Sending, Storing & Sharing Video With latakoo

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1. Introduction

Today, sending and managing high quality video is a difficult task. The large file sizes that are typical in video production, combined with the relatively slow upload speeds intrinsic to most broadband Internet connections, results in long upload times. It is not uncommon for video professionals to have to wait five or six hours for a full-length HD video to upload, or to resort to sending portable hard drives via a courier service. In addition, most consumer Internet video services – for example YouTube – are orientated towards public publishing, and tend to overlook private or enterprise communications. Meanwhile, many enterprise video services do not take advantage of the latest in web technologies.

While solutions exist that improve upon these upload speeds, they are costly, often require expensive hardware or bespoke server integrations, and may depend upon specialized video training and knowledge to use effectively. The improvements these measures achieve may also not be significant enough to represent a suitable return on investment.

latakoo allows anyone to send, store and share high quality video, fast, using a standard Internet connection – and then search and collaborate with it using any modern web browser. Today, the latakoo app compresses videos to a fraction of their size before uploading them to the cloud; the latakoo web infrastructure allows for secure and easy archiving, retrieval and collaboration. This infrastructure also allows you to transfer *any* file, allowing you to keep all the files relating to a project together. Because latakoo is a web-based cloud service with a deliberately simple interface, costs for transmission, deployment and training are kept to a minimum.

2. Sending video & files with latakoo

2.1 The latakoo app
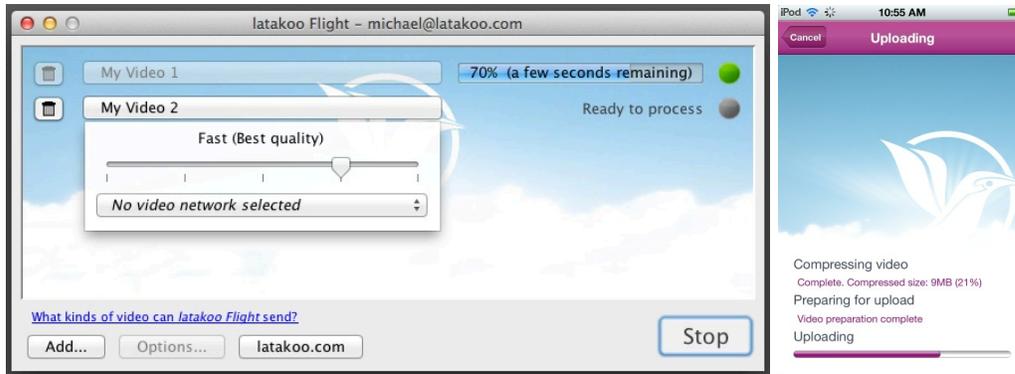
To send files, latakoo requires the use of an app, which is compatible with Windows XP and higher, as well as Intel Macs running OS X 10.6 and higher. Versions for iPhone and iPad are also available, with Android in development. As many copies as are required of the app can be downloaded from the web at http://latakoo.com/; iOS versions are available at the iTunes store. Users must also have a latakoo account.

2.2 Compression & upload

Users simply drag their video or file into the main tool window, and click on the *Start* button.

The latakoo *Flight* app compresses video files to a fraction of their original size before uploading them to cloud servers. Video files can be compressed using a highly optimized version of the H.264 MPEG-4 format, which is compatible with most major video software, including the players on Apple iOS devices. (The video files can be downloaded in other formats as well.) The rate of compression depends on the source format; latakoo performs best with uncompressed high definition video, although significant speed enhancements are typically observed with all video formats. Compressed sizes are often less than 2% of the original. Live statistics are constantly recorded which allows latakoo to proactively make performance enhancements and discover speed issues.

In order to retain maximum compatibility with corporate firewalls and public wireless access points, the latakoo app uses standard protocols and ports equivalent to HTTP over SSL. Users on networks that require the use of proxy servers to reach the Internet may click on *Settings* within the app and enter the information supplied by their IT department.

See Appendix 1 for a list of input video formats that have been tested with the latakoo app's built-in compression.

2.3 latakoo minutes

Uploading a video using the compression option depletes the user's video minutes balance depending on the length of the video. If a video is 1 minute long, the user's balance will be depleted by 1 minute. latakoo never prevents you from uploading: if you achieve a negative balance, the web infrastructure will simply ask you to upgrade your plan.

3. The latakoo web interface

3.1 Web interface requirements

latakoo believes in web standards, and that web content should be accessible from any device. As such, latakoo works on any browser that supports modern web standards. It also requires JavaScript to be enabled.

