

Singular.live

# Sustainability means cloud-native not cloud-based

In the summer of 2015, Hubert Oehm was surrounded by a gallery of hardware vision mixers in the middle of the intense heat of Qatar. He was working on a graphics project for a major broadcaster in a huge control room. As the wall of machines whirred and the air conditioning strained to keep them cool with the surrounding desert approaching 50C, he knew there had to be a better way.



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Was there an alternative that didn't require all this expensive, landfill-destined hardware, significant power consumption, and his presence on-site? Oehm was simply adding a layer of graphics to live video – the process suddenly seemed extraordinarily wasteful. After an intense period of research, he envisioned a revolutionary, significantly more sustainable, solution. What if all this hardware, with its huge carbon footprint and price tag, along with its specialist operators, could be replaced by an entirely web-based platform harnessing HTML?

Singular.live was conceived the following year with Oehm as CTO. It has since replaced countless numbers of these machines, along with their transportation, the power required on-site for them to function, and their operators' travel and accommodation. We've helped initiate the dramatic shift from traditional broadcast infrastructure, with its hardware-based vision mixers, toward the cloud.

Yet, the industry can and must do more to avoid using hardware and make production more sustainable.

## Cloud-native vs Cloud-based

When assessing the environmental impact of graphics solutions, it's important to distinguish between 'remote' or 'virtualised' production and a cloud-native approach. Remote production calls itself 'cloud-based' as it utilizes the internet and therefore can be produced remotely vs. traditional on-site production workflows. Yet it still relies on dedicated hardware, whereas cloud-native does not. Dedicated graphics rendering hardware is inescapably unsustainable.



As well as the emissions required to produce and power it, it is also incredibly hard to recycle or safely dispose of. The hardware lifespan varies but it's typically only around 3 - 5 years. The industry sometimes attempts to re-use this hardware at the end of a rights cycle but it is typically amortised over that period.

Advances are needed to make hardware's end-of-life more sustainable by recycling components and ensuring safe disposal of its hazardous material (which includes heavy metals and carcinogenic toxins) which can enter waterways and the atmosphere. The most sustainable approach is to avoid dedicated hardware altogether with a cloud-native platform.

## Assessing Our Impact

Albert – the BAFTA-owned, industry-backed organization – recognized our positive impact by awarding its sustainability accreditation to Singular in 2019, and we remain the only live graphics platform to have achieved this recognition.



Building on our Albert accreditation, we were eager to use our platform and expertise to further analyse and increase the sustainability of live production with the ultimate goal being a carbon 'net zero' future.

That's why Singular instigated a project that subsequently united competitive broadcasters for the first time to collaborate on a proof of concept with the longterm vision of creating a more sustainable industry future.

The challenge was part of the Accelerator Challenge organized by IBC and coordinated with BBC Sport, BT Sport, Sky Sports, English Premier League, Premier League Productions, SuperSport, NBCUniversal and albert.

This project has allowed the industry, for the first time, to confidently say that cloud-native production is even more sustainable than remote or virtualized alternatives as it dramatically reduces the need for hardware, therefore, reducing emissions from its manufacture, power, and transportation.

Specifically, it demonstrated a reduction in the amount of technical infrastructure required for the gallery production by up to 70% vs a remote production. It further demonstrated that the cost of fuel usage can be more than halved versus on-site.

## Collective action on climate

Being cloud-native we make assumptions that therefore we are a more environmentally friendly platform than say, going out and buying graphics hardware and shipping it around the world. But we don't know categorically because we don't receive any measurement from our cloud providers. Other participants in the IBC Accelerator trial including Sky, the BBC and BT Sport echo this frustration.

This challenge is not confined to one vendor nor just graphics solutions. The entire broadcast infrastructure is being re-engineered to take advantage of micro-compute services. This distributes workloads across different servers that are shared with other companies and have spare capacity at the time. Undoubtedly, this is a more environmentally friendly alternative to building or defining dedicated computers since this enables an existing resource to be activated only when needed to as opposed to building and powering bespoke servers 24/7.

Unfortunately, using multiple shared servers does make accurate power calculations impossible at this stage.

Added to that, the servers are powered using a mixed power supply infrastructure which includes both fossil fuels and non-fossil energy such as solar, wind, and hydro.

As a result of initiatives like the Accelerators, light has been shone into this black hole. Cloud providers are fully cognisant of the demands being laid down by broadcasters and are now actively engaging with the industry to collaborate on this. Singular.live are committed to working with AWS and others to develop a carbon emissions calculation methodology.

## Sustainable Live Production

Sustainability is one of our core values; it was at the heart of our conception as a platform that dramatically lowers emissions by eliminating the need for dedicated hardware and transportation.

We're proud that this aligns us with the UN's Sustainable Development Goal 13 on Climate Action, and are aiming to embed our social and environmental mission and impact by working towards B Corp certification.

Cloud native solutions are essential to achieving effective remote working, global collaboration and to driving more sustainable working practices. If the solution is not cloud native it is just a stop gap to the inevitable future.

