xView

Data Sheet
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xtrmx.com/xView

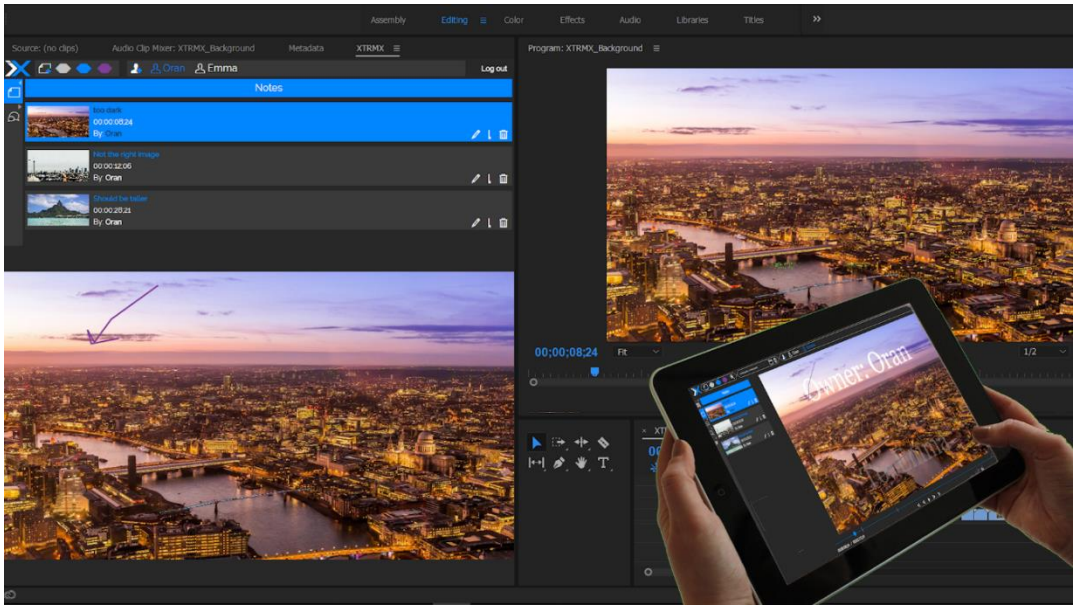
xView 3.2

- Remote Review integrated with Avid Media Composer©, Adobe Premiere Pro© and Shotgun RV©
- No Render, No Uploads, No Downloads
- Agnostic to media location
- Collaborated, simultaneous, synchronized, frame-accurate review
- Secured at Transit & Rest

xView 3.2

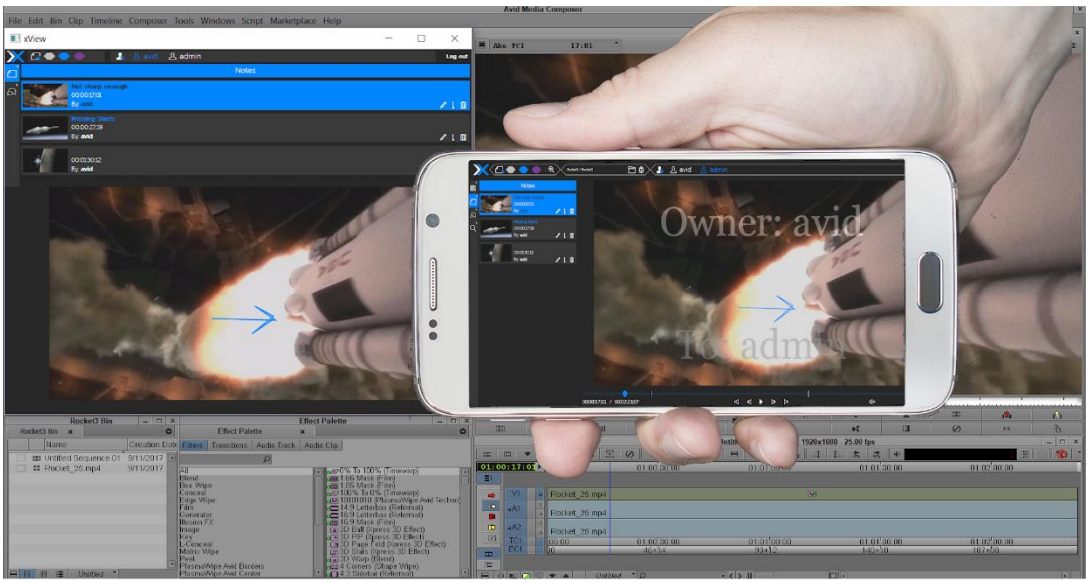
xView is a professional review tool intended for the broadcast and post-production industries, for content review, compliance review and editorial review. xView allows accessing remote content from its origin storage or even directly from the NLE, without render, upload or download, regardless of the reviewer and the content physical locations. In addition, xView allows multiple users to review simultaneously the video content, in real-time.

