

# System Overview

Nx Witness is an open, extensible IP video management system with Cloud, Desktop, Mobile, and Server applications.



## Nx Witness

VIDEO MANAGEMENT SYSTEM



### CLOUD

A cloud-based service that enables simple, centralized remote access and insight into any Nx Witness system.



### DESKTOP

A rich media player with a flexible GRID interface designed for connecting to and managing an Nx Witness system.



### SERVER

A powerful, lightweight media server designed to discover, add, and manage system devices and resources.



### MOBILE

A mobile application for iOS and Android devices designed for remote viewing and control of

#### BROWSERS

|  |                 |
|--|-----------------|
|  | Google Chrome   |
|  | Mozilla Firefox |
|  | Microsoft Edge  |

#### OPERATING SYSTEMS

|  |              |
|--|--------------|
|  | Windows      |
|  | Ubuntu Linux |
|  | Mac OS       |

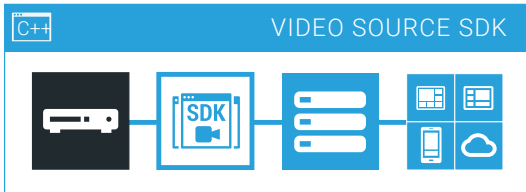
#### OPERATING SYSTEMS

|  |                    |
|--|--------------------|
|  | Windows            |
|  | Ubuntu Linux       |
|  | ARM / Debian Linux |

#### OPERATING SYSTEMS

|  |                |
|--|----------------|
|  | Google Android |
|  | Apple iOS      |
|  | Microsoft Edge |

# Developer Tools

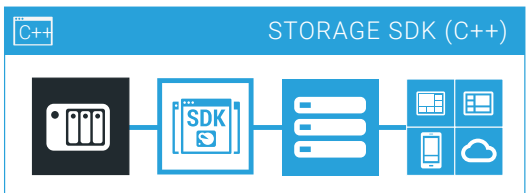


**3RD PARTY VIDEO DEVICES**

The Video Source SDK provides the ability to integrate virtually any live or recorded video source (IP Cameras, NVRs, DVRs, etc) into System. It also allows integrating device I/O ports and motion detection information.

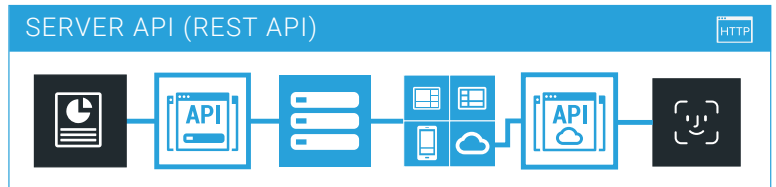
**3RD PARTY I/O DEVICES**

The Video Source SDK also provides the ability to integrate 3rd party I/O devices which can increase hard wire interoperability with 3rd party systems and connected devices.



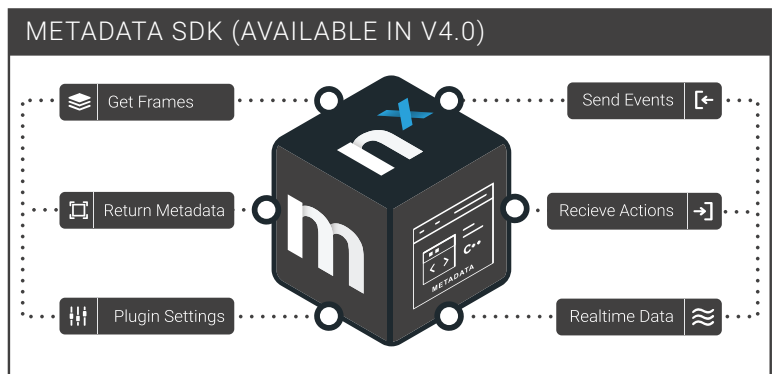
**3RD PARTY STORAGE**

The Storage SDK allows developers to read from or write to any storage location: local, remote, and cloud. Creating a storage plugin requires implementing standard functions such as: I/O stream, if file exist, delete file, list of files in the folder, etc. The Storage SDK also contains an example for using an FTP server as a storage location.



