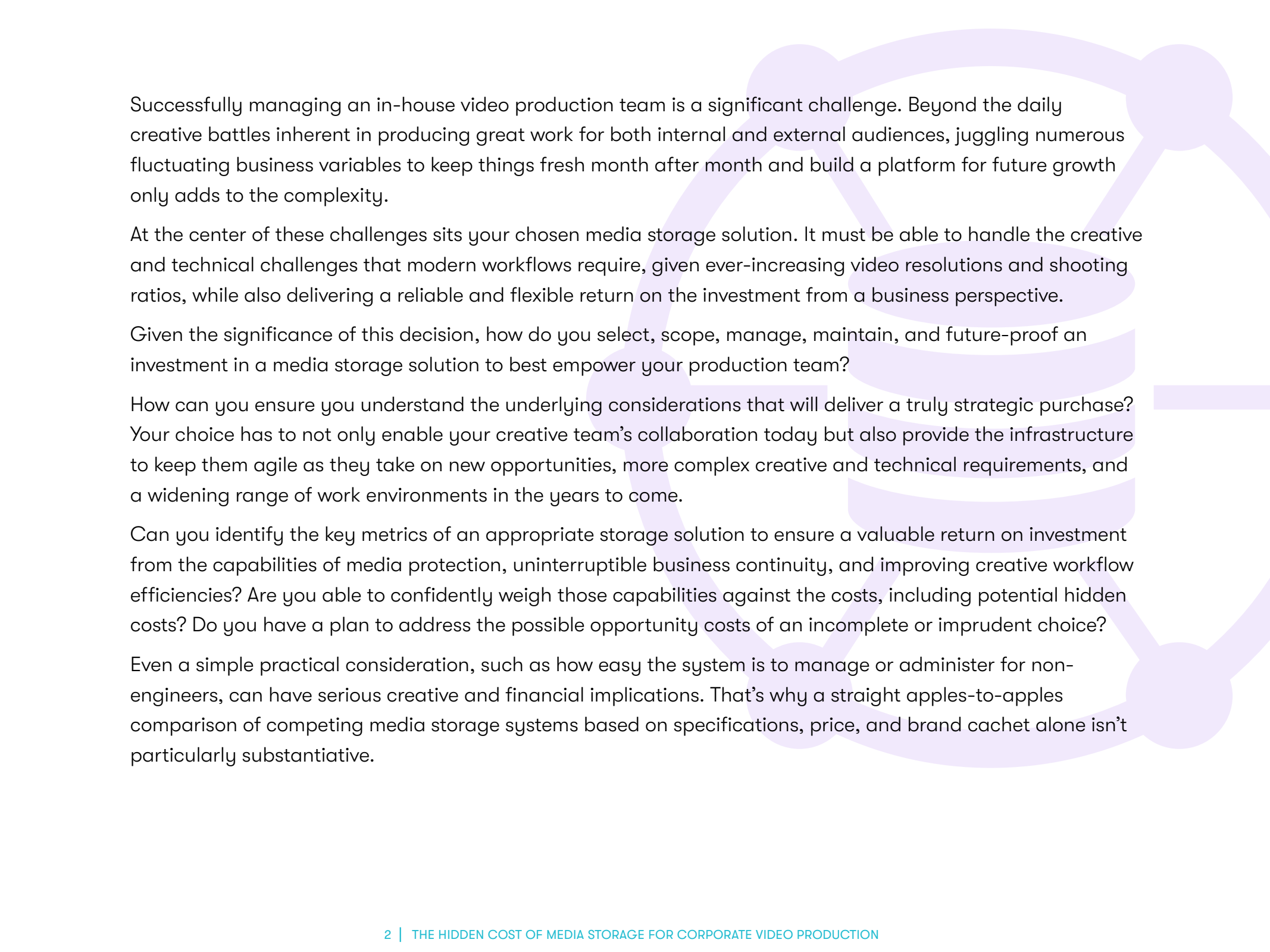# BREAKING DOWN THE 'HIDDEN COSTS' OF MEDIA STORAGE FOR CORPORATE VIDEO PRODUCTION

BY JONNY ELWYN

Successfully managing an in-house video production team is a significant challenge. Beyond the daily creative battles inherent in producing great work for both internal and external audiences, juggling numerous fluctuating business variables to keep things fresh month after month and build a platform for future growth only adds to the complexity.

