with counter-productive time constraints as they wait for workstations to perform transcoding, framerate conversions, captioning and other processes.

With utilization of a workflow platform running on a central server linked to all workstations these issues can be mitigated through reliance on common trigger interfaces utilizing API integration, XML support, watch folders and other measures comprising today's best practices (Figure 3).

This server-based workflow orchestration also enables browser-based administrative oversight of operations to facilitate ongoing adoption to evolving best practices and to ensure those practices are consistently followed not only at the front end but through every phase of postproduction.

Given the impact an expanded volume of data and versions is having on file sizes, efficient use of storage resources is more important than ever.

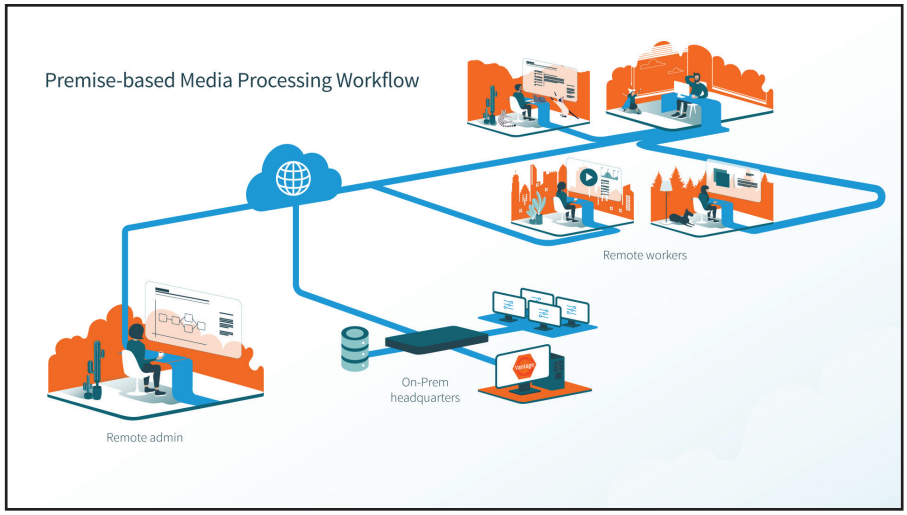

Figure 3

Best practices incorporated into the centralized workflow must support defining and collecting the KPIs (key performance indicators) that track shared storage usage on a per-file basis in tandem with adherence to protocols like the mezzanine format OTwrapped XDCAM 50. The system must be able to ensure all levels of storage, from network-attached storage (NAS) to storage area network (SAN), archival and other modes, are utilized with maximum efficiency.

Equally important, the workflow framework must provide a means by which repetitive editing tasks are automated Templates enable automation of editing processes within the postproduction workflow that can produce outputs comprising multi-layered video compositions with transition and image effects, graphic overlays and conformed audio.

Leveraging the Cloud

To accommodate the need to enable far-flung collaboration in postproduction as well as to cost-effectively scale postproduction processes beyond the capacity of local appliances, the postproduction workflow platform must be amenable to seamless integration across multiple facilities with all the benefits that accrue in single-location environments (Figure 4). Specialists must be able to collaborate in real time in dispersed locations linked by high-speed terrestrial backbones whether they're across town from each other or a continent apart.

This requires that the postproduction workflow platform be architected to exploit the most efficient virtualization framework, which entails modularization of components. These orchestrated building blocks make it possible to extend postproduction operations into public cloud facilities with the most cost-effective and secure use of shared resources on an as-needed basis. With cloud support, new postproduction centers can be quickly implemented whenever there's a need to expand operations in different parts of the world.

