LIMELIGHT REALTIME STREAMING:
SUB-SECOND LATENCY FOR LIVE ONLINE STREAMING VIDEO

EXECUTIVE SUMMARY
Today’s organizations and their audiences are increasingly leveraging the excitement and engagement of live video in multiple ways. Yet, as organizations seek to adopt live video for time-critical use cases, streaming latency of up to a minute or more has emerged as a significant challenge. Current video streaming technology is not able to provide the realtime latency required to provide the viewer experience necessary to realize live streaming’s potential impact on the industry. What is needed is new technology that can be deployed at scale to deliver sub-second latency online video to audiences on any device they are using. Limelight Realtime Streaming provides sub-second live streaming latency for use cases demanding the lowest possible latency, and is supported on popular browsers and devices.

ONLINE STREAMING VIDEO ADOPTION GROWS
Online streaming of major sports events is rapidly growing in popularity, with the 2019 Super Bowl drawing 2.2 million live streams, the fourth consecutive year of streaming growth, as the number of TV broadcast viewers slipped 5% from the previous year. According to the Limelight “State of Online Video 2019” report, 58% more viewers would stream more sports events if it was not delayed from the broadcast. Besides sports events, other online live video use cases are poised to experience significant popularity if the streaming latency issue could be addressed, including online gambling, esports, and video gaming.

THE LATENCY CHALLENGE
The delays inherent in a traditional broadcast signal path are consistent and can be easily controlled. However, latency issues are present in the majority of streaming video formats for the internet. Traditional HTTP streaming breaks the video in small segments or chunks that are buffered prior to playback, leading to typical streaming delays of 30 seconds or more. While it’s possible to reduce the size of the chunks to minimize the delay, making them too small increases the chance viewers will experience video rebuffering and other playback issues.

WHEN LATENCY MATTERS
Latency is not a problem for every online live streaming application. A one-minute delay may not matter to viewers who are watching a live pay per view concert. However certain business use cases demand the lowest possible latency, such as:

- **Sports**—When fans are watching a live online stream of a sporting event on their smartphone, the last thing they want is to get a chat message from a friend watching the same event on TV saying, “What a great play!!!” before they’ve seen it on their mobile device. For sports broadcasters, delivering low-latency online streams increases viewer engagement and grows total viewership.
- **Online gaming**—For online casinos, the ability to stream in realtime means all players instantly get to see the turn of the cards at the same time, allowing them to place their bets more quickly and increasing the number of hands that can be played each hour.

- **Live auctions**—Remote bidders participating by phone are common at auctions, but now they can be online and have a “just like being there” experience with a live video stream to participate along with those on-site. The realtime video stream ensures the online participant can signal bids with confidence, knowing that they are viewing the action at the same time as those on-site.

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**SUB-SECOND LATENCY WITH LIMELIGHT REALTIME STREAMING**

Limelight Realtime Streaming, a WebRTC-based realtime streaming solution, is the first scalable solution that delivers live broadcast-quality video from anywhere in the world, to anywhere in the world, with less than one second of latency.

Released in May of 2011, WebRTC (Web Real Time Communication) is an open standard for embedding secure, SSL-protected real-time voice, video and data communication capabilities into a broad range of web browsers and mobile applications.

While WebRTC was originally designed for peer-to-peer communication, Limelight has extended the technology and adapted it for realtime streaming to online viewing audiences.

**HOW LIMELIGHT REALTIME STREAMING MINIMIZES LATENCY**

HTTP chunk streaming for HLS/DASH utilizes the TCP/IP protocol. The high latency is due to the buffering of chunks prior to transmission. Limelight Realtime Streaming uses WebRTC technology to stream live video with less than one second of latency through the fast and efficient UDP data transfer protocol. Video streams do not need to be segmented into chunks and buffered before delivery. Adaptive Bitrate streaming delivers the highest possible picture quality to each viewer, even over changing network conditions, ensuring the best possible online experience. Limelight Realtime Streaming leverages Limelight’s global private network which has the capacity, reach, and connectivity to ensure a high-quality, realtime viewing experience for viewers wherever they are.

