Mobile Live Video Broadcasting

Product Introduction

Product Documentation

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Product Introduction
Product Overview

Last updated：2024-01-13 15:49:41

The Mobile Live Video Broadcasting (MLVB) SDK is specifically designed for mobile live streaming scenarios, supporting features such as live push streaming, pull streaming, interactive streaming with audience, anchor cross-room battle, and more. It provides users with reliable and fast live streaming services on their devices. Together with the Cloud Live Broadcasting Service (LVB), it helps users quickly implement live streaming capabilities in their own apps.

Basic features

Feature Support: Live stream publishing, mic connect, anchor PK, and playback.
Platform Support: Web/H5, iOS, Android, Flutter
For a better product function and performance experience, it is advised to combine with Tencent Cloud Streaming Services.

Use Cases

MLVB SDK is ideal for show live, live shopping, sports streaming, new product launches, roadshows, online auctions, and other large-scale, high-concurrent live viewing device applications.

Strengths

Open-source UI for quick integration

You can quickly implement mobile live streaming solutions by integrating the MLVB SDK into your project for iOS, Android, and web, etc. There are no restrictions on streaming devices.

Quick publishing

You can use the MLVB SDK together with CSS and use RTMP over QUIC to quickly publish streams to Tencent Cloud at low latency and stuttering rate.

LEB

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Thanks to the use of UDP, the latency of LEB is kept within 1s, as opposed to 3-5s in traditional live streaming. This, along with excellent instant streaming performance and low stuttering rate, guarantees a superior streaming experience.

Low-latency co-anchoring

Powered by Tencent Cloud's years of experience in developing audio/video technologies, the MLVB SDK supports real-time audio/video calls and allows co-anchoring between users on different platforms.

AI technology

MLVB uses AI technologies to enable real-time application of beauty filters and animated stickers, enhancing interaction in different live streaming scenarios.

More Media SDKs

In addition to MLVB SDK, we also provide User Generated Short Video (UGSV) , Player and Effect SDKs to quickly meet different applications requirement. You can choose the appropriate SDK you need. If you need both MLVB, UGSV, Player functions, you can also choose to download the All-In-One SDK。

MLVB SDK

Player SDK

UGSV SDK

TRTC SDK

All-In-One SDK

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Concepts

Last updated：2024-01-13 15:49:41

Publishing

This refers to the process in which the host publishes local video and audio to Tencent Video Cloud servers. It is also known as "RTMP publishing" in some cases.

Playback

This refers to the process of playing audio/video streams via a specified URL after the streams are published to Tencent Video Cloud servers. Since video sources are generated in real time, playback is possible only if streams are being published. Once the host stops streaming, the playback URL becomes invalid. Also, because the streaming takes place in real time, there isn't a progress bar during playback.

Publishing domain name

It refers to the domain name used to publish live streams, which is a required setting. You must register a domain name before using it for live streaming. After a publishing domain name is configured, CSS will generate a corresponding publishing URL. For details, please see How to automatically splice push URLs?.

Playback domain name

It refers to the domain name used to play live streams, which is a required setting. You must register a domain name before using it for live streaming. After a playback domain name is configured, CSS will generate a corresponding playback URL. For details, please see How to automatically splice playback URLs?.

UserSig

`UserSig` (user signature) is a security signature designed by Tencent Cloud to authenticate user logins, check whether a user is real, and thus prevent attackers from accessing your Tencent Cloud account. For more information, please see Generating UserSig.

License

The MLVB SDK has trial licenses and international licenses. For how to obtain them, see Try and Purchase License. You can unlock different features of the MLVB SDK using different licenses. For details, see Feature Description.

Recording and replay

The recording and replay features are enabled by **VOD**, so before using the features, you need to activate VOD and complete domain and recording configuration in the CSS console. To view the recording files generated during live streaming, go to **Media Assets** of the VOD console.

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LEB

Live Event Broadcasting (LEB) is the ultra-low-latency version of LVB. It features lower latency than traditional streaming protocols and delivers superior playback experience with millisecond latency. It is suitable for scenarios with high requirements on latency, such as online education, sports streaming, and online quizzes.