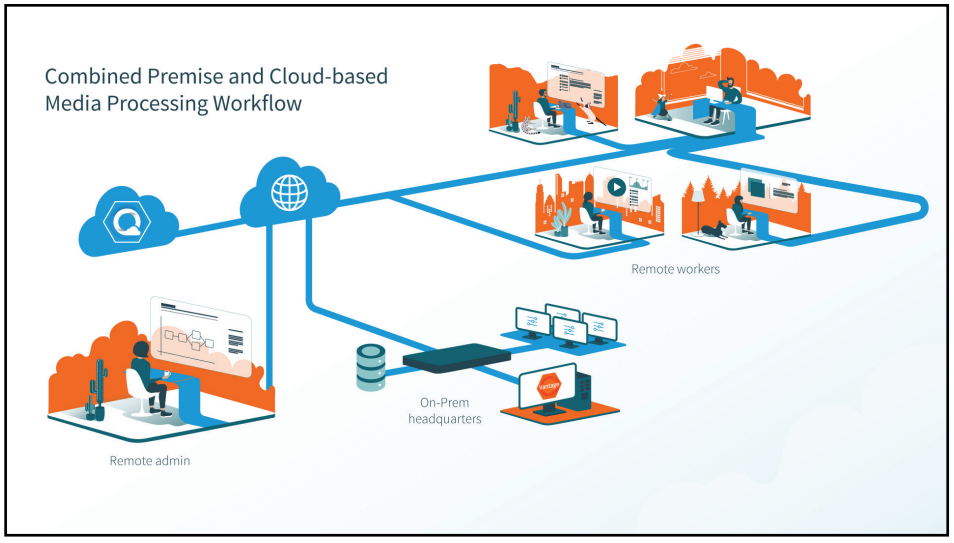

Figure 4

Utilizing IMF

One of the great advances supporting the ability to package postproduction deliverables for today's distribution marketplace came with widespread adoption of the Interoperable Master Format (IMF), jointly developed by DPP and SMPTE and standardized as ST-2067. The scale of IMF adoption is reflected in Figure 5.

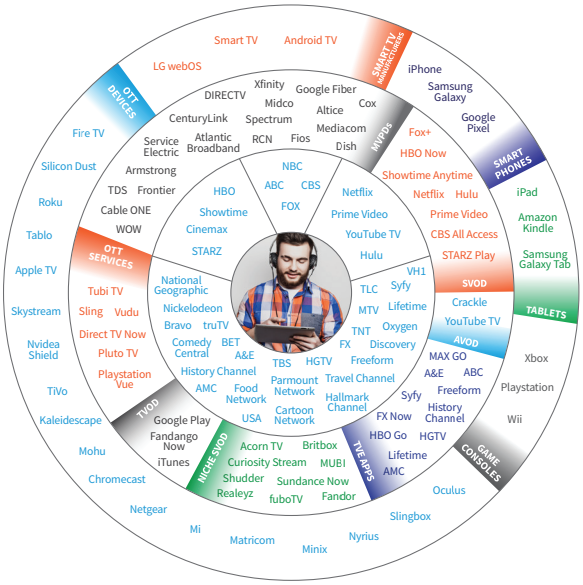

Figure 5

ST-2067 modifies the use of track files transferred in the Material eXchange Format (MFX), which was first developed by the Pro-MPEG Forum and later standardized by SMPTE as a container for different streams of coded essences in non-linear exchanges of digital files over IP links for use in production and postproduction processes. When MXF files are used to wrap media content with useful metadata at the beginning of the production process, that metadata can be accumulated, processed and expanded to include information about asset management, digital rights management and media archive systems all the way through to distribution.

By repurposing MFX and adding ports for integrating track files into a single flow, IMF enables creation and management of many different versions from the same video essence. It supports creation of Composition Play Lists (CPLs) to describe the components in terms of video format, audio version, language, captioning, etc. that comprise one version of the program.

These are packaged with Output Profile Lists (OPLs) to describe how different output versions are to be transcoded from the master essence, including instructions for codec formats, picture resolution, HDR modes, frame rates and audio versions.

The IMF package also incorporates the XML Asset Map, Packing List, and Volume Index files that describe the package structure. And it utilizes an adaptation of the file delivery specification AS-11 that was developed by the Advanced Media Workflow Association (AMWA). at the request of DPP.

