JIGSAW24

The case for remote working: Benefits, challenges and core equipment

For the last four years, we've been helping the UK's most ambitious production and post teams navigate the challenges of implementing remote workflows. Now, the technology has matured to the point where some form of remote working is affordable for everyone, and it's (relatively) simple to hit that client requirement. But, as we've seen at recent panels and trade shows, there is still confusion as to what the benefits of remote working are, the challenges it poses, and the core technologies you should invest in.

It's important to understand that "remote editing" is not a single thing, and that there are many ways of achieving it. Remote working can take place over a very short distance (for example, editors in suite one using PCoIP to access resources in suite four without walking down the hall) or a very long distance (facilities in LA and London logging into the same cloud-based system to deliver a 24/7 service). Editors can use lightweight Macs or PCs to connect to machines in your MCR or a datacentre; alternatively, you can use that centralised hardware to create virtual machines which your editors can log in to and move between. There are solutions available for networked and Fibre connectivity, for ENG crews struggling with 4G, for facilities that need to collaborate without files leaving their network.

Your choice of workflow will be determined by cost, client demand, the connectivity available to you and what you think is best for your business. But before we dig into these options, let's look at a more basic question: why bother with remote editing at all?

Why adopt a remote editorial workflow?

Obviously, people aren't investing in remote workflows and their underlying architecture just because it's fashionable. A robust remote workflow can save you space and money while increasing your access to talent, and improving your ability to fulfil client demands.

Adding remote capabilities to your system means you can **reduce the cost of expansion**. If your staff can work from anywhere, there's no need to have them working in an expensive central facility – you can develop premises in more affordable areas and have the staff there connect remotely to central systems. Alternatively, you can switch to the 'work from home' model popular across other industries, and remove the need for office space where relevant.

While any remote solution is going to involve an initial investment, you can **reduce hardware spend over time** by moving your end users off high-power, high-cost workstations that need refreshing regularly and on to cost-effective thin client machines, which do not need to be refreshed as often. This is especially useful if you have a variable workload and find yourself regularly buying expensive hardware for freelancers and temps, only for it to go to waste in quieter periods.

And it's important to remember that, while we're focusing on editing here, the same technology can be used to give clients remote access to content for approvals, or to connect to other sites so you can **collaborate with (and attract) the best talent available** at every stage of production and post.

There are also the logistics of modern creative workflows to consider. Financial and political pressures have made it increasingly common for projects to bring together creatives in different locations. If you have a robust remote access solution in place, **everyone can work from a central pool of assets** (and even on remote machines running on centralised hardware), so **while creative work can take place anywhere, technical teams only need to maintain and manage hardware in one location**.

In fact, if you need to link offices in multiple countries, or regularly connect with freelancers and other facilities, remote working is the easiest way to give everyone equal access to the systems they need – and the learning curve is likely to be easier than you think. Remote working is well supported in the Avid ecosystem and by popular cloud service providers, meaning that you can achieve the level of remote access you need using tools your end users will already be familiar with, and which are already used globally.

Your core hardware and software

There are multiple hardware and software options for every kind of remote workflow. While every situation is different, there are a few solutions which have established themselves as de facto standards, or which we believe to be more stable than their counterparts.

A familiar NLE Avid Media Composer currently offers robust support for a range of remote editing and approval workflows. There are more on-set/ENG-focused tools available through Interplay | Production, as well as the new Media Composer | Enterprise for anyone who wants to give production teams role-based access to footage. You can purchase Media Composer | Cloud VM licences if you want your team to be able to connect to Media Composer using thin clients, or use the Avid | Edit on Demand service to access Azure-hosted virtual machines.

Elsewhere, Adobe's Team Projects allows Prelude, Premiere Pro and After Effects users across multiple sites to share assets. Adobe's collaborative functionality can be extended by combining it with Projective's popular production asset management software, Strawberry, which now offers Strawberry Skies workspaces for cloud-driven collaboration.

DaVinci Resolve has had remote tools built in for a while now. Within their workspace, each artist gets access to the tools they need to get their job done, with all the databases tied together and managed by a powerful database, and universal timeline that allows editors, colourists, VFX artists, animators and sound engineers to work together on the same project simultaneously.

Whatever your preferred editing platform, the team can help you develop a solution that supports your workflow in a remote or cloud-based environment.

A reliable PC over IP client A PC over IP connection, also known as PCoIP, allows the machine your editor is using to connect to remote hardware. You can establish this connection using hardware or software clients.