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Features

Last updated：2024-01-13 15:49:41

Core features

Feature	Description	Use Cases
Live stream publishing	Publish live streams using RTMP or RTC, with increased adaptability to network fluctuations and faster transmission speed that help deliver a reliable and low-latency publishing experience	Publishing
Live playback	Play RTMP, FLV, HLS, DASH, or WebRTC streams. Smooth and HD viewing experience	Live stream watching
Mobile (game) screen recording	Stream the host's phone screen and camera video at the same time	Game streaming, mobile presentation

Details

Module	Feature	Description
Video capturing	Capturing parameters	Resolution, frame rate, audio sample rate, GOP, bitrate, etc.
	Aspect ratio	Capture videos in the aspect ratio of 16:9, 4:3, or 1:1
	Orientation	Publish streams in portrait mode, landscape left mode, or landscape right mode
	Video quality selection	SD, HD, or FHD
	Flashlight	Turn on/off the flashlight
	Camera switch and zoom	Switch between the front and rear cameras and zoom in or out
	Auto and manual focus	Turn on/off auto and manual focus
	Photo taking	Take photos

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	Video flipping	Horizontally flip the camera video or the published video. The front camera is flipped by default.
	Watermarking	Add watermarks to captured videos
	Screenshot	Take a screenshot of the phone screen
	Pausing audio/video	Pause audio or video during live streaming
	Filters	Add custom filters and adjust the filter strength
	Basic beautification	Smooth skin, brightening, and rosy skin
	Advanced beautification (value-added capability)	Apply effects including big eyes, slim face, V shape, slim chin, short face, and slim nose, and adjust the strength. This is a value-added capability, and if needed, you can purchase the Tencent Effect SDK.
Audio capturing	Background music	Select a local MP3 file as the background music before capturing
	Pitch change	Change the music pitch
	Audio mix	Mix voice and music audio with independent volume adjustment
	In-ear monitoring	When earphones (wired or wireless) are used, the user can hear the audio captured by their local mic in their own earphones
	Stereo	Recreate multi-directional and 3D sounds using dual-channel audio
	AI-based noise suppression	Built-in noise suppression is based on a psychoacoustic model and can increase the signal-to-noise ratio by more than 20 dB without compromising the sound quality
	Voice change	Voice changing effects such as girl and man
	Reverb	Reverb effects, which can be used together with voice changing to produce various sound effects
	Muting	Disable the mic during capturing to publish only video images
	Auto volume adjustment	The SDK can adjust the volume automatically depending on ambient sound
Live stream	RTMP publishing	Publish 180-1080p videos using RTMP or RTMPS

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publishing		
	WebRTC publishing	Publish streams using WebRTC
	SRT publishing	Publish streams using SRT
	QUIC publishing	Publish streams using QUIC
	Publishing from screen	Publish a stream containing content captured from the screen
	SEI messages	Insert text data as SEI (Supplemental Enhancement Information) into the audio/video stream. The information is published by the host and received by audience members. This allows you to show text information in sync with audio/video content.
	Adaptive bitrate	The SDK can automatically adjust the bitrate (multiple control modes supported) according to network conditions to deliver a smoother streaming experience
	Audio-only push	Capture and publish audio-only streams, which helps you save bandwidth costs
	External publishing source	Publish from an external source
	Auto reconnection	The SDK can automatically reconnect after a disconnection occurs
Live playback	RTMP playback	Play RTMP streams
	FLV playback	Play FLV streams
	HLS playback	Play HLS streams
	DASH playback	Play DASH streams
	WebRTC playback	Play WebRTC streams

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Strengths
Support for RTC Publishing

Last updated：2024-01-13 15:49:41

In order to improve publishing performance under poor network conditions, we have added support for RTC publishing in addition to the traditional RTMP protocol. This document compares the performance of publishing under different network conditions using the two protocols.

Note

For instructions on how to publish streams, please see Publishing from Camera.

Performance Under Normal and Poor Network Conditions

Test method

We simulated different network conditions at the publishing end and observed the playback effects (the streams were played over CDNs, and network conditions at the playback end were normal).

