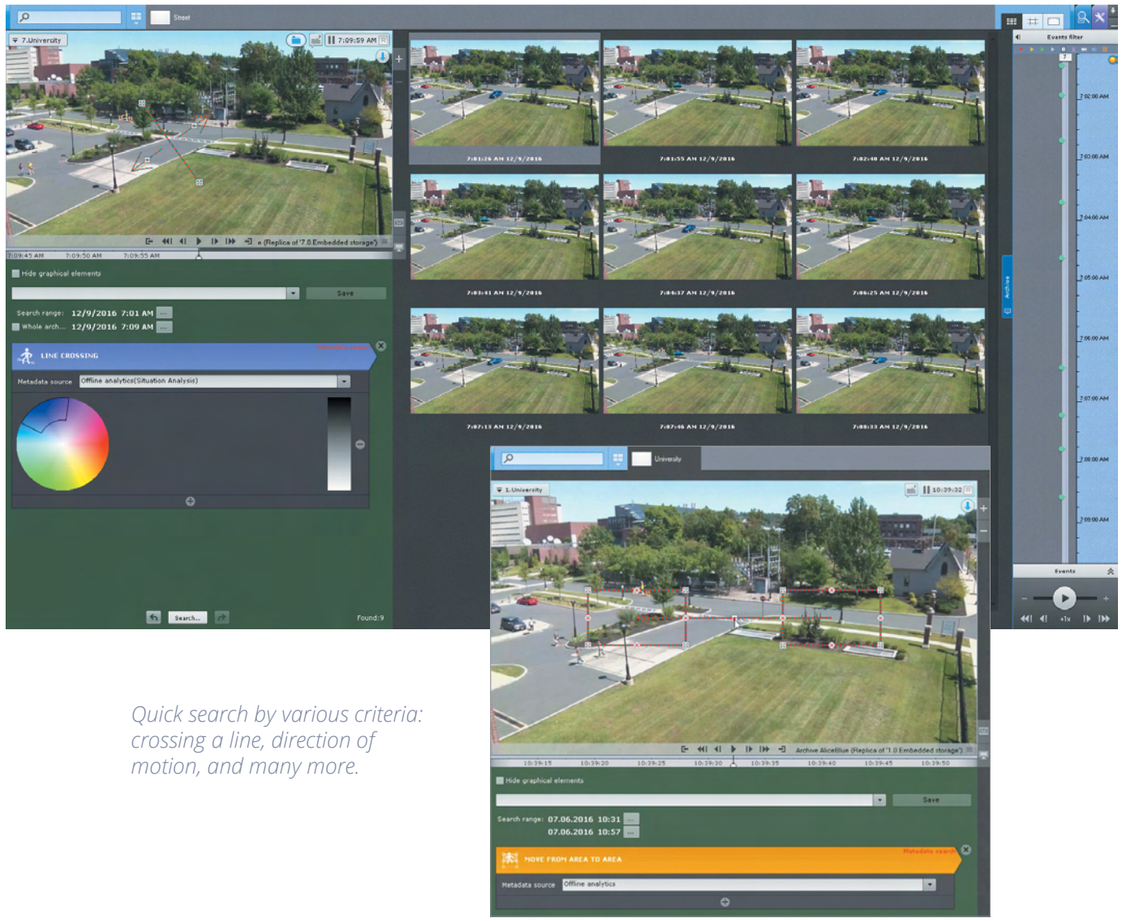
STATE-OF-THE-ART
OPEN-PLATFORM INTELLIGENT
VIDEO MANAGEMENT
SOFTWARE

MOMENTQUEST

Near-instant forensic search of recorded video



Quick search by various criteria: crossing a line, direction of motion, and many more.