- **Integrated with Adobe Premiere Pro ©, Avid Media Composer ©, and Shotgun RV ©**: Allows multi-users editorial review directly from the editor's timeline, for immediate review and approval. Clients participating in the session can review the NLE project without the need to have the NLE installed on their platform. Collaborators have real-time transport and effects' control, and can add textual and graphical markers directly into the NLE project, and get an immediate approval workflow without render, upload or download.

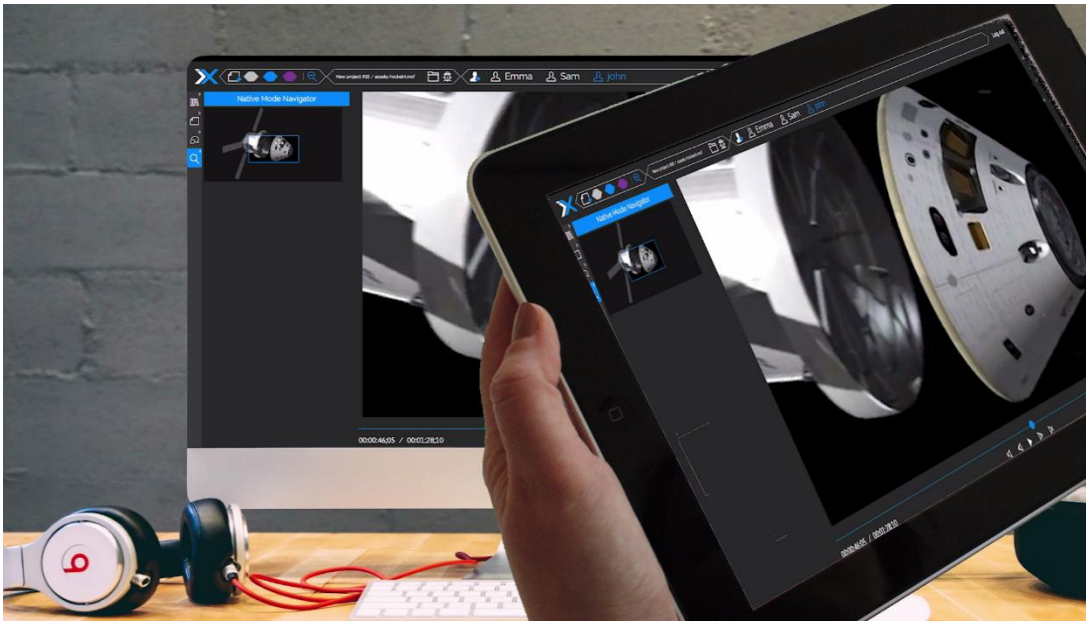


- **No Uploads, No Downloads:** Traditionally, to share content you would upload your media into a central repository or have it resided on each client in the review session. Using XTRMX technology, you and your colleagues can immediately start reviewing content – regardless of its location. Content is accessed from its one secure location, no upload required. File size, file format, and resolution doesn't matter.
- **Simultaneous Review**: All users see the same frame at the same time, and each action apply by one user is automatically reflected on the other collaborators, in Real-time. Transport control usage (play, pause, scrub etc.) is collaborated among the users.

- **Frame Accurate, Random-access stream**: Transport control is frame-accurate, allowing frame-by-frame stepping without drop-frames, regardless of the source format.
- **Content Location Agnostic**: The Video content may be accessed from any of the client's workstations. No preliminary upload/download is needed.
- **Frame Accurate Annotation**: Textual and graphical frame-referenced annotations may be made by any client, are visible to all clients, are frame accurately synchronized to the media, and are stored with a thumbnail image for later reference.