Parameter configuration

To prevent the use of different sources from affecting the results, we used V2TXLivePusher to publish the same video over RTMP and RTC.

Video parameters:

Parameter	Value
Resolution	720 x 1280
Bitrate	1800 Kbps
Frame rate	15

Comparison of performance under different network conditions

Frame rate

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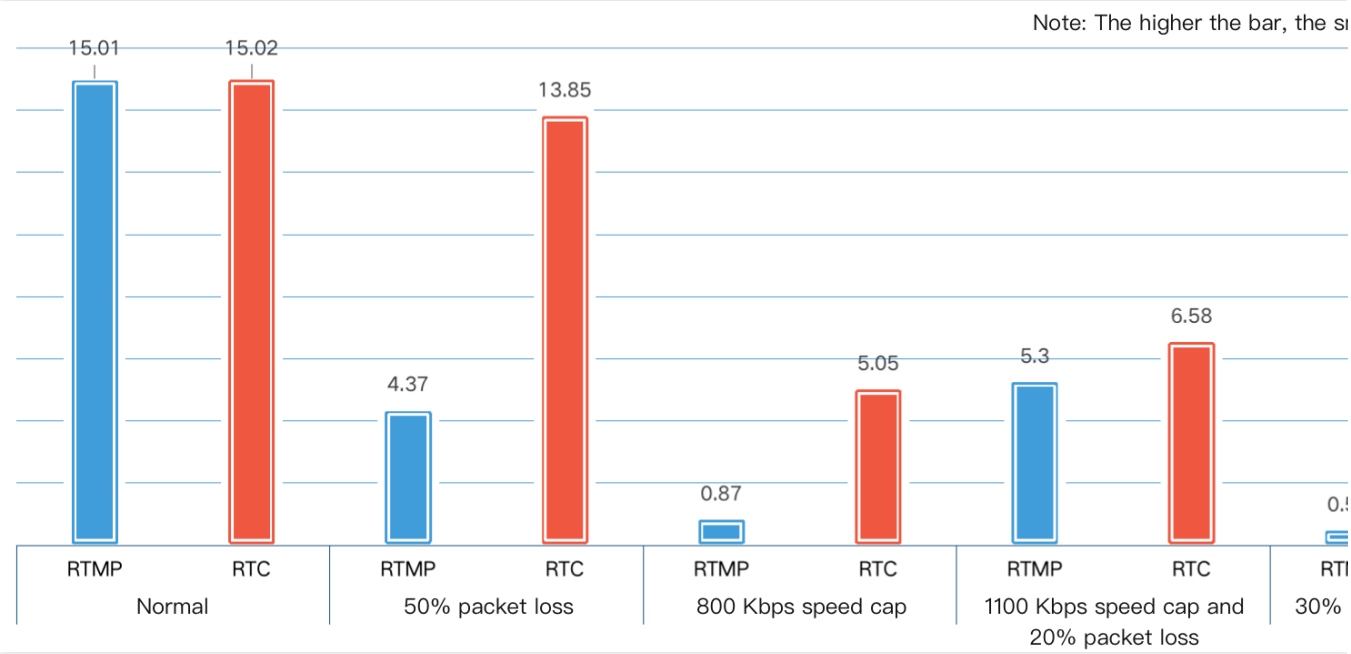
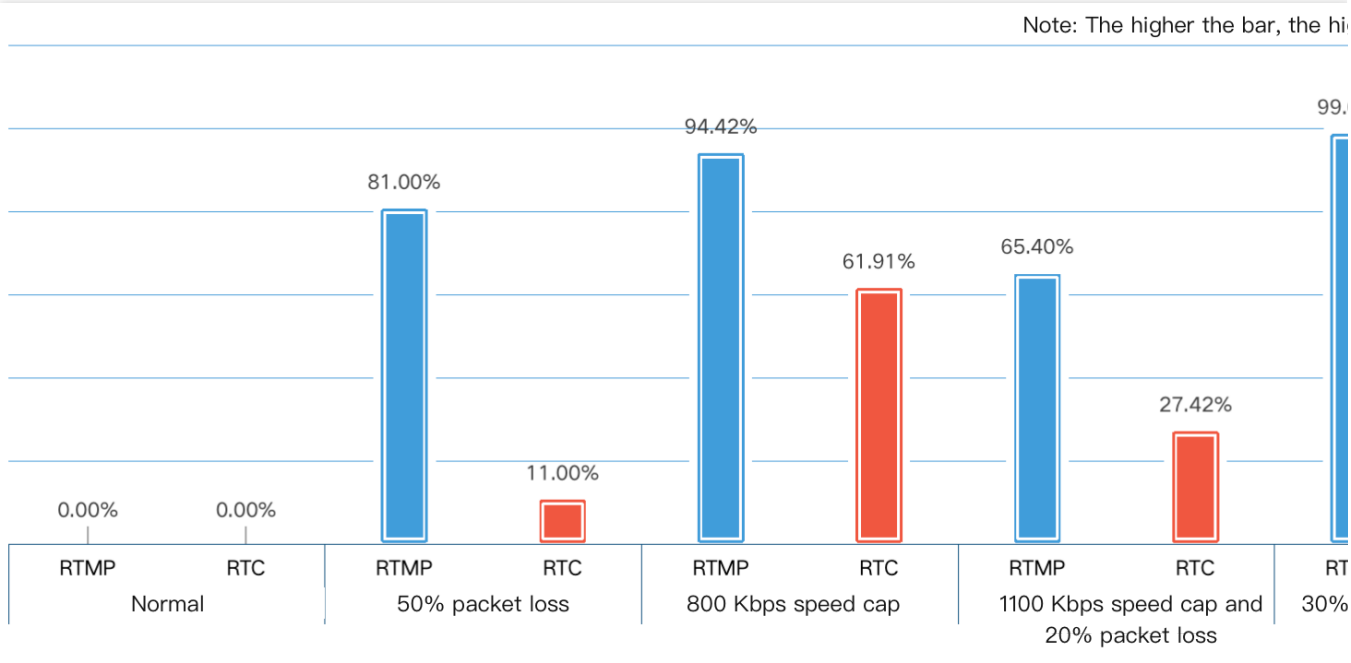


