Lumen® Mesh Delivery for Enterprise

Enabling high-resolution streaming for company announcements, all-hands, and employee trainings within the enterprise network

With hybrid work environments here to stay, enterprises must be able to ensure seamless video communication for their global employees whether they are in the office or at home.

Our peer-assisted eCDN technology helps companies increase the quality of their video communications while removing workflow complexities and reducing operating costs. While traditional eCDN solutions can overload network capacity or require costly on-site hardware deployments and maintenance, Lumen Mesh Delivery for Enterprise promotes high-quality video with no additional hardware investments.

Our patented technology intelligently distributes video within your network, minimizing stress on your infrastructure by utilizing idle resources and optimizing overall bandwidth required. Best of all, it integrates seamlessly into major enterprise video platforms such as Microsoft Teams and Stream, Vimeo Enterprise, Kaltura and Brightcove.

Our lightweight technology enriches your enterprise video with no programs to install on workstations, routers to configure or infrastructure to deploy. Lumen Mesh Delivery for Enterprise can be up and running throughout your company for your most important announcements in just minutes.

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Benefits

Quality video communications

Virtually eliminate the limitations imposed by traditional server infrastructures, extending the corporate network to accommodate large-scale video communications.

Bandwidth optimization

Redistribute traffic from unicast distribution to an ad-hoc mesh network to leverage abundant LAN bandwidth as opposed to limited WAN bandwidth. This topology helps prevent network overload during broadcasts and ensure that critical business functions (email, intranet) remain accessible.

Network topology-based configuration

Using enterprise-specific matching techniques, Mesh Delivery for Enterprise can limit peer-to-peer delivery to within sites or LANs if inter-site bandwidth is scarce.

CAPEX-free scaling

Grow your unified communications initiatives without any extra hardware investment with a solution that scales naturally to the number of employees watching.

Easy integration and setup

Unlike multicast or legacy peer-to-peer solutions, Lumen uses standard streaming protocols and requires no changes to your video workflow. The lightweight software is invisible for employees, operating directly within the web browser.
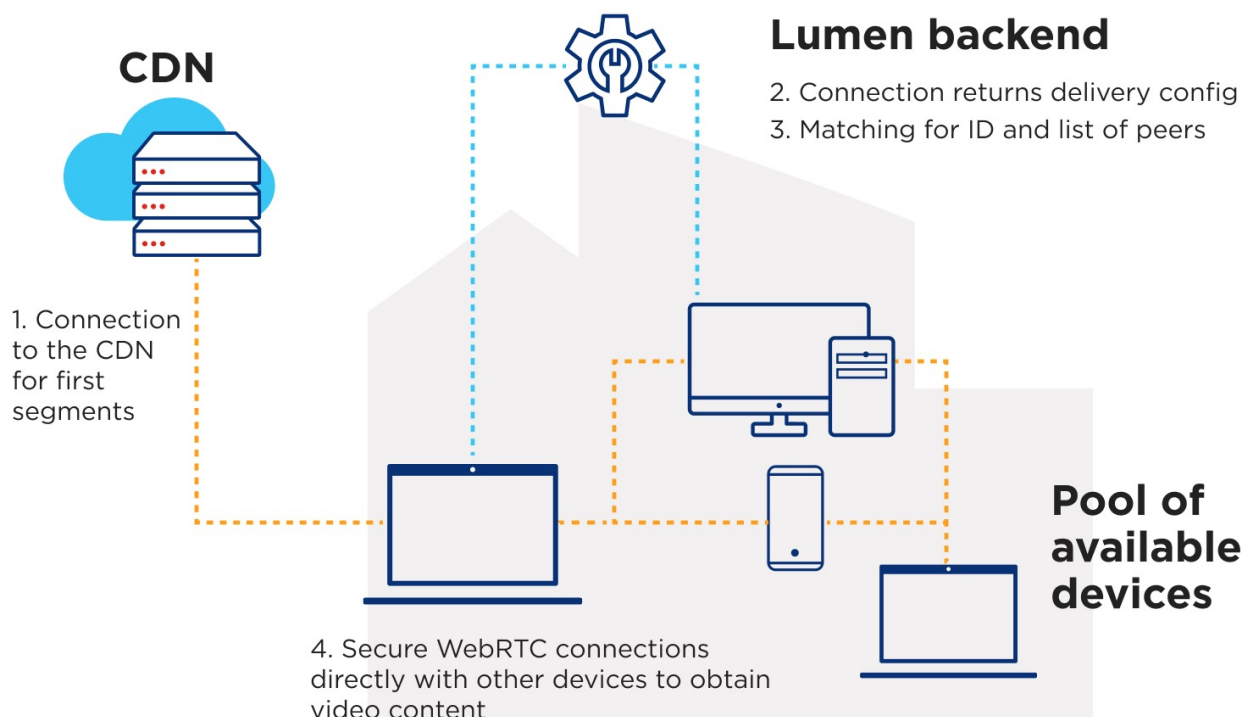
Enterprise-grade security