**REACH THE WIDEST AUDIENCE WITH NATIVE BROWSER SUPPORT**

Another advantage of Limelight Realtime Streaming is that while some other low latency streaming solutions require custom software development or rely on special client-side plug-ins, Limelight enables playback and delivery on standard web browsers. Native browser support means video playback can happen without the need for plug-ins or special players. Currently supported PC and mobile device browsers include Chrome, Safari, Firefox, and Opera (Microsoft Edge coming soon).

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**LIMELIGHT REALTIME STREAMING**

- Sub-second latency
- Uses UDP/IP protocol for transport
- Does not require video segmenting and buffering
- Broad browser support – no plugin needed
- Supports adaptive bitrate streaming to adjust to network conditions
- Stream security features include ingest stream authentication and access control
ENABLE NEW BUSINESS MODELS WITH INTERACTIVITY

Limelight Realtime Streaming’s sub-second live video enables you to create interactive online experiences by integrating live data with video. Sports fans can now vote for the player of the match, wager on who will score the next goal, or choose which camera angle they would like to view, right from their computer or mobile device. Gamers can have an integrated chat channel with their video, online auctions can be streamed along with the ability for viewers to bid on items in realtime by hitting a button. Limelight Realtime Streaming opens up new business opportunities in sports, gaming, auctions, and more by making live viewing a more interactive social experience.

REACH VIEWERS EVERYWHERE

Limelight’s private network ensures your viewers receive the best live experiences. Unlike most CDNs, Limelight’s high-capacity private fiber backbone bypasses the unreliable public internet when delivering content via peering agreements with ISPs around the world. With complete control over routing from the content source to the user’s ISP, the Limelight CDN eliminates many common bottlenecks in the content delivery process.

FEATURES

Limelight Realtime Streaming includes the following capabilities:

• **Realtime Video Delivery**—Stream video to anywhere in the world in under 1 second.

• **Adaptive Bitrate (ABR) Streaming**—Viewers automatically receive the highest possible picture quality for their available bandwidth and current network conditions.

• **Configurable Streaming Options to Support Different Devices**—Define a custom bitrate and resolution up to 3Mbps per stream to meet your specific needs.

• **Video Can Be Viewed Using Standard Web Browsers**—Live streams can be viewed in standard web browsers including Chrome, Firefox, Safari, Opera, and Microsoft Edge—without the need for special plug-ins.

• **Highly-Resilient Video Playback**—Audio-priority streaming allows audio to continue to play if bandwidth drops and video freezes. RTMP and HLS video fallback available to support older legacy devices.

• **Redundant Ingest Capability**—Multipoint ingest of your video stream provides seamless failover to a backup location for added resiliency.

• **Prevent Unauthorized Access to Your Video**—Several methods are available to restrict access to video including geo-blocking based on viewer location, IP whitelist and black list control, URL tokenization, and SSL encryption.

• **On-Demand Streaming Capability**—Streams can be easily configured, started, and stopped through programmatic APIs and a self-configuration portal for flexible scheduling.

• **CDN Stream Authentication**—Restricts ingest of live streams to authenticated sources.

• **Integrated Analytics for Decision Making**—Robust usage data is available to help you make strategic business decisions.

• **Develop Your Own Interactive Applications**—Integrated data sharing allows you to create interactive applications that share live data with viewers and lets them provide realtime feedback such as voting, chat, and more.
SUMMARY
Limelight Realtime Streaming addresses viewers' primary complaint with live online streaming by helping broadcasters and other organizations deliver truly realtime streaming experiences to viewers using standard web browsers. In addition, by integrating realtime interactive data with the live video, you can create interactive social experiences that increase viewer engagement and offer new opportunities for broadcasters to monetize their live streams. Limelight is committed to helping organizations deliver the best online experiences to their viewers and maximize the value of their online content.

To learn more about how Limelight’s low latency video delivery solutions can reduce latency for your online live video delivery application, contact us at: info@limelight.com.

ABOUT LIMELIGHT NETWORKS
Limelight Networks Inc., (NASDAQ: LLNW), a leading provider of digital content delivery, video, cloud security, and edge computing services, empowers customers to provide exceptional digital experiences. Limelight’s edge services platform includes a unique combination of global private infrastructure, intelligent software, and expert support services that enable current and future workflows. For more information, visit www.limelight.com, follow us on Twitter, Facebook, and LinkedIn.