WHITE PAPER

THE POWER OF VIRTUALIZATION

Guillaume Aubuchon, CIO, DigitalFilm Tree

Virtualization is not just for enterprises, it can be deployed effectively in post-production too. This White Paper explains how virtualization can be used to better service more customers from a smaller, more optimized facility.

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INTRODUCTION

When it was first introduced, the driver for virtualization was primarily cost savings as a result of consolidation. Now, as the technology matures, we have begun to discover new benefits, born of a degree of flexibility simply not possible before. Post-production in the cloud is much more than just a 'lift-and-shift' of tried and tested workflows into a different infrastructure.

DigitalFilm Tree (DFT) is leading the way in cloud-based post-production services, exploring and exploiting new ways of collaboration and facilitation. The cloud makes it possible to decentralize production and post-production, to better service customers worldwide from a smaller physical footprint. The benefits of such an approach can be summarized as follows:

- Instantly scale an operation to meet demand
- Change workflows at a moment's notice
- Become location-agnostic
- Reduce physical infrastructure
- Do all of the above with minimal negative business impact

The thought of returning to the age of the mainframe may seem ridiculous, but essentially that is what is happening – virtually – across the entire computational landscape. Mainframe computing, driven by large-footprint, complex computers built prior to the personal computer revolution, certainly had its benefits, namely: *data centralization, scalability,* and *access control or security.*

As the diversity and complexity of tasks increase, access to data becomes ever more fluid, and the need for security in particular becomes paramount. We suggest that it would be wise to look to virtualization and its ancestor, the mainframe, for solutions to these issues, and this white paper seeks to explore and expand on these three key benefits of working in a virtualized post-production environment.

DATA & PROCESSING CENTRALIZATION

Like most companies, DFT has been centralizing data for years in SAN and NAS storage systems. However, there are certain limitations with this approach. First, both the data and the processing power required to manipulate that data must remain in the same centralized location. Bandwidth constraints won't reasonably allow for having storage and computing resources in separate locations. But at the same time, clients working with this data want greater flexibility in terms of being remote from the physical location of the processing power. This is true whether you are talking about cloud-enabled workflows that serve widely distributed clients, or just greater flexibility even within the confines of a post-production facility's network.

DFT operates with a very loose definition of what any given workspace is for. Yes, there are physically differentiated rooms that serve as online, color correction, or QC bays, but those designations often need to change at a moment's notice. The modest size of DFT has been a key factor in maintaining the flexibility which has allowed us to survive and flourish, financially. The ability to be flexible is at the core of any modern, successful facility infrastructure. Virtualization is the cornerstone of that flexibility.

The workstations that exist in each of our bays are simply thin clients, merely a platform for a keyboard, video display, and mouse – nothing more. The hardware and software required to drive an instance of Media Composer, for example, are centralized in the server room which also houses storage. Every work area can be adapted to reflect demand. Not only can physical workspace be reconfigured on the fly, but if one client is rendering and the other just browsing through bins, processing power can be prioritized where needed.

Running multiple instances of Media Composer on multiple, high-performance servers in a pooled processing environment is significantly less expensive than equipping each bay with a powerful workstation and a suite of software. Yes, this will require an audit of the processing requirements for specific workflows, but in our experience we have found that *most individual workstations do not even reach 60% utilization*. Virtualization allows quicker access to data and reduces infrastructure costs through more efficient use of shared resources.

SCALABILITY

TV production has grown hugely in recent years – content is produced throughout the year and there is no guarantee of 'slow periods', when a facility can shut down to perform maintenance and upgrades. Schedules must remain flexible, to deliver content in response to almost continuous demand.

In addition to efficiencies in processing, virtualization allows for a truly scalable infrastructure by severing the connection between hardware and software, and allowing resources to be pooled.

Virtualization eliminates the need to update individual workstations. It allows you to quickly scale a facility and perform hardware updates with zero downtime. You can also scale out to external resources using virtual, private connections to public cloud providers. Likewise, satellite workstations, outside of your facility can tap into the centralized computing power located at the facility.

Virtualization gives a facility the ability to operate beyond its physical footprint and geographical location.

SECURITY

As an increasingly connected world exposes more and more vulnerability, it is paramount that we do everything we can to separate access and content. Virtualization provides both the agile access that is demanded by clients while at the same time delivers unparalleled levels of security.

DFT has developed a multi-level 'ring-fence' approach to network security. First is perimeter network security - basic network security to prevent intrusion. Next, having content and general traffic on physically separate networks limits content exposure to any network that could be compromised. Lastly, physical workstation access controls prevent entry into a given space without proper credentials.

However, even with physical access controls there might be a lingering sense of the need to do more to prevent client systems from retaining sensitive data. The great benefit of a virtualized environment is that the thin clients are not even processing the data. If the client systems were to be somehow compromised, there are three additional layers of access that would still have to be breached before any actual data could be reached.

CONCLUSION

While cloud computing is the darling of modern processing organizations, it is important not to forget the strengths of earlier configurations. When the basic principles of mainframe computing meet the cloud in the form of virtualization, we see efficiency and security move forward together. Centralized processing power, linked to the flexibility offered by the cloud, which could be public, private, on-premises or any combination of the three, means that virtualization is the next evolutionary step in expanding the services that a post-production facility can offer.

About Guillaume Aubuchon

Guillaume Aubuchon has spent the past decade melding the latest in technological innovation with the century-old tradition of filmmaking. He has kept DigitalFilm Tree at the forefront of innovation in Hollywood, as highlighted by DFT's recognition in 2014 by the Hollywood Post Alliance for the innovative implementation of OpenStack software in cloud-based workflows on recent hit television shows *UnREAL*, *American Housewife* and long-running series like *NCIS: Los Angeles*.

Corporate Headquarters 800 949 AVID (2843)

Asian Headquarters + 65 6476 7666

European Headquarters + 44 1753 655999

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