Mesh Deliery for Enterprise supports enterprise security standards and is based on IETF and W3C protocols: HTTPS, websockets and webRTC Data Channels (DTLS encrypted).

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Technology

Lumen Mesh Delivery for Enterprise solution is composed of a client-side module that integrates into the enterprise video platform of your choice and a backend that initiates and controls the mesh network.

1. The first video segments are sourced from the original video server to help ensure the fastest startup time.

2. The client module connects to the Lumen service that authenticates the user and returns a configuration that has been fine-tuned according to your network topology to provide high video quality.

3. The client connects to the Lumen matching service that assigns the viewer a unique ID. The viewer requests video tracks and new peers periodically throughout the session, and the matching service provides an updated list of peers with which the viewer should connect based on site, subnet, and other considerations.

4. The client connects to other peers watching the content via the Lumen signalling service using a WebRTC connection.

Once connected to other devices, and if the end user has filled a minimum buffer threshold, it starts pre-fetching video segments directly from other devices (without any relay server).

CDN

Lumen backend

2. Connection returns delivery config
3. Matching for ID and list of peers

1. Connection to the CDN for first segments

Pool of available devices

4. Secure WebRTC connections directly with other devices to obtain video content

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Specifications

Support and compatibility

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Web browsers	Full support: Chrome, Chrome mobile, Firefox, Firefox mobile, Opera, Chromium-based browsers; Electron app for browsers not supporting webRTC Partial support: Safari users cannot be assigned to a site in subnet matching modes
Players	Enterprise video platforms (EVPs) including Microsoft Teams & Stream, Vimeo Enterprise, Kaltura MediaSpace, Brightcove Enterprise Video Suite; open-source video players Other UCaaS platform integrations available upon request
Media formats	HTTP streaming support: DASH, HLS, Smooth Streaming, multi-bitrate live and VoD
Media features	Content protection: DRM, tokens, geo-blocking & authentication mechanisms. Common media features including subtitles, multi-audio, DVR, fallback URLs etc.
Network	Standard HTTPS, secure Websockets and WebRTC are designed to work in a wide variety of IP-based networks (UDP required for webRTC connections) Lumen cloud backend included standard; multiple levels of on-premise support possible upon request and at an additional cost

Product features

Security	Mesh network cryptographic integrity checks. Domain whitelisting for web and application secret key whitelisting for mobile. Fully encrypted communications with the Lumen backend (HTTPS & WSS). Fully encrypted DTLS mesh network communications.
Matching	Smart matching via sequential algorithms. Mechanisms to limit delivery to within a specific LAN or LANs, building, or site depending on your network requirements. Subnet matching: via mask, map and mask + map modes (see F2 below).
Configuration & support	Network diagnostic tool to test network readiness, configure and troubleshoot Premium setup and support, network diagnostic, eye-on-glass monitoring for high-profile video events
Device-adaptive delivery	Adaptive resource usage: devices' core health metrics (CPU, memory, QoS, battery, etc.) monitored in real time to adapt the algorithms to the capabilities of the device Advanced congestion control algorithms in addition to network stack mechanisms; protection against uplink saturation. Dynamic buffer level configuration (patented) to improve mesh network efficiency and QOS in live streaming without adding any additional latency. In-segment multi-sourcing: pre-fetching from several peers to reduce reliance on a single source; seamless fallback to server if segments cannot be pre-fetched from peers.