At the moment, Teradici Cloud Access is the software client of choice for PCoIP. End users download the Teradici software and use this to log in to a virtual machine as they would a remote desktop. It's a simple process done by a relatively unobtrusive piece of software, which delivers a huge amount of power and flexibility, with support for GPU-intensive applications and a robust management toolkit for IT admins. As a result, it's been used for a number of major rollouts, and forms the basis of Avid and Microsoft Azure's remote workflows.

For hardware-driven PCoIP, we recommend Amulet Hotkey's zero client solutions. Their solutions are particularly popular in post because, unlike others, they don't require a high bandwidth, dedicated connection – they'll work over any network and will scale down to work with a standard internet connection. Also in Amulet Hotkey's favour is its low cost (about 60% that of a rival solution), and the fact that all data is AES encrypted on the network and uses 4096-bit public key cryptography, meaning the odds of anyone being able to intercept your files on their way over the network is negligible.

Standard MCR infrastructure Everything about modern PC over IP solutions is lightweight, meaning that if you are looking to centralise workstation hardware in your MCR and have each editor access it remotely, there's actually relatively little impact on your underlying MCR infrastructure. You should still be able to use your existing network and switches, though you will need a PCIe card to "package" the hardware into virtual machines to present to your users. However, things become slightly more complicated if you want to store your hardware anywhere other than an MCR in the same building as your editors.

A high bandwidth datacentre connection If you want to store your hardware in a remote site (for example a datacentre outside London) and have editors connect to it from multiple locations, nothing much will change for the editors – they'll still use Amulet Hotkey or Teradici, and the interface presented to them will be exactly the same, though the quality of their connection may affect the quality of their footage.

Behind the scenes, though, your IT team will have a little more to do. To roundtrip uncompressed video to your datacentre, you'll need to set yourself up with a Dark Fibre connection. This is actually becoming cheaper than you might think – metro Fibre networks are increasingly prevalent in cities across the UK, and we've helped many clients use them to connect to a datacentre or another facility. We use coarse wavelength division multiplexing solutions from Barnfind (more on them at **Jigsaw24.com/brands/barnfind-brand**) to build a Fibre connection that supports more lanes of traffic – and therefore more users and signal types – but uses lower cost hardware.

If you don't need to work with uncompressed video, an alternative to Dark Fibre is a high bandwidth IP network connection. This gives you around 100Gb of bandwidth, rather than the terabits you can get with Dark Fibre. This is still enough for multiple streams of video if you're willing to, for example, convert your video signal into NDI at the datacentre, transport it in that format, and then reconvert it back to its original format when it reaches the end user (you may need to add a hardware convertor to whatever thin client they're using).

Cloud-based workflows Centralising your hardware in a datacentre and creating your own virtual machines for your users is great in terms of the level of customisation and control it gives you, but it does involve the upfront investment of buying your hardware outright, and the periodical expense of updating it. Services like Media Composer Azure, which effectively lets you rent a virtual machine from Avid and use it via a high-bandwidth connection to Microsoft Azure, look to remove that cost, simplifying everything down to a single monthly payment.

There are other advantages to this model – the massive scalability of Azure means it's good if you need to expand quickly. It's also massively redundant and you're working in a secure, private cloud. However, because Azure is delivered over Ethernet, this workflow is only suitable for compressed footage – if you're working in uncompressed 4K, in particular, you're going to need to use physical machines and a Dark Fibre connection.

How are facilities currently applying this to their editorial workflow?

Over the last four years, we've seen remote working infiltrate almost every area of our clients' pipelines. Some common scenarios include:

- **Remote access to hardware** Multiple clients in Soho use Dark Fibre to connect to a high-end projection facility so that they can grade projects on a system with the requisite colour depth and detail. The colourists are effectively using the hardware at the projection facility to log in to their own systems, so no footage ever leaves the original facility, a key condition on many of their NDAs.

- **Remote access to assets** More and more often, clients who operate across multiple sites are choosing to centralise their storage in a single facility, and use high-speed networks to give editors at every other site access to that one storage pool. This way, editors in multiple facilities can work on projects as if they're in the same room, even if each member of the team, and the files themselves, are actually at different locations.

- **Moving post to the regions** Major broadcasters, production companies and post facilities have traditionally been based in London. However, financial pressures are leading many to open regional premises, and move the majority of their staff there. However, these regional teams need access to central resources too, and a high-speed IP or Dark Fibre network is an effective way to link sites, even when they're on opposite sides of the country.