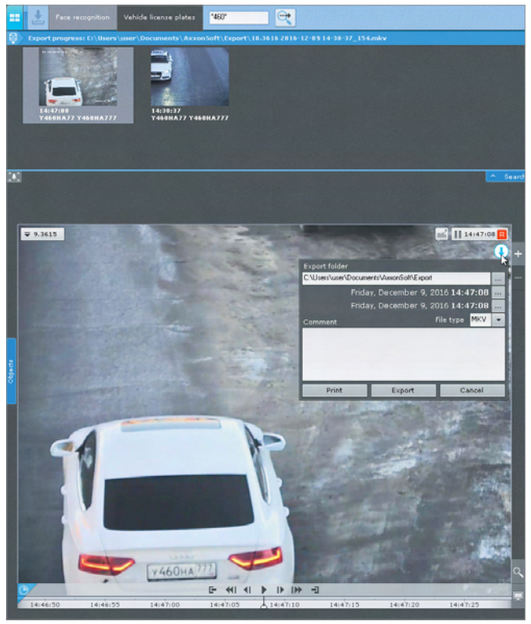
MomentQuest is more than a search tool (although it is one). It is a set of technologies that generate metadata right at the moment of video recording. The metadata database is the basis for quick and accurate analysis of archives. To find an event of interest later, just enter the necessary criteria: motion in zones, crossing of a line, size, color, direction, speed of object motion, and more. Thumbnails of relevant video episodes are shown in seconds. All-night viewing marathons are a thing of the past now. MomentQuest has replaced them with fast, effective criteria-based forensic search.

Search in MomentQuest is fast because it is based on metadata, which is calculated for all moving objects in the field of view. The metadata contains objects' attributes that are saved as text strings to a special VMDA* database at the same time as the video itself.

**VMDA is an exclusive AxxonSoft innovation, consisting of a database for indexing and storing descriptions of what is happening in the scene.*

FACE AND LICENSE PLATE SEARCH

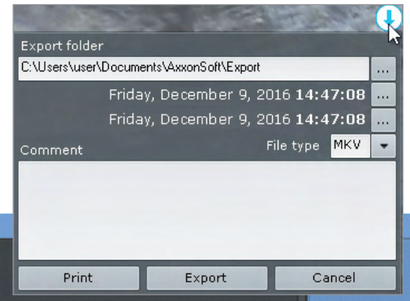
Face and license plate recogition, and quick search for them in video footage

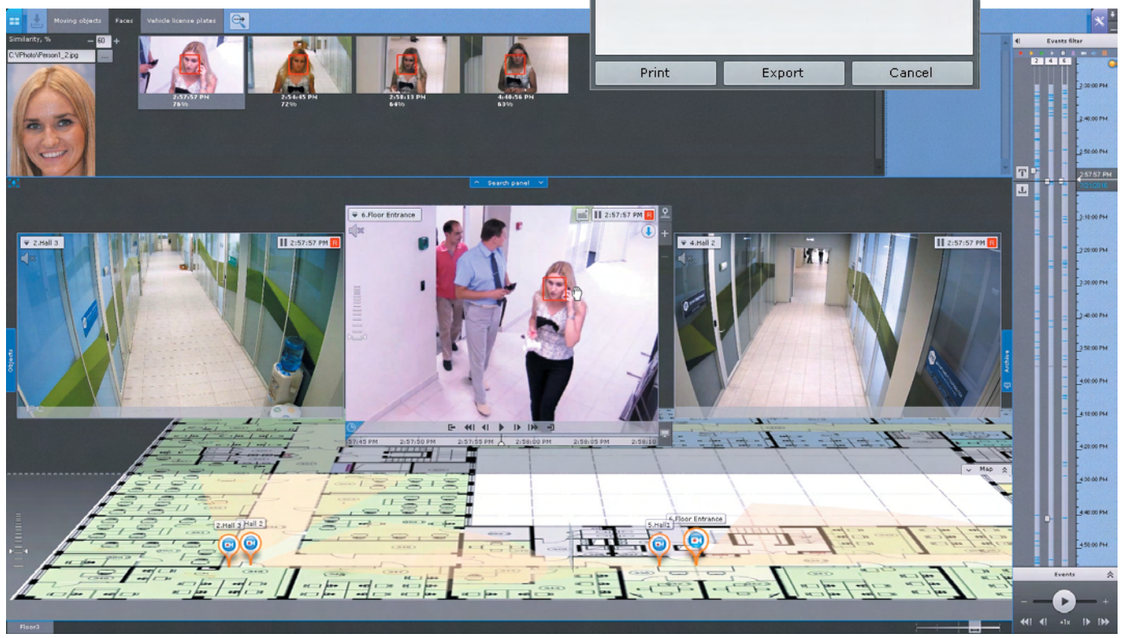


Axxon Next features a face and LPR search algorithm that automatically detects a face or a license plate in the field of view or in a provided video footage of one or several cameras.