3.2 Logging into the dashboard

Video and files are managed and shared via the latakoo web interface. This can be accessed using any modern web browser on any Internet-connected device. We recommend the latest version of Mozilla Firefox, Google Chrome or Microsoft Internet Explorer.

Users log in with an email address and password, and immediately are presented with their most recent upload or the most recent upload from the networks (collaborative folders) where they hold membership. Other uploads from the same day are displayed in a scrollable interface below.

3.3 Streaming video previews

Streaming previews of each video can be played on any Flash-compatible browser, or any HTML5-compatible browser that supports the H.264 video codec. Streaming videos are not currently supported on browsers that support HTML5 but don't support the H.264 video codec, and don't have the Flash plugin installed. We are keenly watching HTML5 development, and believe that this is the future of web applications. Improvements to HTML5 video – for example, wide WebM support – will inform latakoo's future development.

3.4 Downloading video

Videos can be downloaded in two formats. The first, H.264 MPEG-4, is compatible with most major video products. Although it is one of the most widely used video formats, some applications – notably some older versions of *Final Cut Pro* – are not engineered to work efficiently with it. For this reason, we have included a second download option, designed to work with legacy software, which converts the video to a number of hand-picked formats including Avid DNxHD, MPEG-2, DVCPro HD and more.

On installation, the latakoo app registers itself as a helper application within the user's browser. When the user clicks the *Download for editing* button on a video in the web interface, the app launches, downloads the video, and transcodes it into the selected file type.

3.5 latakoo Pilot

Pilot is latakoo's overview interface. This provides a time-stamped activity stream of video uploads for the current user, and any other videos that he or she has access to, presented in a reverse-chronological list (*i.e.*, with the newest video at the top). Each item in the stream clicks through to the video or file itself, where it can be downloaded, shared and previewed.

3.6 Search and tagging

Each file and video may be annotated with keyword tags, titles and notes (which could contain, for example, a script). Items are then searchable on these fields, either exclusively or in combination with date ranges and the user who uploaded the video.

Further metadata search is in development. For example, we are actively exploring ambient location information, in order to search by the location where a video was shot.

3.7 Sharing

Three types of video sharing are available: by email, to external services, and by embedding a player in your site.

3.7.1 Share by email

The owner of a file or video may share it with any other person by entering their email address in a form on the video dashboard. The recipient need not have a

latakoo account. A unique URL is emailed to the recipient, which includes an encrypted hash as well as his or her email address.

The recipient clicks through the link and may need to authenticate, depending on the item's security settings, in order to ensure that only the intended party can view the item. (An audited record of any streaming views or downloads is also made.) He or she is then presented with the item on the video dashboard, and may stream or download it. He or she may not share, edit or delete the item.

3.7.2 Share to external services

latakoo aims to make it easy for you to send your video to its ultimate destination. While this may include individuals, many users may wish to send their videos to external services.

Currently, latakoo allows you to push to YouTube, Facebook and Box, with more services forthcoming. You must authenticate with these services up from your account settings (a link is provided from each video that you have permission to share). Once this is established, simply select the service from the "share" panel, and click "Start". The video is physically copied to the selected service, and may take several minutes to appear.

Bespoke integrations are also available.

3.7.3 Embedding video

By default, latakoo files and video can't be seen without the owner's permission. In order to embed a video into a public website, you must first set the video to "embeddable" from the "share" pane. A code then becomes available that can be placed in any external website.

3.8 Networks

Depending on their subscription plan, users may create latakoo networks: access-limited collaboration folders that allow any network member to upload assets. Network administrators can grant network members upload-only access, or they may also allow them to browse, stream and download everybody's contributions. Administrators may also give other members administrator access. All activity within a network depletes the minutes of the user who owns the network.

Network administrators may invite users to become members, or they may share a unique URL where members may apply. In the former case, users are notified via email when an administrator invites them to join a network; in the latter case, administrators are notified via email when a user applies to join a network.

Networks are made available within the latakoo app as destinations, so that users may upload directly.

Networks may contain other Networks. You can think of this as a hierarchical folder structure; users may be granted access to any subset of this structure, and then browse it from a simple web interface.

By default, all activity within a Network depletes the minutes of the user who owns it. However, the administrator may assign bill payer responsibility for portions of their Network structure to other members. Network owners may see detailed analytics for Networks that they are the bill payer for.