At the center of these challenges sits your chosen media storage solution. It must be able to handle the creative and technical challenges that modern workflows require, given ever-increasing video resolutions and shooting ratios, while also delivering a reliable and flexible return on the investment from a business perspective.

Given the significance of this decision, how do you select, scope, manage, maintain, and future-proof an investment in a media storage solution to best empower your production team?

How can you ensure you understand the underlying considerations that will deliver a truly strategic purchase? Your choice has to not only enable your creative team's collaboration today but also provide the infrastructure to keep them agile as they take on new opportunities, more complex creative and technical requirements, and a widening range of work environments in the years to come.

Can you identify the key metrics of an appropriate storage solution to ensure a valuable return on investment from the capabilities of media protection, uninterruptible business continuity, and improving creative workflow efficiencies? Are you able to confidently weigh those capabilities against the costs, including potential hidden costs? Do you have a plan to address the possible opportunity costs of an incomplete or imprudent choice?

Even a simple practical consideration, such as how easy the system is to manage or administer for non-engineers, can have serious creative and financial implications. That's why a straight apples-to-apples comparison of competing media storage systems based on specifications, price, and brand cachet alone isn't particularly substantiative.

THE UNFORESEEN IMPACT OF SNAP PURCHASING DECISIONS

> *Corporate media production teams need to purchase a storage solution of the correct size to suit the projects they have. As demand for more media projects increases over time, the storage solution needs to be able to scale seamlessly.*"
>
> – Kevin Usher
> Director, Storage Product Marketing
> Avid

The danger of impulsive storage purchases is that they can lead to costly problems down the line. For instance, they may lack more nuanced capabilities, such as scaling, maximizing the efficiency of media storage through professional management controls, or recovering corrupted or lost media.

This ebook will equip you to deftly navigate these hidden costs and empower you to make an intelligent choice that best serves your business. Whether this is your first tiered media storage purchase or you're incorporating several existing systems, you'll find expert insights to help you plan confidently for the future.

Note that the average warranty period for most storage solutions is about five years. Planning with this time horizon in mind ensures a sensible succession plan is in place for a smooth "relay race" across various media storage systems.

That said, not all of the costs of media storage are a surprise. Hidden costs are part of the picture, but some of the more obvious costs and requirements include:

› **SUITABLE INFRASTRUCTURE:** building space, rack space, power, cooling, wiring, drive capacity, uninterruptible power supply, media backups, and trained personnel to manage and maintain the hardware

› **RIGHT-SIZING CAPACITY AND PERFORMANCE:** calculating the correct number of concurrent users, their different requirements in terms of speed and space, and interconnection of storage segments and users

› **CONFIGURING MEDIA PROTECTIONS:** establishing and managing an appropriate degree of media protection at various levels. Some systems only offer one-size-fits-all protection, rather than an adaptive mix

› **INTEGRATION AND FLEXIBILITY:** connecting media silos and creative departments while enabling a mix of on-premises, remote, and cloud working options

› **TIERED SCALABILITY:** storage capacity able to easily expand with a mix of online, nearline, and archive space to respond effectively to new business needs

› **ROUTINE MAINTENANCE AND UPGRADES:** downtime during repairs; the need for hot-swappable components such as power supplies, cooling modules, disk drives, and controllers

› **DISASTER RECOVERY:** the cost of a bulletproof daily backup (on/off-site) and the procedures and personnel to execute it
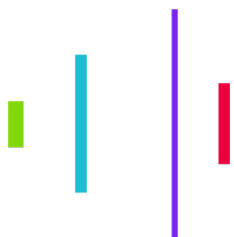
Over the rest of this ebook,
we will examine the hidden costs
of media storage across the
following four key areas:

1

Inefficiency due to production silos

2

Inability to expand the system
as needed

3

Maintenance over the system's
working life

4

Ineffective administration

The more of these hidden costs
you avoid, the greater the return
on investment your strategic choice
of media storage will deliver.