**INTEGRATE ANYTHING USING HTTP API CALLS**

A REST API that gives developers the ability to access almost every system feature available in the regular client: query/manage system resources (servers, cameras, users, permissions), pull live or recorded video out of System, generate events, create rules, control PTZ cameras, and more.



**CREATE PLUGINS THAT RUN ON NX SERVER**

The Metadata SDK allows developers and tech partners to create installable Plugins for Nx Witness which run on the Nx Server application to create tight, seamless integrations. The Metadata SDK is focused on bringing object metadata from 3rd party Systems - like Face Recognition, Retail Analytics, License Plate Recognition, etc - to enhance both real-time system intelligence and post-event, post-capture video search and review.

**Nx Witness Dev Tools are FREE!**

























Nx Witness developer tools are FREE to use and can be accessed by installing Nx Witness VMS and opening the Server Web Admin interface.

Download Nx Witness today at:  
<http://networkoptix.com/nx-witness>

# Desktop Overview

A rich desktop application with a flexible GRID interface designed for connecting to, viewing, and managing your Nx Witness System.



| USABILITY   | MEDIA  | CONFIGURATION   | SEARCH  |
|---|--|---|---|
|  Drag & Drop Interface      |  IP Video Cameras / Devices |  Events & Rules Engine |  Smart Motion Search |
|  Consolidated Notifications |  RTSP/HTTP Streams          |  User Management       |  Keyword Search      |
|  Adaptive Playback          |  I/O Devices                |  IP Video Devices      |  Calendar Search     |
|  Customizable Layouts       |  Web Pages / URLs           |  Server Management     |  Time-Slice Search   |
|  Digital Maps               |  Recorded Video Files       |  I/O Device Management |  Bookmarks           |
|  Adaptive Scaling           |  Static Image Files         |  Storage Management    |  Audit Trail         |

# Desktop Specs

## HARDWARE REQUIREMENTS

### MINIMUM SUPPORTED SPECS

HARD DRIVE: HDD/SSD/mSATA  
 RAM: 2GB  
 CPU: Quad Core Intel Celeron CPU or higher  
 GRAPHICS: Intel HD Graphics 3000  
 w/ OpenGL2.1 support  
 NETWORKING: 1Gbps NIC

### PERFORMANCE SPECS

HARD DRIVE: Performance SSD  
 RAM: 16 GB  
 CPU: Intel Core i5  
 GRAPHICS: NVIDIA GeForce GTX 1050  
 (OpenGL2.1 support is required)  
 NETWORKING: 10 Gbps NIC

### MAXIMUM # OF GRID ITEMS PER LAYOUT

64 Items (e.g. 64 live streams)

## SUPPORTED OPERATING SYSTEMS

### WINDOWS

Windows 7 (July 2009)  
 Windows 8.1 (October 2013)  
 Windows 10 Home (July 2015)  
 Windows 10 Pro (July 2015)  
 Windows 10 Enterprise (July 2015)  
 Windows Server 2008 (February 2008)  
 Windows Server 2008 R2 (July 2009)  
 Windows Server 2012 (August 2012)  
 Windows Server 2012 R2 (October 2013)  
 Windows Server 2016 (October 2016)