Recognized license plate numbers are saved to a database. The algorithm involves advanced heuristic methods (such as substitution of similar looking letters/numbers) to identify as many potential matches as possible.

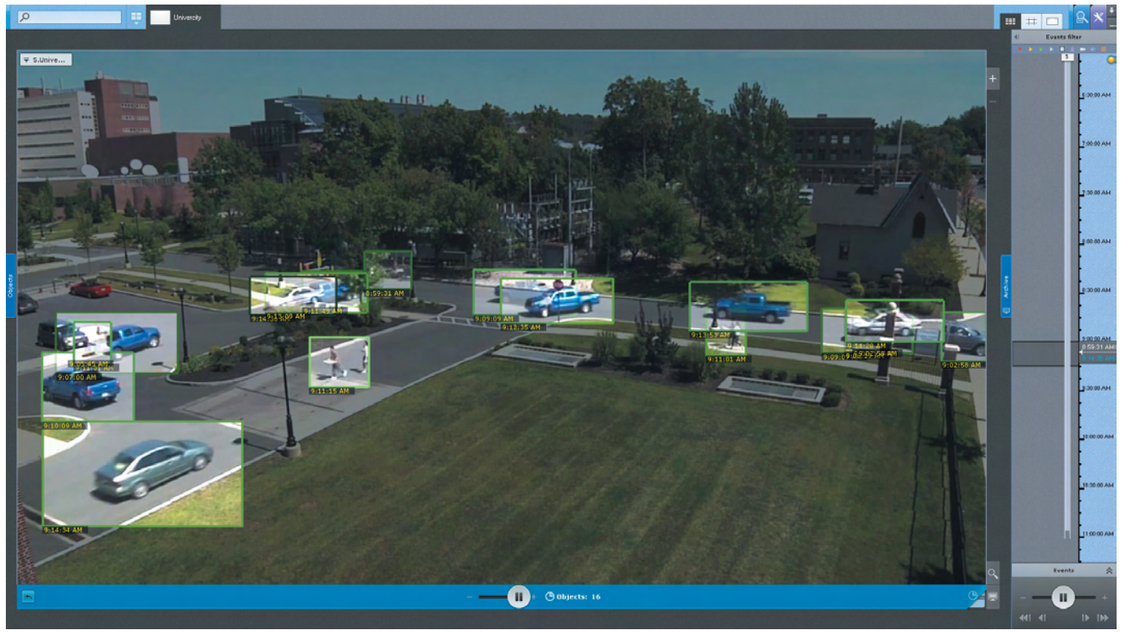
To search for a person, the user uploads a photo and the system compares the face on the photo with the face descriptions stored in the database. The search results show all the scenes with people who look similar to the photo.





TIMECOMPRESSOR

Visual scene synopses



TimeCompressor is a whole new paradigm for efficiency in video surveillance. All moving objects in recorded video are shown to the operator in a short video clip, compressing time but maintaining the original speed of motion of the objects. Just click an object to jump to playback of the corresponding video in normal mode.

TimeCompressor is a cut-to-the-chase review of events in the scene. Efficiency in video surveillance will never be the same.