Each Network may have a number of custom metadata fields associated with them. These are defined in the settings for each Network, and will display in the latakoo app when that Network is selected. Currently, these fields may be free text or pull-downs containing pre-defined values. Because a file may be uploaded to one or more Networks, metadata fields for each selected Network will be shown in series.
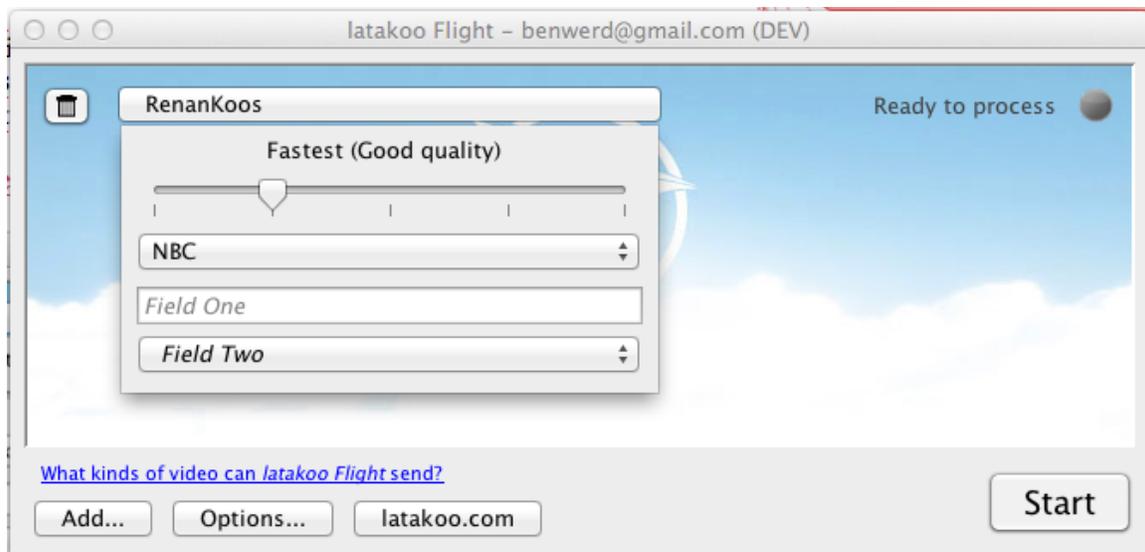
Networks may also be set to perform automatic actions on upload, including:

- Copy a video or file into another network
- Push to third-party services like Facebook, YouTube or Box
- Push to a bespoke integration, for example via SCP or third-party software like Signiant

Currently, these automatic actions are by prior arrangement, but we anticipate making them more widely available soon.

Additionally, a number of Network variations are available:

- **Networks:** the standard asset-sharing network with full upload, download and access permission capabilities. Membership is counted against your account seats.
- **Ingest Networks:** these are designed to allow for quick ingest from a large number of sources, eg user-generated content. Any user can join, but will not be able to access uploaded files. Standard memberships of these Networks are not counted against your account seats.
- **Distribution Networks:** whereas Ingest Networks are designed as a way for you to take *in* video, Distribution Networks allow you to distribute it in a controlled way, for example for public relations purposes. Users may not upload, but any number of users may join to download content. Standard memberships are not counted against your account seats.
- **Public Networks:** these may be embedded in an external website, or displayed on their own terms, without user authentication (although authentication is possible, so that users may make comments and rate videos).

Further Network variations are likely to be made available over time.

3.9. Transcriptions

Transcriptions are available as an add-on service via latakoo's partners.

If this add-on service has been enabled for your account, you will be able to request a transcription for any video in any of your Networks. A "transcriptions" tab will be available on the video; if a transcription is available, it will be displayed here, and downloadable in a number of common subtitle formats. If not, you may click the "request transcription" button to generate a transcription.

4. The latakoo web platform

4.1 The Application Programming Interface (API)

The latakoo app communicates with the web platform via a RESTful API, delivering JSON objects via HTTP over SSL in response to signed requests. Portions of this API are also made available for latakoo users to integrate with their own software and infrastructure. Because it is the same API that latakoo uses to power its official client software, developers can be assured that they have the best possible performance and feature-set.

Security is built deep into the latakoo web platform, and as such users will never see videos that they don't have permission to view. This is also true of the API; all feeds of videos returned by the system are tailored to only include those that the user is allowed to download. No extra checking is ever required.

Like the rest of latakoo, the API is designed to be simple. Just as the website is efficient to use, the API is quick to develop for, using industry best-practice methodologies.

The public latakoo API service is currently in beta. Documentation is available on request.