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User interface / API access

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Client configuration	Client-side configuration: ContentID, asynchronous loading, SiteID Client API: per-user traffic data; upload & download control API per network type
Basic data API	Mesh Delivery & CDN traffic over time; concurrent viewers over time; buffering ratio over time. Top 100 streams in traffic, bandwidth, and audience
Advanced insights API	Multi-dimensional queries including platform, live vs VoD, stream, country and ISP. Custom advanced data reports available upon request (paid service), accessing & compiling data from the Lumen Hadoop data pipeline
Dashboard GUI	Real-time traffic: concurrent users, DNA vs CDN traffic in volume & bandwidth over time QoS: buffering ratio over time Details per stream, per platform, per country, per device & per ISP
Alerts & reporting	Automatic reporting interface for daily, weekly or monthly emails on efficiency and traffic. On-demand alerting service for anomaly detection in efficiency, audience, QoS, new releases, etc.
Specific configuration	Create properties to apply specific configurations to content (e.g. live vs VoD), SSAI detection & range request detection Wi-Fi & cellular network upload & download configuration Activation ratio to activate Lumen on a percentage basis of traffic for easy ramp-up Activation threshold (VoD): activate P2P only if streams have 3+ active users in the last 20 minutes

F1

Lumen Mesh Delivery for Enterprise delivers 85% of traffic during a company all-hands
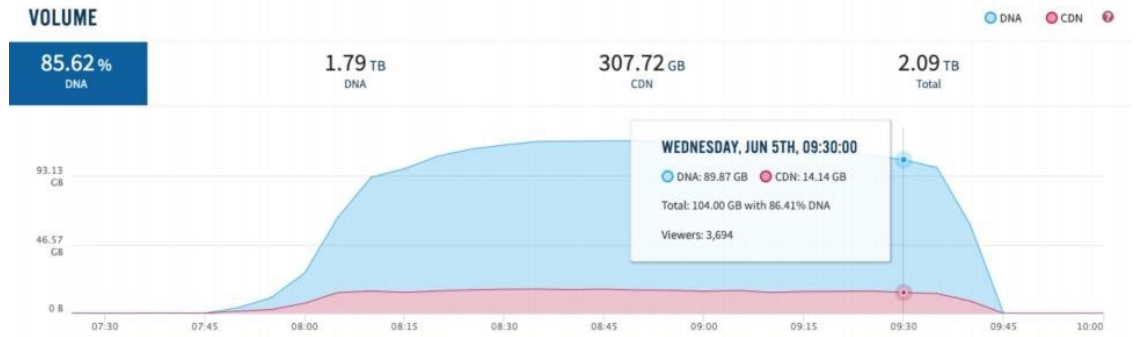
For typical company events, Lumen delivers 80 to 90% of traffic within the corporate network. For the CEO's quarterly all-hands above, Lumen promotes quality delivery to thousands of employees across hundreds of sites.

F2

Subnet matching for greater control over how video traffic is routed through the corporate network
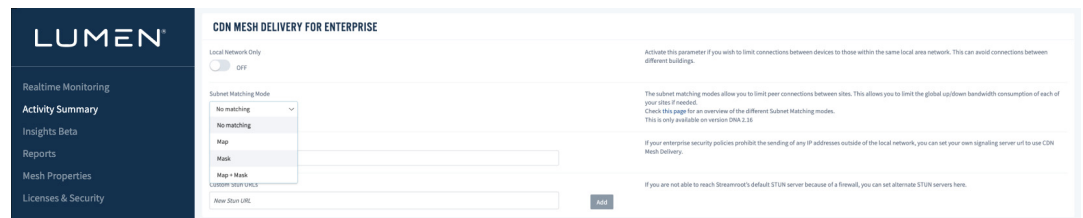
Companies may wish to limit peer-to-peer exchanges to within specific LANs or groups of LANs to avoid saturating weak connections between different sites. Subnet Matching gives them more granular control over their peer-to-peer delivery and is available in three modes: map, mask, and map + mask.

Mask mode allows companies to define sites with minimal configuration. Only a subnet prefix length (CIDR notation, integer between 1 & 32) is required. Each device applies a "mask" to its private IP and the resulting number is the site ID to which the device belongs.

Map mode allows companies to fully define their sites to help ensure that peer exchanges only happen within a specific site. Sites are composed of a unique site name, public IP, subnets, and whether mesh delivery should be enabled.