1. THE HIDDEN COST OF INEFFICIENCY DUE TO DISPARATE DATA

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If you think of the efficiencies gained from the deployment of unified storage, when you have individual silos of storage and, potentially, you might have to move media between them, which of course introduces complexities of moving media, moving media safely . . . how do you manage the deletion of media from the drive or system it's moved from and who's responsible for that deletion? Having disparate pools of storage introduces a lot more complexity and risk into workflow, system, and media management."

– Kevin Usher
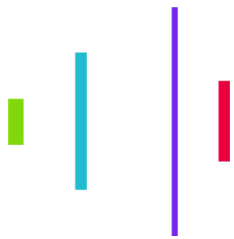
The cost of disconnected and disparate media storage (i.e., a collection of hard drives sitting on a shelf) might seem quite apparent: constantly seeing members of the team carrying and swapping hard drives around, twiddling thumbs waiting for media assets to transfer, or plugging in and inspecting numerous different individual drives trying to track down that one key asset from a previous project.

Yet when these scenarios become routine day-to-day realities, the idea that in a correctly configured, tiered media storage system all of these inefficiencies could be eliminated seems unimaginable.

AVOID PLAYING THE WAITING GAME

There is an inherent cost to the efficiency of your creative teams when all media assets—including online, offline, or archive content—cannot instantly be made available to the right users at the right time. This results in the repetitive need to transfer, copy, or manually enable access to media, which in turn can let file errors and media insecurity creep in.

If all media isn't readily available on the system, then delays abound when archive elements need to be re-ingested, an old hard drive with an even older cable connection needs to be accessed, or the system just doesn't have the capacity to store all of the media all of the time. The end result is the same: talented artists sit idly by waiting for the assets they need.

Working in this kind of fragmented arena, it's even more important to strike on a reliable and widely adopted procedure for deleting media from one system or drive after its transfer to another. Too often, this is conducted in a haphazard way that promotes user error and accidental media loss. Or it doesn't happen at all, clogging up valuable production resources with unnecessary duplicate media.

Furthermore, if the administrative aspect of the media storage system isn't easy to manage, then ensuring the correct users have sufficient access to the right media tiers at any given time may also be a slow, cumbersome experience. This can also impede media as it moves from department to department and tier to tier throughout the production pipeline.

CALCULATE YOUR TIERED MEDIA STORAGE NEEDS

Empowering creative teams to move ever more rapidly in modern post-production requires a deep embrace of collaborative workflows. It also, however, necessitates a properly provisioned tiered media storage system powerful enough to keep up with performance demands.

The calculation required to correctly construct a tiered media storage solution with both the adequate storage capacity (in the right tiers) and the correct level of throughput performance isn't entirely straightforward, and it involves the following components:

- The total number of concurrent users
- The variety of individual performance requirements of those different users (e.g., online, full-resolution multi-stream color grading vs. simple offline proxy editing)
- The correct mix of hard drive types and capacities to support the total performance needs within the various tiers of those users

If the media storage solution isn't capable of this, then users across the board will experience a sluggish, stuttering, or unworkable media editing and rendering environment. This kind of delay hamstrings multi-user, real-time collaborative workflows that are essential to delivering on a deadline.

This performance requirement is one of the crucial differences between generic IT data storage likely to be found and overseen by the IT department elsewhere in the business and the kind of high-speed, high-bandwidth storage your creative team needs to get their jobs done.

It is therefore essential that, if your IT department oversees these kinds of strategic purchases, they also understand the fundamental differences involved and don't rely on their existing IT-specific knowledge when evaluating proposed solutions. The seeds of discontent between the creative and IT teams can often be sown if there isn't consensus on the value of and return on investment from adequately powerful tiered media storage.