CONFIGURATION BACKUP AND RESTORE

System backup and roll-back is easy

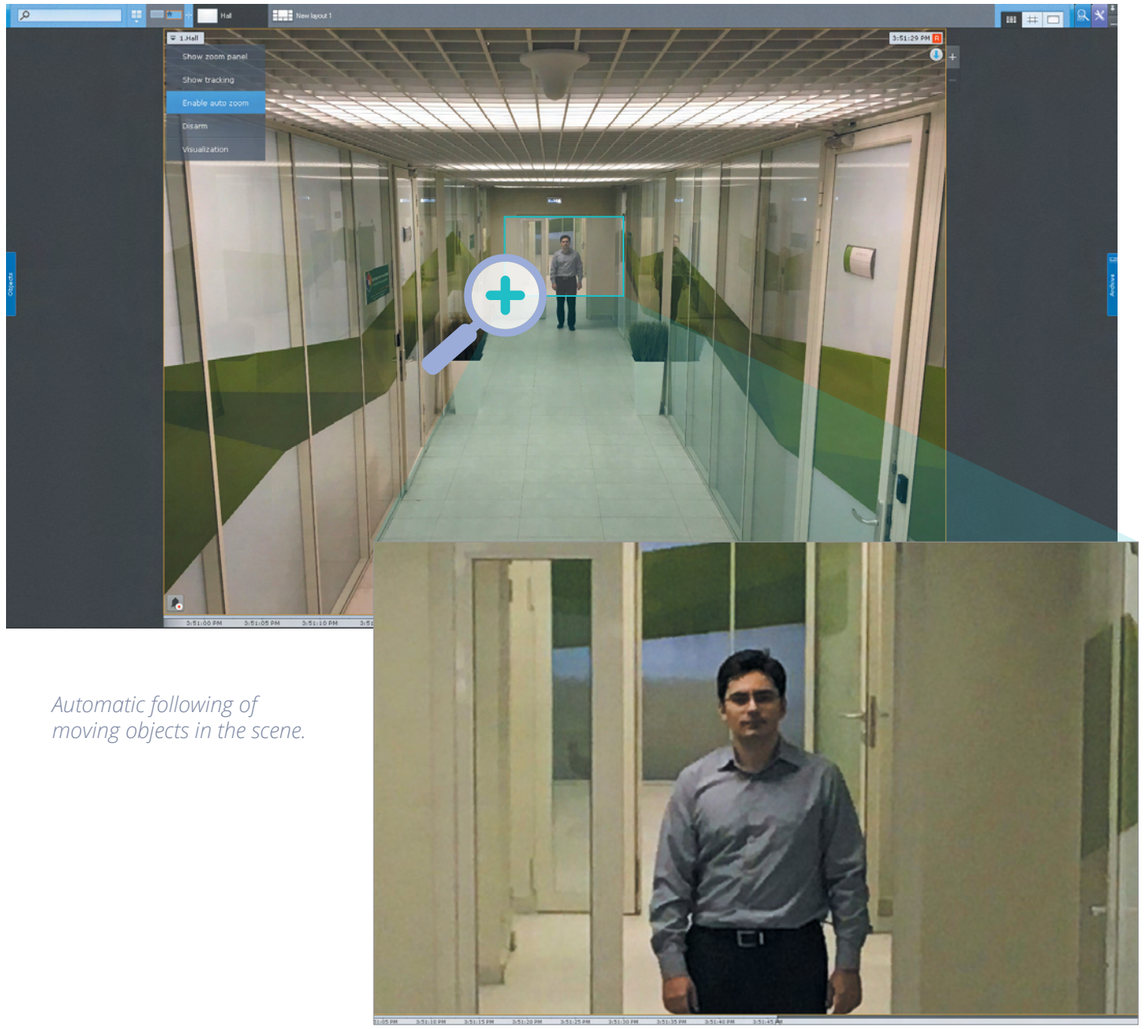
Axxon Next offers a new utility for saving and restoring the configuration of an Axxon domain's servers, all system objects, their parameters and change logs, databases containing user names, passwords and custom layouts. Established backup routines are essential for smooth 24 x 7 operation.

Automatic creation of recovery points makes it easy to roll back the system any configuration logged.

