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SOLUTION BRIEF

Successful Live-OTT Streaming Begins With Monitoring

Cyrus Uible — Solution Architect

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Introduction

Anyone who has ever been involved in Live OTT production from an engineering standpoint knows…there is a lot to know! You could potentially have twenty cameras feeding streams to a remote production truck that in turn is sending feeds to a broadcast facility. From that broadcast facility those feeds are being encoded into perhaps 10 or more different variants for display on various screen sizes with differing download speeds. Then packaged up and sent on to the content delivery network (CDN) and from there on through the ISP and into the Fire sticks, Roku boxes, Apple TVs, Smart TV's and you-name-it consumer devices.

There could easily be 10 to 20 or more different vendors involved across the different technologies. A capable engineering team will need to have at least some knowledge across a variety of products including cameras, switches, encoders, origin servers, IP video probes, Windows servers, Linux servers, virtual servers, etc. Oh, and all of these (except maybe the cameras) could be virtualized and running completely in the cloud!

An evolution that has taken place in the industry as we've made the move to more all-IP or mostly-IP workflows has been the realization that monitoring is no longer an afterthought that you stick on after the project is designed and build with the money you have left over. Many of us have learned that these kinds of complex projects and workflows simply don't work over time without accurate and actionable monitoring. And that monitoring has come to be involved in the design architecture from the very beginning.

From a real-world standpoint that means verifying that each vendor along the 'chain' will give the operations, engineering and maintenance teams the information they need to determine the health of the flows themselves, the tools involved along the way and the underlying infrastructure that is making it all possible. And all of that information must be accessible remotely. Whether by SNMP, web API, message bus, syslog, or any other protocol there must be a way that an outside entity (NMS or Network Management System) can get to that information and alert people if and when problems are discovered.

The luxury of having multiple screens in the truck or broadcast center for each vendor and their alarms is simply impossible now. There are too many to be of any use. There needs to be a single 'pane-of-glass' that will have all alarms and performance data across all technologies throughout the entire operation.

Because of the large number of different technologies and vendors involved it may be helpful to segment the information to be monitored into major buckets.

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01

Infrastructure

This means all physical servers and switches. Monitoring basics like CPU load, free memory, available disk space, power supply health, fan health for example. If a disk is full, it can cause havoc on the software applications that rely on it.

This might also include those same kinds of metrics on some of the more specific appliance hardware boxes involved like firewalls, vpn concentrators, fiber encapsulators, satellite receivers, compliance monitors, graphics engines, and production switchers to only name a few

02

Content

These are going to be any alarms related to the product itself, that is the audio and video (and ancillary!) data that is flowing from the cameras all the way to the homes. For the sake of simplicity ignore the fact that at some points the signal may be baseband\SDI and at some points it could be multicast IP. Instead think of them all as content alarms. This will include things like signal presence, video freeze, video black, silence detection, QOE (quality of experience), etc.

These kinds of alarms will give the operator a quick idea of the health of the video without actually having to look at a feed on a screen which might be the last resort in a facility with hundreds even thousands of streams. Content alarms themselves could come from some of those same appliances already being monitored for the infrastructure alarms. IRD's, encoders, decoders, compression systems etc. Also popular, especially in multicasting environments, are IP video probes which analyze all the multicast traffic and can tell the operator a lot of detail about each stream and also the quality of the audio\video in those streams.

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Network

More and more the quality of the product being consumed by the end customer is directly related to the health of the networks in between the source and the home. And nowhere is this more true than for Live OTT. If there are problems with capacity and latency anywhere along the chain it is not a matter of IF it will impact that consumer but HOW BADLY. The first strategy here to make sure there is ample bandwidth everywhere in the planning phase. Knowing how many streams and at what bitrates is obviously critical here. Then, once it goes into production it's a matter of monitoring and alarming if there are bottlenecks in that capacity.

Operations must have visibility on bandwidth utilization at as many interfaces as possible. It's the first most straightforward way to monitor network health. That includes not only switches and servers but any appliances and probes in between that will give you the metrics.

Also, if possible, metrics such as packet loss percentage, jitter, round trip latency should be included. If any of them start to creep outside of nominal ranges it's a good sign of impending issues. These can be monitored in various ways from different perspectives on different pieces of hardware including network switches themselves. There are also a variety of products in the market that specifically can monitor these metrics.

Finally, depending on the networking technology being used it may make sense to analyze the network traffic directly using technologies such as netflow from Cisco (or sFlow from Arrista) as an example.

This enables the user to get a good picture for what exactly is making up the traffic hitting the interface. Which applications or streams coming from where and heading to where for example. Typically, this kind of information is most useful when the bandwidth capacities are nearing their limits.

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04

Configuration

Anyone who has spent a good deal of time troubleshooting an outage know that many times the root cause was a mistake made in the configuration somewhere along the line. An incorrect compression rate, port name, IP address, label description, destination address, you name it.

Monitoring these kinds of configurations remotely can save enormous amounts of time and stress and lead to smoother, more reliable operations. This is especially important in live OTT operations where there are so many moving pieces and time is of the essence. There simply isn't time to manually check all the configurations before the game starts. It has to be done automatically.

05

ST2110 specific configurations

Monitoring the SDP (Session Description Protocol), and having visibility into the variety of flows for each stream (video, audio ancillary) is important to give operations the tools they need to see the real health for each flow.

06

Other Data

While all of the above are a great starting point there are still other areas that can be monitored such as PTP (Precision Time Protocol) that is required for ST2110 or SCTE data for ad-insertion, custom databases, environmental metrics such as power availability from smart PDUs, temperature or AC health, secure area access are all examples of data that could all be important to an organization.

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Conclusion

Being able to bring this all together in a single 'pane-of-glass' requires using an enterprise-class NMS (such as Kybio) that ideally has been designed with the needs of broadcasters in mind. It absolutely must be vendor agnostic, protocol agnostic, secure and cloud capable. It ideally should also support custom visualizations and be easy to use and configure.

Also, as mentioned before, the NMS is best integrated at the beginning of a project and scaled along the way rather than at the end. This will flush out monitoring blind spots while they can still be addressed. All together the goal is to bring visibility to the entire enterprise into a single screen.

Ready to improve your media monitoring? Getting set up with Kybio is easy, takes only a few minutes, and your first 30-days are FREE.

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HEADQUARTERS
20, Avenue Neil Armstrong
33700 Mérignac Bordeaux-Métropole FRANCE
+33 533 890 500

U.S. REGIONAL OFFICE
19595 NE 10th Avenue Suite A
Miami, FL 33179
USA
+1 305 249 3110

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