4.2 latakoo's hosting infrastructure

latakoo is hosted on industry standard cloud computing architecture in the United States and around the world. Video storage is replicated in three locations.

latakoo believes that the Linux & Apache open source technology stack is the most secure and powerful choice for hosting its service. It uses tried and tested methodologies and server applications, and is always evaluating its software in order to make improvements where possible.

5. Video compression

5.1 Compression overview

The latakoo app incorporates advanced encoding technologies based on the open-source x264 codec, which is derived from the H.264/MPEG-4 AVC (Advanced Video Coding) standard. Codec optimization has been designed to take advantage of the x264's ability to provide excellent video quality at substantially lower bit rates than comparable codecs, while providing the ability to perform on most standard systems. In addition, latakoo's approach with x264 facilitates video encoding that is not only easily transportable, but can be trans-coded to a variety of video formats that are designed for re-editing. latakoo's compression takes advantage of many of x264's advanced features, including the use of Reference and B-Frames, CABAC (Context-adaptive binary arithmetic coding) encoding, and de-blocking variants to reduce artifacting.

The latakoo app begins the compression process by first scanning the input video and checking for errors that may cause the process to fail. It will scan the video to determine proper video aspect ratio, frame-rate, video length and audio parameters. In reference to audio, the app will determine if audio is present, the number of channels and the number of tracks. If more than 1 track is present, it will map the tracks in the same order as the original, ensuring that video delivered by latakoo will be identical to the original.

5.2 Video transcoding

After video transfer, the latakoo app has the ability to transcode the video to some of the most common video container formats used by the majority of professional video editing systems. The output video formats currently produced by the latakoo tool include but are not limited to the following:

- Avid DNxHD codec: A lossy high-definition video post-production codec which provides excellent video quality at a substantially smaller file size compared with uncompressed formats.
- DVCPRO 50: A common Standard-definition video post-production codec that is compatible with most professional video editing systems.
- DVCPRO 25: Standard-definition video post-production codec that has a wider compatibility with older video systems that may not have the capability to utilize DVCPro 50.
- XDCAM EX 35 HD : A newer HD codec that doubles the chroma-resolution compared to the previous generations of high definition XDCam formats, and can be used as an alternative to the Avid DNxHD. (XDCAM HD 422 – coming soon).
- HDV: A lossy high-definition video utilizing MPEG2 Part-2 compression scheme multiplexed into an MPEG-2 transport stream. Can be used with HD and SD video formats.
- MPEG2 (MPEG format): The most widely used digital format providing good performance in both SD and HD formats. Universally compatible with the majority of video editing systems.
- DVCProHD: An extension of the DVCPro formats that supports 720P and 1080i HD video formats.
- Apple ProRes: A highly regarded format for Apple Final Cut Pro editors that provide outstanding quality and high-performance in both SD and HD formats.
- MXF formats - Coming soon.

Appendix 1: Supported video formats

Accepted Container Formats

- 3GP (.3gp, 3gpp)
- Advanced Systems Format (.ASF, .WMV)
- Audio Video Interleave (.AVI)
- Flash Video (.FLV)
- General eXchange Format (.GXF)
- iTunes Video Format (.M4V)
- Matroska (.MKV)
- MPEG program stream (.MPG, .MPEG, .M2P)
- MPEG transport stream (.TS, .M2T, .M2TS)
- MPEG-4 Part 14 (.MP4)
- QuickTime (.MOV)
- Material eXchange Format (.MXF)
- Material eXchange Format (.MXF) with Panasonic P2 format support.

Known acceptable video codecs

- Advanced Video Codec (AVCHD)
- Apple DV/DVCPro
- Apple ProRes
- Avid DV
- Avid DV100
- Avid Meridien
- Blackmagic 10 bit, 8 bit
- DVCAM
- DVCPRO 25
- DVCPRO 50
- DVCPRO HD
- H.263
- H.264
- HDV Mode 2
- Huffyuv
- MPEG 4 Part 2
- Microsoft DV
- MPEG2 HDV1
- MJPEG
- Sorenson 3
- Sorenson Spark
- Sony YUV
- Theora
- Raw RGB / Uncompressed
- VP3, VP6 (On2)
- WVC1 (Windows Media Video 9)
- WVC1 (Windows Media Video 9) HD

- XDCAM HD 35, HD 422
- XDCAM IMX 30 / 50

Known acceptable audio codecs

- Advanced Audio Coding (AAC)
- AC-3
- MP3
- Pulse-code modulation (PCM)
- Vorbis
- Windows Media Audio (WMA)