Note

For a description of the network parameters, see Appendix: Network Parameters.

Stutter rate



Note

For a description of the network parameters, see Appendix: Network Parameters.

Appendix: Network Parameters

Parameter	Description

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Frame rate	Frames rendered per second
Packet loss	A packet loss rate of 50% means that for every 10 data packets sent, five fail to arrive at their destination.
Latency	A latency of 200 ms indicates that data packets are delivered by the network only 200 ms after they are sent by the SDK.
Transfer speed cap	A transfer speed cap of 800 Kbps means that 800 KB of data can be sent per second at most.
Stutter rate	Stutter occurs if the interval between the rendering of two consecutive frames exceeds 200 ms. Stutter rate is the total stuttering time divided by the total playback time.

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LEB Playback

Last updated：2024-01-13 15:49:41

Live Event Broadcasting (LEB) is an extension to LVB in ultra low-latency playback scenarios, which enables viewers to enjoy an ultimate live viewing experience with a millisecond-level latency. Compared with traditional CDN-based live streaming, where the playback latency is 3–5 seconds, LEB is more suitable for scenarios with high requirements for latency, such as online education, sports streaming, and online quizzes.

Main Strengths

Strength	Description
Playback with millisecond latency	LEB uses the UDP protocol to reduce the live streaming latency between nodes to milliseconds in high-concurrency scenarios, solving the problem of 3–5 second latency in traditional live streaming. It delivers high performance in terms of core metrics such as instant live streaming and lag rate to deliver an ultra low-latency live streaming experience.
Diverse features and smooth migration	LEB integrates a wide range of features including stream publishing, transcoding, recording, screenshots, porn detection, and playback. It allows smooth migration from standard live streaming services.
Abundant cache nodes and a high bandwidth capacity	LEB can deliver streams through more than 2,000 acceleration nodes in 25 countries/regions, which can sustain a bandwidth of over 100 Tbps.
Ease of use	LEB uses a standard protocol for easy integration. You can use it for playback on Chrome and Safari without installing any plugins.
High immunity to poor network conditions	LEB guarantees high quality video streaming under different poor network conditions such as high packet loss rate and high latency, so as to offer a more stable live streaming experience.
Low-latency live streaming on web	Currently, CDN-based live streaming supports only the HLS format on web. However, the latency of playback in this format is as high as several seconds. By contrast,