LOCAL STORAGE IS NOT ENOUGH

Locally attached storage, such as small, low-cost individual drives or even more expensive locally attached, multi-terabyte RAIDS, are generally insufficient or, at best, sub-optimal for modern workflows. This kind of storage often does not provide any media backup protection or collaboration capability. Instead, they force users to make multiple copies of the media in order to work collaboratively, which is inefficient when transfer time, duplicate storage space, and media management across multiple drives are considered.

This kind of workflow is also prone to unnecessary and costly errors creeping in, such as the loss of key media if accurate backups and archives aren't made; for instance, if the graphics are created on one machine and saved to its local drive, but the final archive is created by another team member from their incomplete duplicate drive. Media management gets messy very quickly.

Furthermore, when a production storage solution comprises multiple components from a range of vendors, the technicalities of operating various hardware and software elements can become even more complex. This arrangement can also invite costs through maintaining multiple product support agreements, the time and effort required in adequately training new staff, and it risks reducing the opportunities for interoperability between the core systems.

Among these considerations, remote workflows have taken center stage. They're no longer an afterthought but rather a necessity for ensuring seamless business continuity—regardless of unforeseen circumstances—as well as improving artist satisfaction, collaboration, and the flexible recruitment of top talent from around the globe.

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You need to ask yourself, will the storage system deliver the performance that I'm looking for, for all the users I need, simultaneously? You're going to be ingesting content, you're going to be editing, you may be doing color grading, you can be doing all sorts of things . . . different users on the system will have different needs in terms of performance. And so you have to size the system and provision it, so that you have sufficient discs to deliver the performance you need to support all those users at the same time."

– Kevin Usher

TAKEAWAY

### TIERED MEDIA STORAGE POWERS EFFICIENT, COLLABORATIVE WORKFLOWS

Leveraging a unified tiered media storage solution makes fluid collaboration across all departments frictionless—saving time, effort, and ultimately money by allowing your team to focus on getting the best creative results for your clients. Other, more mundane media management and administrative tasks can be updated as required directly by members of the team or eliminated entirely.

2. THE HIDDEN COST OF CAPACITY AND PERFORMANCE CONSTRAINTS

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In making this decision about purchasing a product, it's not just about bandwidth, performance, capacity, user connections... you have to think a little bit about how easy is it to expand? If I expand this system, is it disruptive? Am I going to have downtime when I'm doing this? And if I do have downtime, is it minutes, hours, days?"

– Kevin Usher
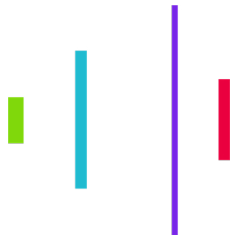
Without the right infrastructure, issues of storage capacity and performance can make themselves very apparent at just the wrong moment—and without a simple solution. The inability to quickly expand both the capacity and performance of your current media storage means the team cannot accommodate more space and access greater speed when a big project comes down the line.

FIND FLEXIBILITY FOR THE LONG TERM

One of the inherent difficulties in scoping out the correct storage solution is that your estimate of what your needs are now may not reflect your needs a couple years down the line.

How much space and speed will you actually require at any given moment? It's almost impossible to know from the outset what you will need in the end given the huge range of fluctuating variables, such as:

› The total number of projects in production at any given time

› The individual size and specifications of each of those projects

› The range of that capacity requirement as it changes over the life of each project

› The amount of archival storage required and maintained for whatever duration is necessary

› The level of media redundancy required to accommodate different projects' varying media security needs

These factors are also relevant when estimating the level of drive performance that will be needed to work with high-resolution footage and more uncompressed formats. Ideally, the system would be able to increase its level of concurrent performance in such a way that the entire system doesn't have to be rebuilt from the ground up in order to make a step change, such as moving from working in HD to working in 4K.

One of the benefits of a flexible tiered media storage solution is the ability to rapidly add extra storage capacity and drive performance. This may happen through hot-swapping in faster drives or by simply adding another array to the existing system without modifying much else.