### UBUNTU LINUX

Ubuntu Linux 16.04 LTS  
 Ubuntu Linux 18.04 LTS  
 Ubuntu Linux 20.04 LTS

### MAC OS

OSX 10.12  
 OSX 10.13  
 OSX 10.14

## UNIQUE CAPABILITIES

### DESKTOP MODES

CONNECTED CLIENT: Manage any connected Nx Witness System

MEDIA PLAYER: View, edit, and export offline videos and images

VIDEO WALL: Put Nx Desktop into Video Wall mode to control remotely

### UNIQUE FEATURES

MULTILINGUAL SUPPORT: Support for 20+ languages

SHOWREEL: Fully customizable viewing sequences of any GRID media

CUSTOMIZABLE BRANDING: Customizable Desktop background

DRAG & DROP REASSIGNMENT: Move cameras/streams between Servers

### SEARCH

KEYWORD: Search System Resources using Keywords

FLEX TIMELINE: Search by date / time using calendar or mouse movements

EVENTS: Quickly search System event log to find event-driven video

SMART MOTION: Select specific pixels to search a year of archive in seconds

BOOKMARKS: Create Bookmarks manually or automatically with Rules Engine

## SUPPORTED MEDIA PLAYBACK & CONTROL

### LIVE STREAMING (CAMERAS & STREAMS)

CODECS: H.265 H.264 MJPEG

### OFFLINE MEDIA FILES

VIDEOS: AVI MKV MP4 MOV, TS M2TS MPEG MPG FLV WMV 3GP

IMAGES: JPG PNG GIF BMP TIFF

### CONTROL DEVICES

I/O Devices: Status and Triggers

SERVERS: Server Health Monitoring

### BUILT-IN BROWSER

























BROWSER SUPPORT: Websites, URLs, IP Addresses



# Server Overview

A lightweight media server designed for discovering, adding, and managing system resources and their related metadata.



| DISCOVER  | MANAGE  | VIEW  | INTEGRATE   |
|---|---|---|---|
|  99% of IP Cameras, Webcams |  Device Configurations     |  Server Health         |  HTTP Events & Actions |
|  I/O Devices                |  System Rules              |  Live / Recorded Video |  Server API            |
|  Encoders                   |  Failover / Redundancy     |  System Configuration  |  Metadata SDK          |
|  RTSP / HTTP / UDP Streams  |  Connections (HTTP, HTTPS) |  Log Files             |  Video Source SDK      |
|  SAMBA NAS Devices          |  Archived Video            |  Audit Trail           |  Storage SDK           |
|  Nx Systems and Servers     |  Flexible Archive Backup   |  Storage Status        |  Server via Cloud API  |

# Server Specs

## COMPATIBLE HARDWARE

### RECOMMENDED BASED ON # OF STREAMS

| STREAMS   | RAM   | NIC  | CPU               |
|-----------|-------|------|-------------------|
| Up to 8   | 1 GB  | 1 GB | Dual Core ARM     |
| Up to 16  | 2 GB  | 1 GB | Dual Core Atom    |
| Up to 32  | 4 GB  | 1 GB | Dual Core Celeron |
| Up to 64  | 8 GB  | 1 GB | Core i3           |
| Up to 128 | 16 GB | 1 GB | Core i3           |

\*CPUs change fast and this spec sheet is fixed.

### RECOMMENDED MAXIMUMS

# OF RESOURCES PER SYSTEM: 10,000  
 # OF CLIENTS PER SYSTEM: UNLIMITED  
 # OF STREAMS PER SERVER: 128  
 # OF SERVERS IN A SERVER HIVE: 100  
 # OF USERS IN A SYSTEM: 1000

\* Based on lab environments. Designing a system that exceeds the numbers above? Contact us for assistance.

## SUPPORTED OPERATING SYSTEMS

### WINDOWS

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### UBUNTU LINUX

Ubuntu Linux 16.04 LTS  
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 Ubuntu Linux 20.04 LTS

### ARM DEVICES

Raspberry Pi  
 NVIDIA Jetson Development Devices  
 \* Contact us to learn more about our ARM support

## UNIQUE CAPABILITIES

### SERVER HIVE

SYNCHRONIZATION: SERVERS SYNCHRONIZE SYSTEM DATA IN REAL TIME

FAILOVER: AUTOMATIC CAMERA FAILOVER WHEN SERVER FAILS

### ARCHIVE INTEGRITY

INTEGRITY CHECK: NOTIFICATION WHEN FILES MANUALLY MODIFIED

BACKUP: REAL-TIME (CONCURRENT) OR SCHEDULED

### NO PREREQUISITE SOFTWARE REQUIRED

DATABASE: SQLITE + PROPRIETARY ARCHIVE INDEX

LIGHTWEIGHT: ~75MB INSTALL FILE

### STORAGE

LAN / WAN: HDD SSD NAS (SAMBA)