AUTOZOOM

Track and zoom in on moving objects

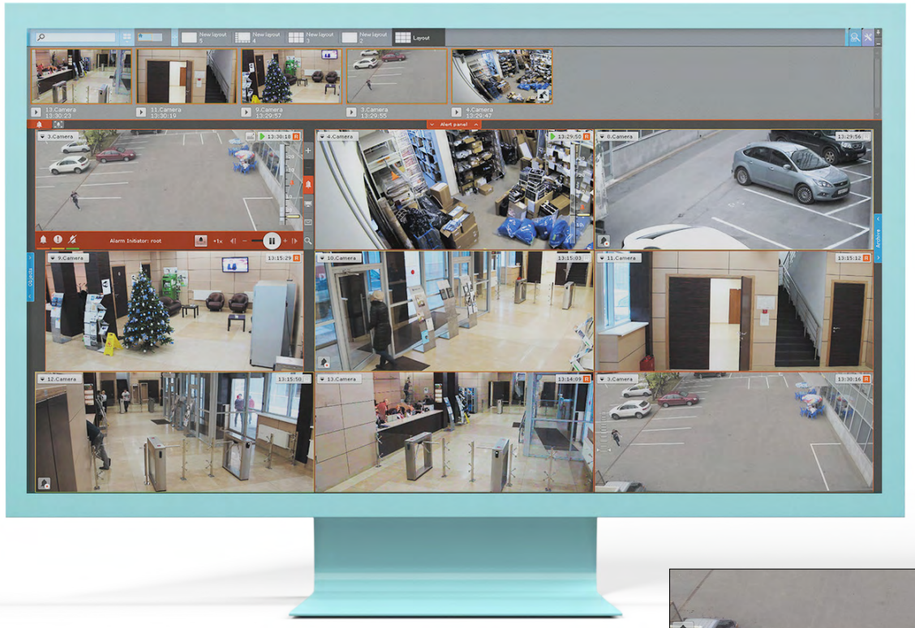
Autozoom allows automatically following objects in the field of view. This feature enlarges the area of the scene in which a moving object is located, and follows the object along as it moves, just like a movie camera does when filming a close-up of an object. Autozoom works with both box cameras (via digital zoom) and fisheye cameras. With fisheye cameras, Autozoom acts like an ePTZ camera that tracks the moving object. If there are several objects moving in the scene simultaneously, zoom is adjusted so that all objects fit in the frame. If there are no moving objects in the frame, the scene is displayed in its entirety, as if Autozoom is disabled.



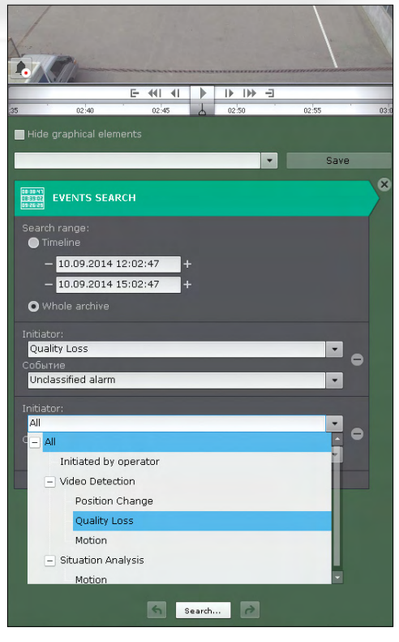
Automatic following of moving objects in the scene.