- **Communication**: Voice and textual chat are self-contained in the software. No additional means for remote communication is required.
- **Collaborative Zoom**: Users can collaboratively zoom in to the native-resolution of any frame, and navigate collaboratively on a pixel-by-pixel basis into an area of interest inside the frame.

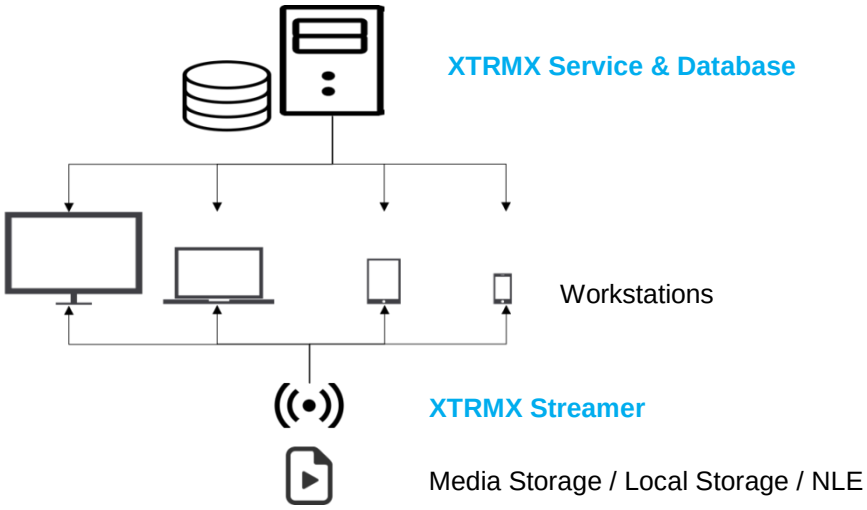


- **Adaptive Bitrate/Resolution:** The xView in-house developed protocol allows dynamic stream adaptation, based on the available bandwidth, from 8Mbps for 1080p, 3Mbps for 720p, and all the way down to less than 0.3Mbps at 1CIF resolution for extremely narrow bandwidth.
- **High-resolution at Rest:** Despite bandwidth resolution constraints, whenever the stream is paused, the full resolution image is distributed.
- **Security:** Streaming content protection is assured by SSL encryption in conjunction with token-based authentication via a secured real-time transport protocol. At rest there is zero-caching on the client side, only the frame on-screen exists at a client. A configurable, visible watermark identifying the content source and end point client, is inserted at the origination of the stream. Files are never moved from their secure storage.

System overview

The xView software environment can be described as follows:

- **XTRMX Service**:
  Software components that are responsible to facilitate review sessions:
  - Session management: User handshake, authentication, robustness & security
  - Users & Projects management: Store and manage users-profiles and projects data
  - On-the-fly transcoding for concurrent multiplatform review
- **Database**: Where XTRMX service stores its metadata
- **Media Storage**: A storage repository hosting the reviewed media-content essence
- **XTRMX Streamer**: Reading, transcoding & streaming the media (hosted either on a workstation or a remote storage)
- **Workstations**: User end-points that participate in the review sessions



On-premises vs. SaaS

XTRMX server can be installed in two configurations types – SaaS and customer owned on-premises:

- **SaaS**: XTRMX server is installed on the XTRMX cloud. In that case, no server is required on the client machine and the server specifications listed below do not apply.
  The "XTRMX remote storage" may be hosted by the XTRMX cloud storage.
- **On-Premises**: The server software is installed on hardware provided by the customer. This customer-provided equipment must meet the requirements of the "Server Specification" section (listed below). In this scenario, the "XTRMX remote storage" is hosted anywhere that is topologically accessible to the server.

Browser vs. Native Applicaiton

The xView client application may run in two modes, via the browser, or as a desktop application. The browser app requires nothing more than a web browser (Chrome Firefox, or Safari), and therefore it may be used from iPads, iPhones, Androids etc. The desktop application will require installation and it is available for both Windows and MacOS.

The two modes are similar in terms of UI and functionality, but while the desktop application supports a stream quality that is up to 720/1080P (if the network allows), the browser app is limited to 4CIF while scrubbing or playing. In both cases, whenever the playback is paused the full native image resolution is presented.