Map + Mask: Fully define the sites that the company knows in detail as well as sites not known in detail with minimal configuration.

Customers can add sites through a CSV upload or by entering them manually into the Lumen Mesh Delivery for Enterprise user interface.

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F3

Mesh Delivery for
Enterprise user
interface
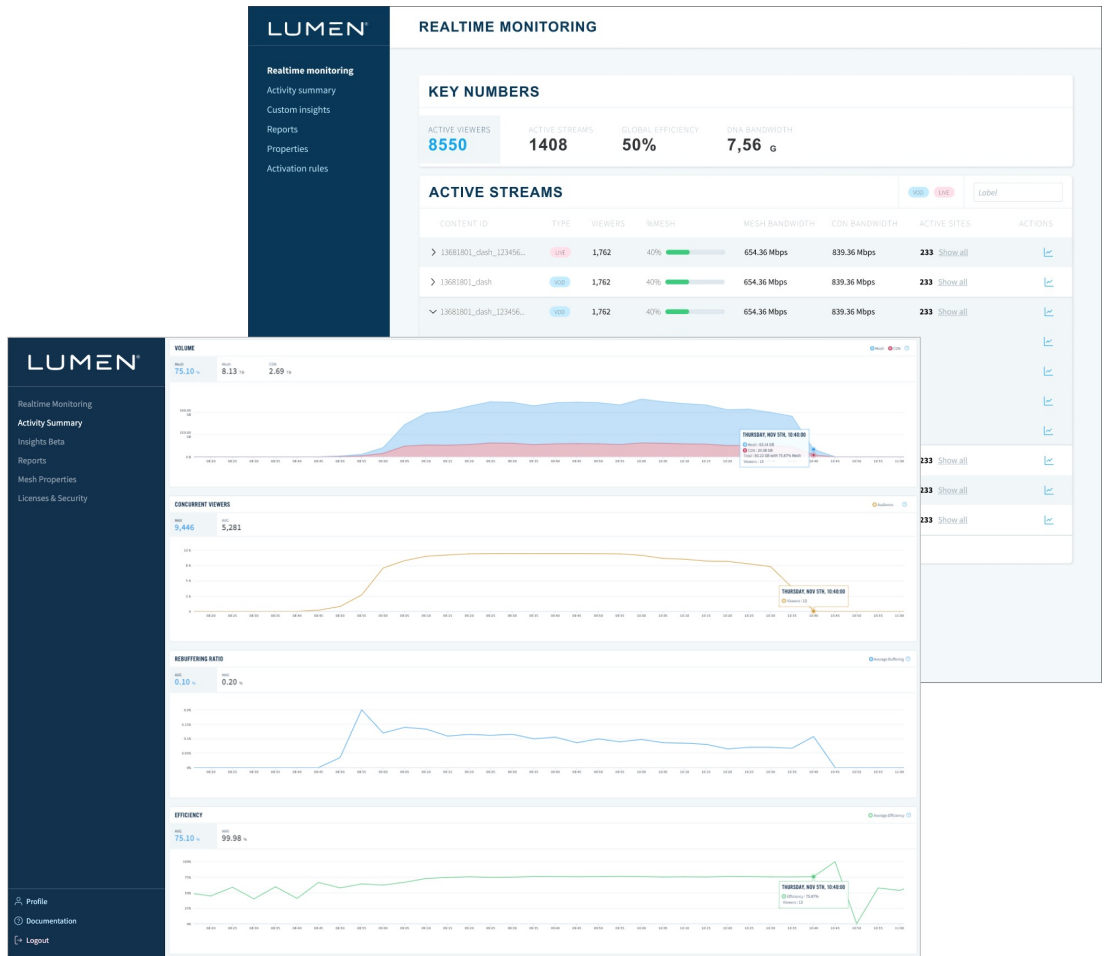
Our intuitive user interface allows you to set up, monitor and analyze your video traffic, as well as quality of service and number of users on your streams.

Why Lumen?

Enterprises must be able to ensure seamless video communication for their global employees whether they are in the office or at home. Lumen Mesh Delivery for Enterprise provides secure, scalable and flexible peer-to-peer delivery that helps ensure optimal performance and reliability of video communication without investing in new network infrastructure.

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