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	LEB also supports web playback but with a latency of only hundreds of milliseconds.
Seamless switch between multiple bitrates	LEB can seamlessly switch between streams transcoded at different bitrates with no interruption or jump, guaranteeing a smooth transition and better viewing experience.
Adaptive bitrate streaming	LEB switches between different bitstreams adaptively based on the network bandwidth to guarantee a smooth playback experience under changing network conditions.

Use Cases

Scenario	Description
Sports events	LEB offers ultra-low-latency streaming for sports events. It brings sports content to audience at low latency, allowing the audience to see the action happening in real time.
E-commerce streaming	Some e-commerce streaming scenarios, for example, online auctions and sales promotions, require extremely low latency. LEB's ability to stream at ultra-low latency ensures that hosts and audience members get real-time feedback from each other, improving the online shopping experience.
Online classes	LEB’s ultra-low latency allows teachers and students to interact with each other naturally, the same way as they do in offline classes.
Online quizzes	Due to latency issues, some online quizzes have to insert extra frames at the audience end to ensure that the host and audience are in sync with each other. However, LEB’s ultra-low-latency streaming capability ensures that the two sides are in sync, which makes it easier to stream a live quiz with a smoother experience.
Showrooms	LEB significantly improves the experience of latency-sensitive interactions such as gift giving in live showrooms.

Performance Under Normal and Poor Network Conditions

Test method

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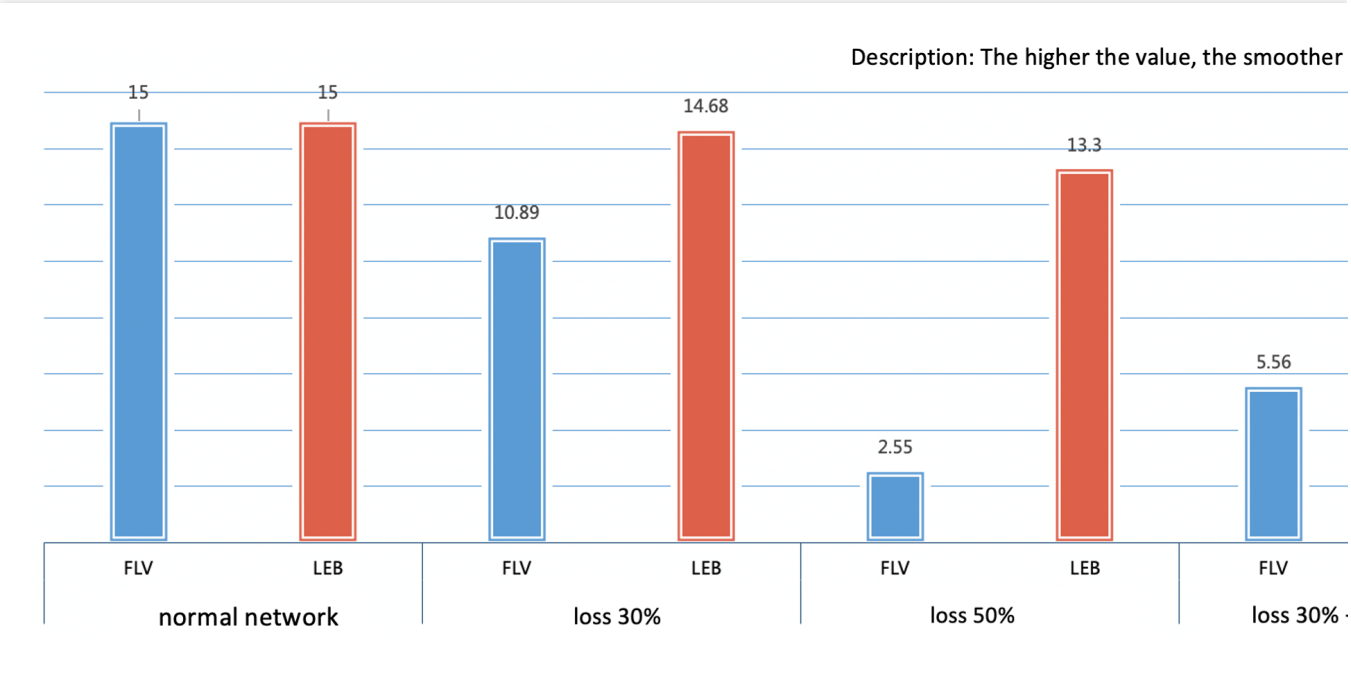
The host uses RTMP for stream push over a lossless network, viewers play back FLV and LEB streams under different poor network conditions respectively, and metrics such as frame rate and lag rate are tested.

