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HCLTECH ENHANCES CAMERA-TO-CLOUD PROOF-OF CONCEPT DEMONSTRATIONS USING CALNEX NE-ONE



The Content Creation Industry has been undergoing numerous transformations over the past decade, in part driven by the MovieLabs 2030 Vision Initiative¹. The first principle of this initiative is that all media assets will go straight to the cloud. The industry is responding to this challenge by adopting new approaches and technologies and one innovation helping to meet this goal is Camera-to-Cloud (C2C) technology. Today, most film and TV productions shoot on digital cameras and record sound on digital recorders, both systems generating files.

Productions can originate on soundstages in studios or on remote locations. Studios will have wired connectivity to the internet or "Direct Connects" to hyperscalers. On location, 5G connections can solve the transfer problems. Image capture is with RAW camera formats that are hi-res files (like ARRIRAW: 24-576GB/minute). Some cameras generate proxy formats low-res files (like ProRes LT/Proxy-2.96GB/minute) simultaneously with the RAW Files. The RAW files are exported on removable camera cards and processed in a Digital Imaging Technician (DIT) Station to the low-res proxy files for editorial review & approval. These files can be either streamed (using SRT/RTSP/RTMP/RIST formats) or sent "store and forward" (FTP) to external locations, like public or private clouds. Collaboration platforms like MS Teams, Google Meet & Zoom can also be utilized to stream sessions between on-site personal & external partners. This groundbreaking approach streamlines the filmmaking process by transferring footage from the camera directly to end-users and providing real-time interactive sessions from the set.

Through the use of 5G wireless technology with guaranteed bandwidth & SLAs, producers can send content directly from cameras, video village and/or Digital Imaging Technician (DIT) stations. Using a Single 5G link or bonding up to to five 5G links together can enhance throughput. A single 5G link can provide 25Mb/sec of bandwidth² for a file transfer. Upload transfer times can range from 202 minutes for 1 minute of 4K (ARRI)Raw to 16 minutes for 1 minute of 4K ProRes proxy. A bonded 5G connection with five 5G Links can provide 112½Mb/sec of bandwidth for a file transfer³. Upload transfer times can range from 45 minutes for 1 minute of 4K (ARRI)Raw to 3½ minutes for 1 minute of 4K ProRes proxy. Productions can enhance their sustainability and reduce their carbon footprint through the use of 5G instead of shipping this data as physical media in cars and planes.

HCLTech is a global technology company, home to more than 224,000 people across 60 countries, delivering industry-leading capabilities centered around digital, engineering, cloud, AI and software, powered by a broad portfolio of technology services and products. In conjunction with their partner, a leading Global Carrier, HCLTech is investigating a turnkey Camera-to-Cloud solution to remote productions with a capability of speeds of up to 400Mbps. This represents an increase of almost 200 times what was available to production teams 20 years ago. The issue for HCLTech was how to best showcase this capability to potential clients at the NAB show where limited network bandwidth made delivery of meaningful demonstrations extremely challenging. This is where the Calnex NE-ONE was able to provide the solution.

THE REQUIREMENT

Like many suppliers in the post-Covid world, HCLTech is returning to exhibitions and conferences as one of the most effective ways to engage with both potential new prospects and existing customers. For the broadcast, media and entertainment industry, the NAB (National Association of Broadcasters) Show, annually held in Las Vegas, is recognized as one of the leading events to attend. However, the scale of this event, with several hundred exhibitors, often imposes significant limitations on available network bandwidth for these vendors, due to the very small number of communications towers in the vicinity of the exhibition hall.

For a company like HCLTech, keen to demonstrate the value of their 5G solution to visitors, this restricted their ability to truly showcase the full potential and versatility of their Camera-to-Cloud offering. Senior Sales Director, Engineering & R&D Solutions, HCLTech, Steven B. Cohen, who was previously Industry Principal, Media & Entertainment, for North America is working with a leading Global Carrier on this project and explains, *"We knew that with a potential audience of over 60,000 attendees, together with our fellow exhibitors, all trying to link up to the same cell tower, we were going to struggle to demonstrate file movement and video streaming through various 5G cellular connections on the show floor. Unless our telco partner could put up a cell tower especially for our needs, which at a cost of hundreds of thousands of dollars was never going to be an option, we would be left with nothing more than a traditional PowerPoint show to get our message across."*

Steven continues, *"I am an Engineer and Solutions Architect, and I am always on the lookout for a cool tool to solve customer challenges. Fortunately, I visited the Games Developer Conference (GDC) in San Francisco earlier in the year, which is where I came across Calnex Solutions and their NE-ONE Network Emulator which looked like it could be the solution I was looking for."*

THE SOLUTION

The NE-ONE Network Emulator, that Steven discovered on the Calnex booth at GDC, enables organizations to create a test network where you have complete control over the network conditions in which to carry out your testing. This technology enables organizations to fully understand the impact different types of network infrastructure will have on service delivery (applications, video, voice etc.,) and performance. It enables vendors and customers alike, to validate application performance and behavior in a controllable environment that accurately mimics real-world Cellular, WAN, Satellite, Cloud, SD-WAN and Hybrid Circuits, so that realistic proof-of-concept tests can be performed and repeated under both normal and challenging network conditions.



THE SOLUTION (CONT./)

Following up on the brief booth demonstration at GDC, an online session was set up with Steven and his engineering team in the HCLTech 5G Labs, based in Frisco, Texas. This real-time demo over Zoom convinced him that the NE-ONE Professional was going to be able to recreate the various Carrier Partner profiles HCLTech wished to demonstrate on their NAB show booth. It was critical to demo bandwidth allotments of 50 Mbps, 100 Mbps, 200 Mbps and 400 Mbps to see how the video streaming & bi-directional file transfers would be delivered using the different options. Another NE-ONE scenario was created as a generic competitor profile to compare the HCLTech/Leading Carrier Partner service against.