PREPARE FOR ADJUSTMENTS

A further hidden cost when operating with an inflexible system is the cost of not being able to spread out the required capital expenditure over time. Rather than being able to buy and add more drive arrays as they're required, therefore spreading out the costs, the initial "once and for all" system and financial outlay will have to suffice—regardless of what happens in the business next.

This often leads to the purchase of secondary stop-gap solutions (e.g., another single drive sitting on the shelf) in lieu of expanding the existing, unified setup. After all, it simply doesn't offer the opportunity to do so. The scale of the required singular financial outlay can also put

pressure on the cash flow of the department or even the business or delay the critical purchase due to a lack of resources. This, in turn, seriously inhibits the opportunities the business can capitalize upon, even raising the risk of having to turn away clients..

One final hidden cost is inherent in capacity and performance constraints: an inflexible system becomes more inefficient without the ability to configure workspaces in response to changing levels of supply and demand.

For instance, if the system doesn't have the ability to dynamically resize the storage space apportioned to each user, then a large percentage of its resources will likely go underutilized over time, as they will remain earmarked for dormant projects and users and hence not remain available for new and active projects. Without careful management of the system resources, the entire media storage solution risks being consumed by inefficiency.

TAKEAWAY

FLEXIBILITY LEADS TO GREATER EFFICIENCY

Focus on operating a flexible, tiered media storage solution that can adapt to changing demands and workflows without downtime or major expenditure spikes. Your solution should allow your creative team to do their work without constraints and make the most of the current system's speed and capacity.

3. THE HIDDEN COST OF LIFE CYCLE MAINTENANCE

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Building in tools to allow the migration of data from a legacy system to a new system is quite important, because it keeps that transition a little simpler. You're not having to bulk move or bulk copy, you can continue working on projects that are on the old system until they're finished and then flip over to the new system when you are ready."
– Kevin Usher

Like death and taxes, maintenance costs are unavoidable. And, depending on the configuration of your post-production media storage units, you may be paying more than you should.

SEEK OUT A CENTRAL PILLAR OF EXPERTISE

Ideally, this hidden cost is not entirely absent from your planning. Designate one person, for example, to be responsible for maintaining the hardware and software and administering the actual media in use on the system; too often, this maintenance is performed in a haphazard way with similarly haphazard results.

This is further compounded if there are several disparate storage systems to be maintained at the same time. The inconsistent mix can eat up valuable time and human resources, as each unit

may have its own vendor, customer support, and a unique range of possible troubleshooting issues.

While general IT knowledge provides a useful foundation, this expertise needs to be enhanced with in-depth knowledge of media tools and applications and their associated workflows. Configuring and supporting a storage and network solution for media is not the same as IT applications like data processing or email.

For example, media storage solutions must support real-time connected clients and deliver extremely high data throughput performance for high-resolution media. They also need to support multiple users potentially sharing the same media file simultaneously, with no dropped frames for anyone.

Storage solutions for media workflows are tuned and architected for these kinds of specific media characteristics that go way beyond anything a standard IT storage solution can deliver. Although IT skills are important, experience with media systems and their applications is essential for a successful storage solution deployment.

Another hidden maintenance cost to be aware of is the potential downtime and loss of productivity that can occur when transitioning wholesale from a legacy system to a new one if the process isn't managed well, or if it's simply not possible or practicable to operate them in tandem while transitioning.

KEEP IT CORRECT, NOT COMPLICATED

Finally, when it comes to maintaining a media storage system, one of the most important considerations is that it has been set up correctly in the first place. If the drive arrays aren't configured correctly for the necessary media protection across the system or have been configured inefficiently, it may waste system resources. In the case of catastrophic drive failure, it may even result in unexpectedly lost media.

Effective media storage should be simple enough to maintain that it doesn't require a systems engineer. The vendor should offer robust customer service and support and, during the normal day to day, ensure that the system is able to undergo local updates and enhancements with minimal to no global downtime.

TAKEAWAY

SIMPLIFIED MAINTENANCE SAVES TIME AND RESOURCES

Running a tiered media storage solution will always require some level of maintenance, but a single and unified system will ensure the most efficient use of resources as well as lower management overheads.