Pre Requisites

xView Server specification

The following specification descibe the XTRMX xView server for **on-premise installation only:**

Operating System: Windows Server 2016 R2 or 2016.
RAM:128 GB RAM
GPU/CPU: The server's GPU/CPU determine the performances in terms of concurrent sessions. The following configurations had been well validated and benchamrked, and the performances of each (as the number of concurrent sessions) is given based on the assumption below:

Server specification	Concurrent session	Concurrent users	Total users
i7-6785R@3.90 GHz, GTX 1070	2	18	70
2 Xeon E5-2620 v3@2.40 GHz, Grid K2	32	300	1200
2 Xeon E5-2690 v4@2.60 GHz, Grid K2	85	765	3060

assumptions and constraints
1) There are 3 concurrent collaborators per session in average.
2) The collaborators require different formats (i.e. some collaborators using mobile or tablets, while some are using desktop/laptops).
3) Only 1/4 of the total user are concurrently using the system at any given time (statistics courtesy of "Web Performance Inc")
4) Maximum CPU/GPU capacity is set to 80% of the actual maximum capacity.
5) Streaming format assumed to be 1080p at 30fps
6) Not more than 1/3 of the total concurrent sessions are playing at any given time (while the rest are either scrubbing or at rest)

xView Workstation specification

The workstations specifications vary based on the workstation role. This role could be limited to recieve only functions. Or the role could encompase both send and recieve functionality.

Receiver (Incoming stream only):

- Operating System:
  - Windows (8.x and up)
  - Mac (10.6 and up)
  - Android (5.x and up)
  - iPhone/iPad (9.x and up)
- Browser: Chrome V 50.x, Safari V x.x, and Firefox V x.x, or higher versions of each
- For Full-HD resolution: i7 CPU

Streamer (Both incoming and outgoing streams):

- Operating System:
  - Windows (8.x and up)
  - Mac (10.11 and up)
- xView 3.2 Native App. installed
- CPU: i7
- For Full-HD resolution, an NVIDIA GPU of Kepler architecture (or higher) is preferred

Supported formats

Video
VP8 / WebM
VP9 / WebM
H264 / MP4,MOV
MPEG-4/MP4,MOV
Elementary H264
Elementary H265
ProRes
DNxHD
DPX
AVC,XAVC/MXF,MOV
MPEG2(IMX,XDCAM)/MXF
DV/MXF,RAW

Audio
PCM / WAV
Vorbis / WebM
Vorbis / Ogg
Mpeg1L3/MP3
AAC / MP4
FLAC / Ogg
Mpeg1L2

Network Streaming Bandwidth

While playing and scrubbing, the stream bitrate and resolution is automatically adaptible according to the network avauialble bandwidth and machine power, as shown in the table below. While paused however, the full resolution image is distributed.

Streaming Resolution	Required Bandwidth
1080p	8.0 Mbps
720p	3.0 Mbps
4CIF	0.3 Mbps
1CIF	0.1 Mbps

Ports

By default, XTRMX uses the following for xView ports:

- xView servers: 8050, 8080, 8888, 8090
- xView streaming: 6001-7000

These ports are configurable via the administration portal.

About XTRMX

XTRMX developed a platform to sync media content and data, between remote users and storages. In a nutshell, the framework is powered by an on-the-fly transcoding and processing engine, that delivers media content on demand by low-latency streaming, without uploading or downloading the source itself. The platform comprise two uniqe features:

1) Remote access to media content – either files based or from another source (such as an NLE timeline) – for both browse and control, regardless of where the content is stored.
2) Multiple users can not only simultaneously view the same media-assets in sync, but can also manipulate the media content simultaneously: Any modification applied by one user, is reflected on the other users in realtime.

This engine is exposed with a mature, simple SDK, allowing to integrate with existing applications and transform them (or some of their aspect) into realtime, multi-users controlled.

On top of this engine, XTRMX developed “xView” – a professional tool for realtime, remote video review, and “ediX” – a product for remote editing. XTRMX products integrated with Adobe Premiere Pro (c), Avid Media Composer (c) and Shotgun RV (c).