

5G: A NEW ERA FOR REMOTE PRODUCTION

Per Lindgren, co-founder and CTO Media Networks at Net Insight, says that with the broadcast industry moving to new uncharted territories and hybrid models, industry players need to ensure they are ready to benefit from 5G as it gets rolled out



5G promises to add to the list of paradigm shifts within the broadcast industry by enabling faster, higher quality, and more streamlined

workflows. A key area where 5G will be driving change and adding real value to the industry is remote production. Covid has rendered these capabilities more relevant than ever, especially for the live events industry, which needed to quickly reinvent its operational model. 5G-enabled remote production workflows will become central in staging large and lower-tier events.

During the virtual IBC 2020, 5G's potential in remote production was put to the test in a joint demo by ten broadcasters. Although, the demo revealed the shortcomings of the technology at this stage, especially around feed delays and audio failures, it also showcased its potential. With the right end-to-end solution, broadcasters can leverage 5G's potential to eliminate bottlenecks in their live production workflows.

5G drives efficiencies in remote production

Production is one of the most costly and resource-intensive workflows across the content supply chain. Traditional production relied heavily on dedicated satellite or IP networks for integrating workflows across multiple newsroom or studio locations.

Covid has accelerated market trends that forced the broadcast industry to rethink its foundations and find



new ways to adapt to a highly uncertain reality. Travel restrictions and physical distancing protocols meant that traditional production workflows were no longer viable for news programmes or events. On-site production gave its place to remote workflows that granted the flexibility and agility needed to keep the broadcast industry going.

Leading companies in the broadcast technology industry have been advancing the development of remote workflows. Net Insight has been working with Grass Valley, using the latter's DirectIP functionality, to allow cameras and their base stations (XCUs) to be located separately. As a result, only camera operators and a scaled-back technical crew are required on-site, while the rest of the production team can remain at the home studio or at a remote production hub.

Further, Net Insight partnered with

media operator The Switch to bring The World Health Organisation's One World: Together at Home concert to life. The partnership created a live media delivery workflow that enabled the ingest of live feeds from multiple domestic and international shows, supporting broadcast-quality playout of live and pre-recorded performances to a global audience.

5G simplifies production workflows by eliminating the need for dedicated satellite, fibre or IP networks while offering greater bandwidth, lower latency, and a defined quality of service at low cost. Mobile media acquisition from anywhere in the world becomes possible. This is particularly important for events whose coverage can be challenging because they run over some distance, such as marathons, golf and cycling, etc.

The ambition is for 5G to become the main connectivity link between the



event location and the centralised production facility. For now, it can be deployed as a back-up link to the primary connection, delivering multiple high-quality feeds and replacing the less efficient method of diverse routing over fixed connectivity. The reliability of connections is further enhanced by 5G's network slicing, which allows a dedicated set of users to reserve a part of the network. This component is critical for live production when the connectivity and ultra-low latency requirements are very demanding.

5G enables compelling viewing experiences

5G brings a host of opportunities for staging excellent viewing experiences for consumers, including 4K UHD video streaming and 360-degree or augmented reality/virtual reality (AR/VR) formats paired with low latency, 5G can shake up gaming and esports experiences.

Camera operators are more flexible and mobile as they can leverage 5G to connect cameras to production facilities without cables. Production teams can set up "pop-up" production capabilities that use the 5G network to deliver multiple camera signals back to a central production facility. Staff can mix video captured by traditional cameras with that on 5G-enabled smartphones seamlessly, creating multi-camera experiences and new angles that were not possible before. 5G also allows production to move away

from bonded cellular technology that relies on heavily compressing videos causing issues in onward production and distribution chains, improving the video quality for consumers.

The benefits of 5G in remote production

To capitalise on the 5G benefits in remote production, broadcasters and production houses need end-to-end solutions that fully support distributed production workflows over commonly available IP infrastructure. This means designing next-generation media processing and delivery workflows that are 5G-ready. Built on open standards, broadcasters can ingest and distribute any live media stream, in any format, securely to multiple destinations across any IP network, with 5G dramatically increasing network capacity to make this process faster and more reliable.

Using a 5G infrastructure can ensure that content is delivered with the highest quality regardless of network issues such as fibre cuts, over-provisioned network capacity, broken IP routers, etc. Clean switching and the ultra-low end-to-end delay are key elements in the remote production workflow. 5G networks can also support facilitating the integration of video synchronisers for high-speed and large multi-camera production synchronisation over wide-area IP transport. Further, 5G can augment the capability for seamless WAN transfer of demanding IP audio production as well as low jitter, high

accuracy studio clock references to the on-site equipment.

5G also supports Net Insight technology's live 4K and 8K ultra-HD remote production workflows, helping broadcasters to leverage immersive streaming video in AR/VR, and 360 formats to craft optimised viewing experiences on a large scale with limited investment.

Level up for the future

While in its early days, 5G promises to change the media landscape. The potential of more bandwidth at a lower cost opens up a host of opportunities for broadcast industry players who benefit from economies of scale and new market segments. 5G will also increasingly be changing the market dynamics with further consolidation in the value chain and partnerships between players such as network operators, broadcasters and content providers.

Covid showcased that remote production is a mission-critical capability for broadcasters to achieve much-needed cost and resource-efficiencies and adhere to new pandemic-induced protocols. With the broadcast industry moving to new uncharted territories and hybrid models, industry players need to ensure they are ready to benefit from 5G as it gets rolled out. The right end-to-end solution enables broadcasters and production companies to level up and prepare for the future of connectivity.