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With the right tiered media storage solution, the management of the system has been designed specifically to cater to non-technical people. You don't have to be an engineer to manage or look after it. Sure, there may come a time when you need somebody with more technical skill to do upgrades, but day-to-day, just managing and creating new user accounts, creating new storage workspaces, allocating those users to teams and groups on the system, can all be managed by anyone."

– Kevin Usher

A media storage solution is only as effective and efficient as its admin procedures. The right level of planning streamlines which users have access to storage and how they ingest, move, and create the media within it.

SERVE THE NEEDS OF SECURITY AND SCALABILITY

If these processes are cumbersome, they're more likely to be ignored or circumvented. However, a badly administered system can lead to even more serious consequences, such as unauthorized access to privileged media or the loss of critical data due to user error.

For example, if all users are given equal access to everything because segmenting the system creates too much friction, then media security could suffer as a result—a serious concern when combining freelance talent and potentially privileged information, like an upcoming product release or financial results. A system that is hard to administer can also drive inefficiencies; if it's too difficult for ordinary team members to configure unique workspaces with their own bespoke parameters for storage capacity, drive performance, and connection to other tiers in the system, then workspaces may be standardized and inefficient.

Even if customized workspaces can be created, if they can't be adjusted after the fact—say, to free up unused space—then they'll consume large parts of the system unnecessarily. The potential knock-on effect of this is that new projects can't be added or gain access to resources, even if the system isn't actually full.

OPT FOR EASY-TO-USE, INTUITIVE SYSTEM ADMINISTRATION

Similarly, when processes for managing, tracking, and backing up media throughout the production pipeline are not simple enough, they can lead to new inefficiencies. For example, say a project is put on hold after it's ingested into the system. In a complicated system, those resources can't be easily freed up, since moving media between tiers or removing it from the system is too difficult to administer.

Too much complexity within the media storage solution can slow down even the "technical-creatives" already on the team. Then, another hidden cost arises in the form of either training or hiring team members to get the right expertise.

Another facet to consider is that system administration controls should be remotely accessible from anywhere and secured with a virtual private network (VPN) connection to the storage system so it can be maintained, customized, and configured intuitively through a standard web browser. This protects against situations in which the administrator may not be able to be on-premises, but users don't want to have to wait for onsite access to the system administration tool set to continue optimizing the system.

Ultimately, the administration of the system must be secure enough to protect the business and its clients from accidental or intentional security breaches or media loss as well as reputational damage.

TAKEAWAY

EASY ADMINISTRATION SAVES MONEY AND REPUTATIONS

Administering a secure, tiered media storage solution means enabling the creative team to handle everyday media management and system admin tasks. Efficient and flexible resource allocation also helps protect valuable assets and maximize the return on investment.

REAP THE LONG-TERM ROI OF INTELLIGENT, TIERED MEDIA STORAGE

Making a sound strategic choice for your media storage ensures your creative production team has laid a solid foundation for success today and tomorrow. The right media storage solution can help future-proof against the demands of ever-changing business, creative, and technical requirements while also unifying workflows and simplifying storage across the company. In turn, everyone's work has a chance to become more efficient, cost effective, and enjoyable.

Investing in a flexible architecture allows creative media departments to adapt to changing performance and capacity demands through seamless upgrades and enhancements, further helping them nimbly respond to new challenges and spread out investments in the system over time. When the system is easy to maintain, administer, and customize throughout its working life, expert engineers aren't needed for regular tasks, saving resources and funds.

A robust media storage infrastructure will also allow creative teams to pivot toward and embrace new workflows through a powerful combination of reliable access to on-premises and remote storage—helping to ensure business continuity and satisfied clients even in the face

of unpredictable circumstances or societal shifts away from in-person working. Finally, offering appropriate levels of media protection will help shield your workflows from accidental or intentional data loss.

THE BOTTOM LINE? The right tiered media storage solution—one that's fit for purpose and continues to add value over its entire lifespan— can be a trusted and reliable backbone for any creative or marketing team's contributions to the growth of their business.