Not only is support for IMF an essential requirement of the postproduction workflow. There's a benefit to be gained if the workflow platform enables automation of the creation of all the files for the IMF package from single output render within the timeline of a postproduction toolset like Adobe Premiere Pro.

Telestream's Answer to Today's Postproduction Challenges

Vantage Media Processing Platform

Centralizing non-creative processes with Vantage workflow orchestration means editors spend more time on creative work and managers have more predictable schedules, storage savings and network traffic reductions.

Post Producer

Post Producer assembles multi-layer video deliverables for multi-language, multi-platform distribution from source media files into one or more outputs. It eliminates "bag-and-tag" editing and repetitive production tasks that enable editors to focus more time on creating high-quality material.

IMF Producer

IMF Producer frees editorial staff to focus on creative functions without worrying about the complexities of IMF by facilitating automated creation of IMF packages directly from a non-linear editor (NLE).

Vantage Cloud Port

Telestream has addressed the need for cloud-based postproduction support through its Vantage Cloud Port solution, which utilizes containerized microservices to enable Vantage actions and workflows in the cloud.

Comprehensive Quality Control

Aurora & VidChecker

Aurora and Vidchecker are the file-based QC platforms postproduction professionals use to execute fast but comprehensive tests for video, audio and other asset quality at multiple points in their workflows.

PRISM

PRISM, is an advanced QC waveform monitor widely used in cinematic and TV production that has been optimized for use in postproduction. With support for 4:4:4 RGB sampling at 12-bit color depth, PRISM can be used with any gamut within REC 2020 color spectrum. It also supports the full luminance range encompassed by PQ. PRISM works in any SDI and IP networking environment, including 25GE, with support for all formats from SD to 8K.

GLIM

GLIM plays mezzanine and professional grade media files in a web browser with a vastly superior playback experience compared to remote desktop applications. Media professionals no longer need to waste hours of time downloading huge mezzanine files just to play them. GLIM enables the ability to "play the unplayable" from remote locations over the internet.

Conclusion

The expansion of distribution outlets for premium content represents both a major opportunity and a challenge for content suppliers. As margins tighten in the traditional pay TV and broadcast syndication markets, surging consumer demand for anywhere, anytime access to content has spawned a rapid increase in OTT outlets, where cost-effective approaches to satisfying this demand are essential to sustaining strong returns on content suppliers' assets.

The proliferation of OTT distributors has greatly expanded the range of requirements that must be met in supplying content suited to each distributor's needs. Along with the emergence of new A/V formats, the OTT market's reliance on ever richer fields of metadata and the need for multiple versions tied to language and regulatory requirements in cross-border distribution have added many new dimensions to postproduction.

Year-round, unscheduled demand for original content has put a premium on speed. And the need for instant scalability and access to postproduction platforms from diverse locations has moved use of cloud resources into the postproduction mainstream.

These developments have transformed postproduction to the point that old approaches to fulfilling work orders won't work. The new paradigm requires new levels of automation, workflow integration and multi-essence packaging that enable performance of tasks simultaneously across multiple systems and from multiple locations with elimination of time-wasting duplication and errors from ingest to completion.

Expanded workloads and accelerated time frames require a new level of automation and breadth of support in QC as well. And the arrival of HDR has imposed new challenges requiring new approaches to ensuring final output leads to user experiences distributors are looking for.

With an explosion in demand for original content from a vastly expanded ecosystem of distributors worldwide, the opportunities for postproduction professionals are greater than ever before. Telestream has created the tools they need to make the most of those opportunities at unprecedented levels of efficiency and performance consistency.

Footnotes

[i] *MPAA, 2018 Theme Report, January 2019*

[ii] *Parks Associates, Percent of US Households that Subscriber to Two or More OTT Services, October 2019*

[iii] *Broadband TV News, 52% of US Homes Have Both Pay-TV and OTT, May 2018*

[iv] *Rapid TV News, UK, France Witness Binge Watching Surge as Global Streaming Steams On, October 2019*

[v] *Parks Associates, Video Services Continue to Gain Ground Following Success at Industry Awards, March 2020*

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