The next step was to ship the NE-ONE to HCLTech for the team to familiarize themselves with its operation in time for the show and to ensure the proposed demonstration configuration was ready to go. During this pre-show preparation phase, the HCLTech 5G engineers worked with the Calnex NE-ONE support team to accurately build the required profiles and help Steven duplicate the demonstration set up at home before shipping it to the show.

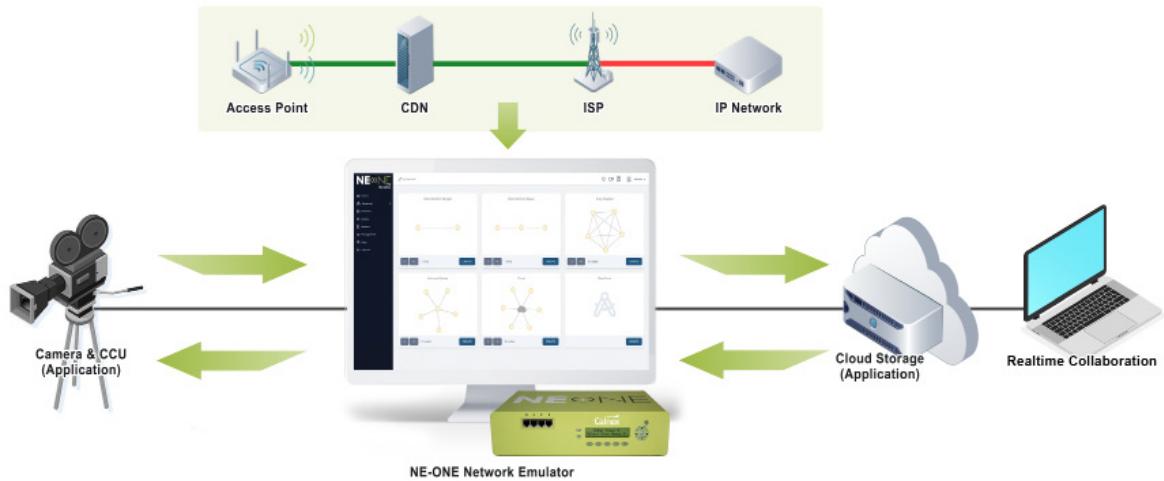
THE BOOTH SET UP - SEEING IS BELIEVING

In order to demo an effective Camera-to Cloud network environment at NAB, Steven and the booth team positioned the NE-ONE between two laptops with webcams to represent the 5G network link between the remote location team and a collaborator's home or studio. The objective in setting up this demo environment was to create a mini **video village** where the director and different department heads could look at monitors and see what the camera is seeing, make comments and provide feedback from anywhere in the world.

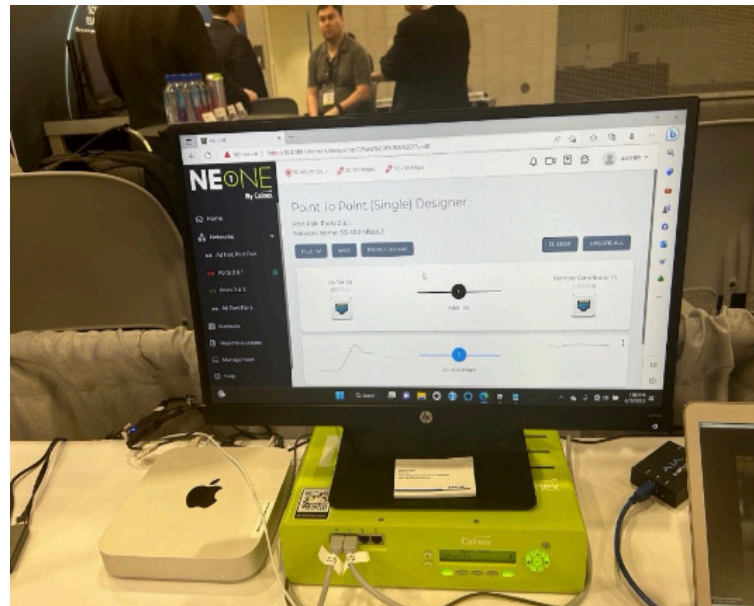


Video files were then transferred to simulate collaboration between the two locations which could be in the same country or on other sides of the world. As part of the on-booth demonstration, different pre-configured profile settings - 50 Mbps, 100 Mbps, 200 Mbps and 400 Mbps were then applied to the link to show the different user experiences that could be delivered depending on the service profile selected.

THE BOOTH SET UP - SEEING IS BELIEVING (CONT./)



Further adjustment to the network characteristics of the various links could be made, live on the booth via the NE-ONE GUI in order to enhance the realism of these proof-of-concept demonstrations. In addition, it was possible to produce an output of the real-time network specs which impressed the visitors to the booth.



CONCLUSION

When asked his final thoughts on the value of the NE-ONE, Steven concludes, *"The beauty of using the NE-ONE to showcase the HCLTech/Carrier Partner solution was that it really brought the user experience to life. Visitors to our booth could see for themselves exactly how our Camera-to-Cloud service could work. It delivered a sense of reality, and instilled a level of confidence, that no slide show could possibly deliver. In short, the NE-ONE was the only cost-effective option for us to meaningfully showcase our kind of solution on the tradeshow floor. It was very easy to use for the booth team, who didn't need to be network engineers to operate it. It just worked flawlessly."*

¹ - <https://movielabs.com/production-technology/the-2030-vision/>

² -based on a single 5G link with 25Mb/sec of upload (as opposed to download) bandwidth.

³ -assuming a throughput loss of 10% across the five bonded 5G links