STORAGE SDK: INTEGRATE NEW STORAGE MEDIUMS (E.G. FTP, CLOUD)

### SECURITY

USER RIGHTS: LDAP/ACTIVE DIRECTORY SECURE PASSWORD RECOVERY

TECHNOLOGIES: HTTPS OPEN SSL SALTED MD5 HASH TSL/SSL

ENCRYPTION: SECURE CONNECTIONS ENCRYPTED VIDEO

## SUPPORTED MEDIA STREAMING

### LIVE STREAM (AVAILABLE VIA SERVER API)

VIDEO: H.265 H.264 MJPEG

AUDIO: AAC PCM (Mu-Law, A-law) g726 MP3

PROTOCOLS: RTSP WebM HLS

TRANSCODING: SUPPORTED (FOR WEB CLIENT, MOBILE, API)

### OTHER MEDIA

VIDEOS: AVI MKV MP4 MOV TS M2TS MPEG MPG FLV WMV 3GP























IMAGES: JPG PNG GIF BMP TIFF

VIRTUAL CAMERA: Upload footage from offline cameras (e.g. wearable cameras)

# Cloud Overview

A public cloud application built to enable simple, fast, remote connectivity and management of Nx Witness Systems.



| CONNECT  | VIEW  | MANAGE  | SCALE  |
|--|---|---|--|
|  NAT Traversal         |  Live Video (adaptive)     |  System Settings     |  Unlimited # of Systems |
|  Data Proxy via AWS    |  Recorded Video (adaptive) |  User Permissions    |  Unlimited # of Users   |
|  LDAP Credentials      |  Camera Details            |  Cloud Connections   |  Unlimited # of Devices |
|  Encrypted Connections |  Keyword Search            |  Email Notifications |  Cloud API              |
|  Wifi / LAN / WAN      |  Calendar Search           |  Push Notifications  |  |
|  4G / LTE / Data       |  Scalable Timeline         |  Health Monitoring   |  |

# Cloud Specs

## SCALABILITY

MAXIMUM # OF CONNECTED SYSTEMS

UNLIMITED

MAXIMUM # OF USERS

UNLIMITED

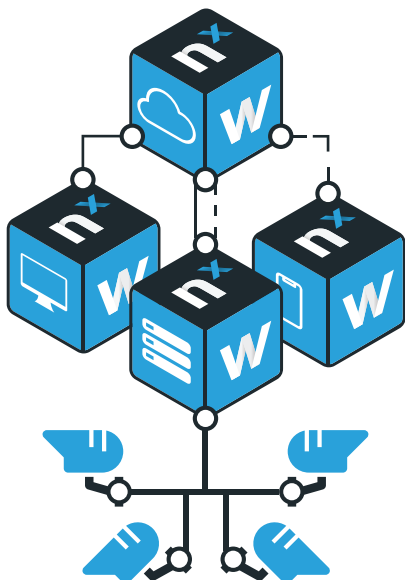
## NX CLOUD SERVICES

### CLOUD CONNECT

Connect any Nx Witness System to Nx Cloud for simple remote connectivity from anywhere using Network Optix's NAT Traversal and Cloud Data Proxy technology.

### MANAGE USERS

Add an unlimited number of users to a single Nx Cloud System. Share access to your Nx Witness System in seconds using only email addresses. Create Custom Roles to quickly assign access to multiple Nx Cloud connected Systems.



## UNIQUE CAPABILITIES

### CONNECTIVITY

CLOUD DATA PROXY: Connect via Nx Cloud to view System data and video

NAT TRAVERSAL (DEFAULT): Connect directly to System via Cloud addressing

## SECURE COMMUNICATIONS

### SECURITY

PASSWORD RECOVERY: Reset password via email

PASSWORD STORAGE: Complex Multi-Level MD5 Hash

ENCRYPTED CONNECTIONS: HTTPS OPENSSL

ENCRYPTED VIDEO: Encrypt video between Client and Server applications

## INTERFACE

### CLOUD INTERFACE

SYSTEMS: View connected System tiles in Cloud Web Admin

SETTINGS: View users, rename systems, disconnect systems

VIEW: View live or recorded video from connected cameras / streams

INFORMATION: Integrated Health Monitoring of the last 24 hours

TOOLS: Download, get support, and see supported devices list

### SUPPORTED BROWSERS

MOBILE / TABLET: CHROME SAFARI FIREFOX EDGE (AND OTHERS)