Stream push parameter configuration

Parameter	Value
Resolution	720x1080
Bitrate	1,800 Kbps
Frame rate	15

Comparison of performance under different network conditions

Video frame rate



Video lag rate

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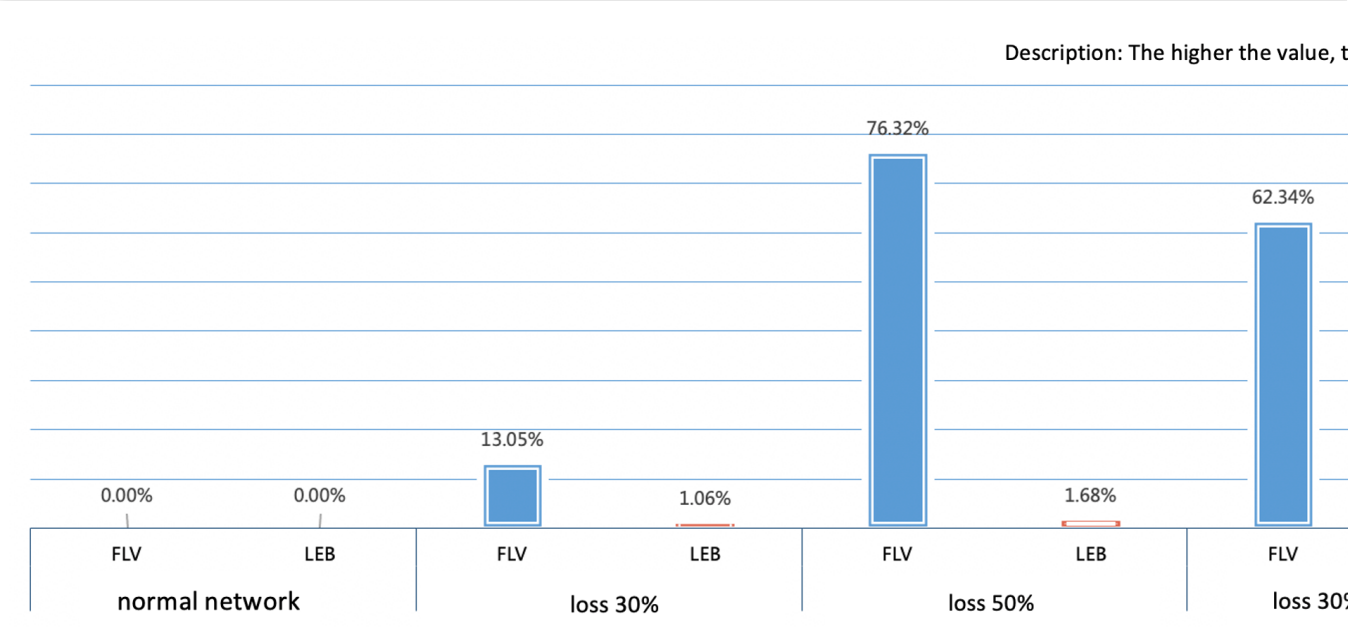
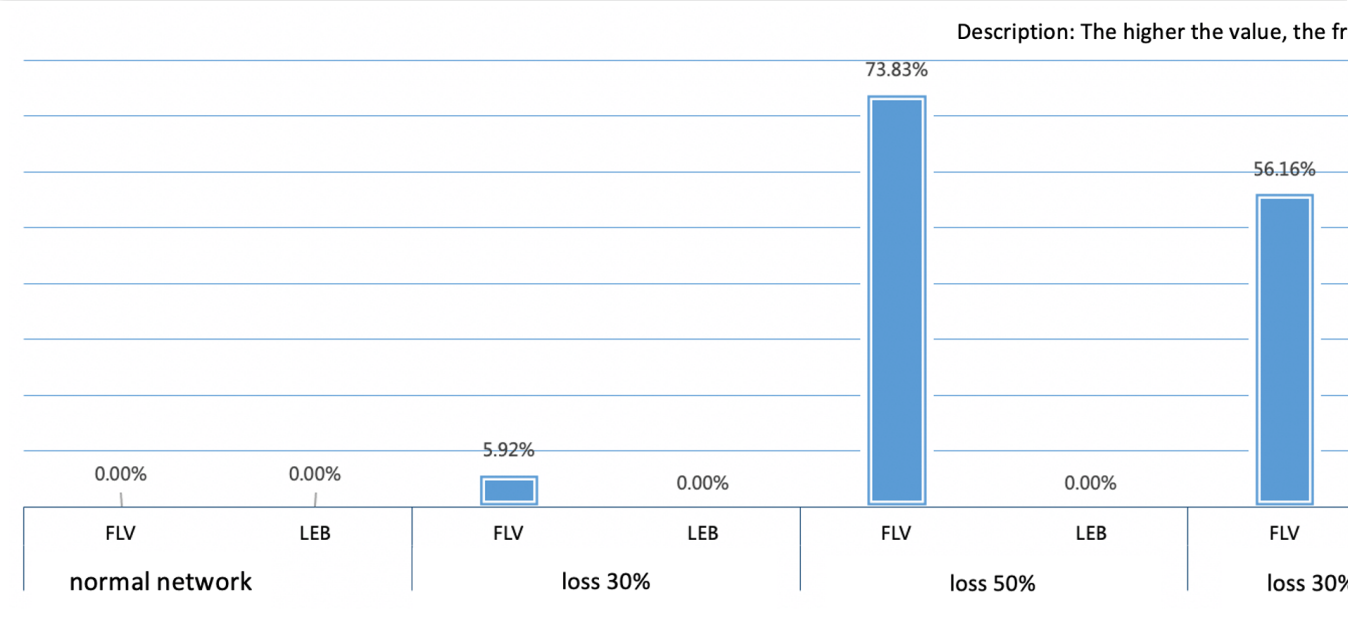


Audio lag rate



Parameter description

Metric	Description
Video lag rate	If video rendering lags for over 500 milliseconds, it will be considered a lag. The lag rate is the total lag divided by the total playback duration.
Audio lag rate	If audio playback lags for over 200 milliseconds, it will be considered a lag. The lag rate is the total lag divided by the total playback duration.
Video frame rate	The number of video frames played back per second.

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Use Cases

Last updated：2024-01-13 15:49:41

MLVB offers solutions for different use cases for you to get started quickly.

One-time Events

The MLVB SDK offers stable publishing and playback for streaming scenarios that involve only one or a few channels of live streams, for example, studio filming, live events, and press conferences. It guarantees smooth and clear playback for even outdoor events.

Live Show Streaming

The MLVB SDK supports streaming on a wide range of platforms, including iOS, Android, PC, browsers, and H5 pages. Hosts can stream anytime with their phones.

Mic Connect

You can use the interactive live streaming solution provided by MLVB to implement the mic connect feature and enable host- audience interaction and host competition. Live streaming is no longer a one-way communication.

Live Chat

By using the MLVB SDK together with IM, you can enable audience interaction including on-screen comments, text chat, and like giving.

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