- **Post-producing reality on the road** Reality TV shows have a high shoot ratio, multiple shoot locations and a very short turnaround time. Moving footage from location to a central facility for editing costs valuable time, so on-set teams are using solutions like Media Composer Cloud Remote to upload, edit and sync footage with the main facility without ever having to leave the production site.

- **Working from anywhere** Handing an editor who works at another facility (or even from home) a lightweight PC with a PCoIP client lets them work from anywhere, making it easier to collaborate with key creatives on their terms.

What are the limitations of remote working?

For some time, there's been generalised concern within the industry that while the technology behind remote working may be powerful enough for the corporate sector, it's nowhere near powerful enough to cope with the large, complex files found in a post-production environment. This simply isn't true.

Affordable metro Fibre networks (particularly in London) and increasingly high-bandwidth Ethernet connections mean that it's easy to establish a connection to a datacentre, machine room or other site with sufficient bandwidth to move high quality video, and manufacturers have now solved many of the individual issues post teams used to highlight. For example, Streambox's intelligent colour compression means that you can now share grading-quality footage over Ethernet; Barnfind provide small, flexible signal conversion solutions that drastically cut down on the amount of 'glue' hardware you need to move project files; PC over IP clients like Teradici's (the basis for much of Avid's remote workflow) use public-private encryption to ensure your data stays secure.

Granted, there are some hard limitations: connectivity in the more rural parts of the UK isn't always strong enough to support remote working, and some cloud-based solutions struggle with footage over 30fps, to name but two. But there are a range of remote workflow models available to you, an increasing array of tools you can use to customise them, and at least one experienced IT provider who can handle the whole process for you as a managed service...

Enabling remote workflows

We've been implementing remote workflows for a number of years now, and have found (and learned to avoid) the pitfalls that can trip up first timers. Our experienced team can help ensure your transition to remote working goes as smoothly as possible, with no false starts, expensive missteps or technical issues that not only tank your productivity, but which can ruin the end user/client experience and make it difficult to attract the talent and client base you want.

But we're not expecting you to take our word for this. We've implemented a remote workflow at our Soho offices, and you're welcome to join us for a live demo of the workflow between Soho and our datacentre in Clerkenwell. Beyond general workflow advice, installation and support, we can provide remote editing as a managed service using our Via24 suite of solutions.

Our services

Virtual Editing

Don't let hardware limitations hold back editing. With VES24, our virtual editing service, your teams can access the best editing software remotely – and deliver quality work without the need for expensive extra kit. You can:

- Harness the power of core facility infrastructure remotely.
- Deliver production services in pop-up locations.
- Attract new creative talent in different markets.
- Increase your capacity at peak times.

Remote Production

Got great production facilities, but need to use them somewhere else? With RPS24, you can give your teams access to the best creative tools wherever they are – and use your equipment more efficiently. Our remote production services help you:

- Make your production facilities accessible remotely.
- Deliver production services in pop-up locations.
- Attract new creative talent in different markets.
- Increase your capacity and work on extra projects.

Remote Facility Monitoring

You've got enough to concentrate on without having to worry about your facility. With RFM24, we'll proactively monitor your hardware and media services for you – so you can focus on your work and your business. We'll help you:

- Spot and resolve problems before they affect production.
- Benefit from managed upgrades and preventative maintenance.
- Get the best advice from experienced media experts.
- Take advantage of our strong relationships with manufacturers.
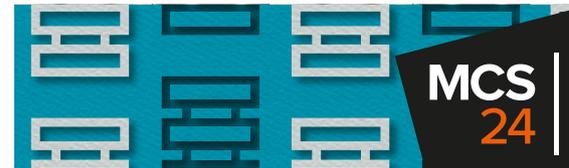
Media Cloud Storage

Storing your media should be simple, reliable and hassle free. With MCS24, our cloud storage service, that's exactly how it is – not to mention fast and flexible, too. It's the perfect solution for keeping your files safe and sound at every stage. You can:

- Store copies of your files securely on the cloud.
- Move your media more quickly with file transfer acceleration.
- Protect your business with better disaster recovery.
- Use tier 1 online storage easily and efficiently.

To find out more about how we can support you in the move toward mobile editing, get in touch on **03332 409 210**, email **broadcast@Jigsaw24.com** or visit **Jigsaw24.com/via24**.