COMPUTERS: CHROME SAFARI FIREFOX EDGE (AND OTHERS)

## INTEGRATION TOOLS

### FOR DEVELOPERS

CLOUD API: Integrate with 3rd party applications and devices

### FOR ADMINS

ZAPIER: Create connections to other Cloud apps with Zapier.com



# Mobile Overview

A mobile application for iOS and Android devices designed for on-the-go viewing and control of system devices.



| CONNECT               | VIEW                      | CONTROL                | SEARCH                      |
|-----------------------|---------------------------|------------------------|-----------------------------|
| NAT Traversal         | Live Video (Adaptive)     | Fisheye Dewarping      | Keyword Camera Search       |
| Data Proxy via Cloud  | Recorded Video (Adaptive) | Pan-Tilt-Zoom (PTZ)    | Calendar Search             |
| Encrypted Connections | Camera Status             | Soft Triggers          | Thumbnail Search            |
| Wifi / LAN / WAN      | Layouts                   | 2-Way Audio            | Notifications (coming soon) |
| 4G / LTE / Data       | Adjustable Resolutions    | Cloud or Local Systems | Flex Timeline               |
| Encrypted Video       | Portrait / Landscape      | Unlimited # of Systems | Smart Motion (coming soon)  |

# Mobile Specs

## SUPPORTED DEVICES



### ANDROID PHONES / TABLETS

Android 5.0: "Lollipop" (November 2014)  
 Android 6.0: "Marshmallow" (October 2015)  
 Android 7.0: "Nougat" (August 2016)  
 Android 8.0: "Oreo" (August 2017)  
 Android 9.0: "Pie" (August 2018)



### APPLE PHONES / TABLETS

iOS 10 (September 2016)  
 iOS 11 (September 2017)  
 iOS 12 (September 2018)

## VIEWING / PLAYBACK

### VIEWING MODES

PORTRAIT

LANDSCAPE

### ADJUSTABLE RESOLUTIONS

HIGHEST SPEED (BEST AVAILABLE FRAME RATE)

BEST QUALITY (BEST AVAILABLE RESOLUTION)

1080p

720p

480p

360p

## KEY FEATURES

### CONNECT FROM ANYWHERE

LAN / WAN: Connect to Systems using public IP address or Dynamic DNS

VIA NX CLOUD: Login to Nx Cloud to view all shared Systems

ADAPTIVE CONNECTIONS: Works well on Wifi or Data (4G / LTE / 3G)

### VIEW LIVE OR RECORDED VIDEO

LIVE VIDEO: Connect to Systems using public IP address or Dynamic DNS

ARCHIVED VIDEO: Login to Nx Cloud to view all shared Systems

### CONTROL CAMERAS

FISHEYE CAMERAS: Universal dewarping for fisheye cameras

PTZ: Control PTZ cameras with Joystick and/or tap to move UX

SOFT TRIGGERS: Control soft triggers on cameras

2 WAY AUDIO: Talk through I/O or IP cameras that support Audio In / Out

### SEARCH

KEYWORD: Search for cameras or layouts by name

CALENDAR: Search by date and time

LAYOUTS: View thumbnails of System Layouts

LIVE THUMBNAILS: Thumbnails refresh in real time

FLEX TIMELINE: Search using the same timeline interaction as Nx Desktop

SMART MOTION: Search using Smart Motion (coming soon!)

PUSH NOTIFICATIONS: Recieve customizable push notifications for key events

Try Nx Witness FREE for 30 days.

Nx Witness is FREE for live streaming. To try recording cameras activate a FREE 30-DAY TRIAL for 4 cameras.

Get Started with your free trial today:  
<http://networkoptix.com/nx-witness>