NEW SLICK USER INTERFACE

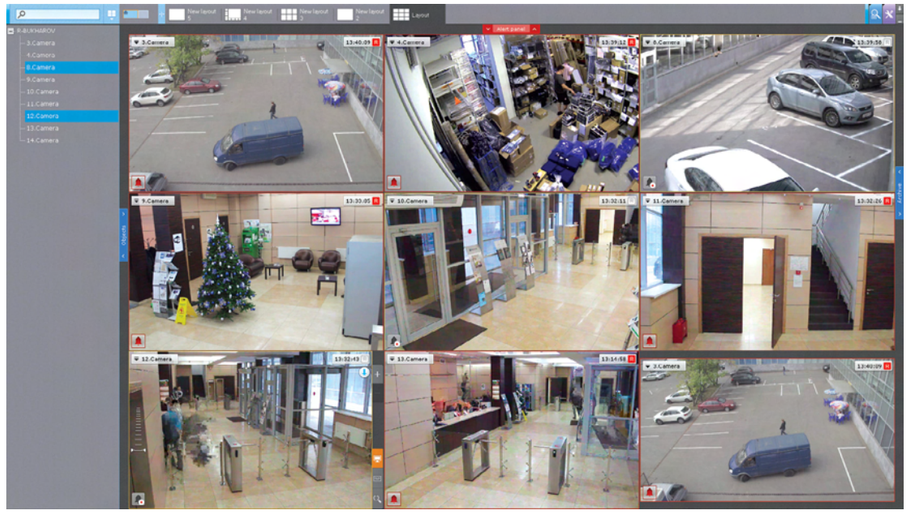
One of the traditional strengths of Axxon Next has always been ease of configuration combined with system manageability. Version 4 refines the interface to make video surveillance accessible, transparent, and manageable as never before.



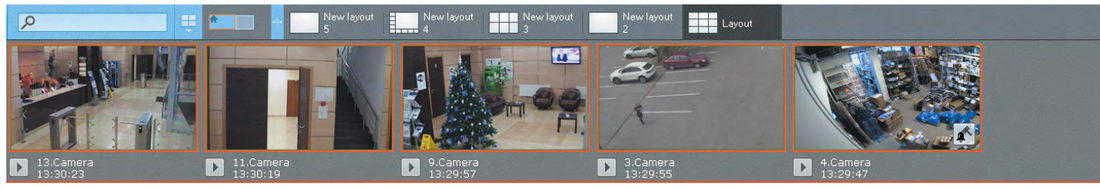
- **The new Layouts Panel** is more functional, compact, and attractively designed.
- **Dialog Board** panel displays messages about events matching user-specified filter criteria. Specified text and reaction buttons are displayed as well.
- **Web Board** allows displaying web pages in Axxon Next layouts. This can be useful, for example, for displaying camera settings or third-party web interfaces.
- New mode for editing of the layout list, in which users can remove and reorder layouts. **The archive search interface** has been redesigned. Criteria for all search types are now specified in a consistent, concise way.
- **Convenient selection of archive for video playback.** If a camera is recording to multiple archives, the user can select which archive to use for playback.
- **Switch all cameras in current layout to Archive mode now in just one click, by using a special shortcut.**
- **The new interface in the auto-discovery wizard** offers a convenient way to manage camera connections. The new interface allows for easy creation and configuration of video archives.



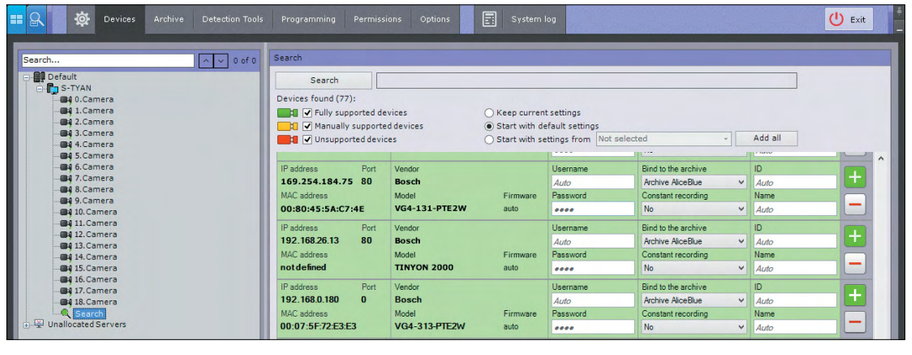
The new Objects Panel contains a list of video cameras belonging to all Axxon-domain servers which are accessible for a current user.



- **The new Alarms Panel** is implemented as a drop-down resizable window (and can be expanded to full screen). The alarms panel displays video thumbnails of recent alarms that require operator attention. Advantages of the new panel include customization of the size of the panel and alarm thumbnails, based on the number of events to be displayed. In addition to current (unclassified) alarm events, the panel allows viewing previously processed alarms.

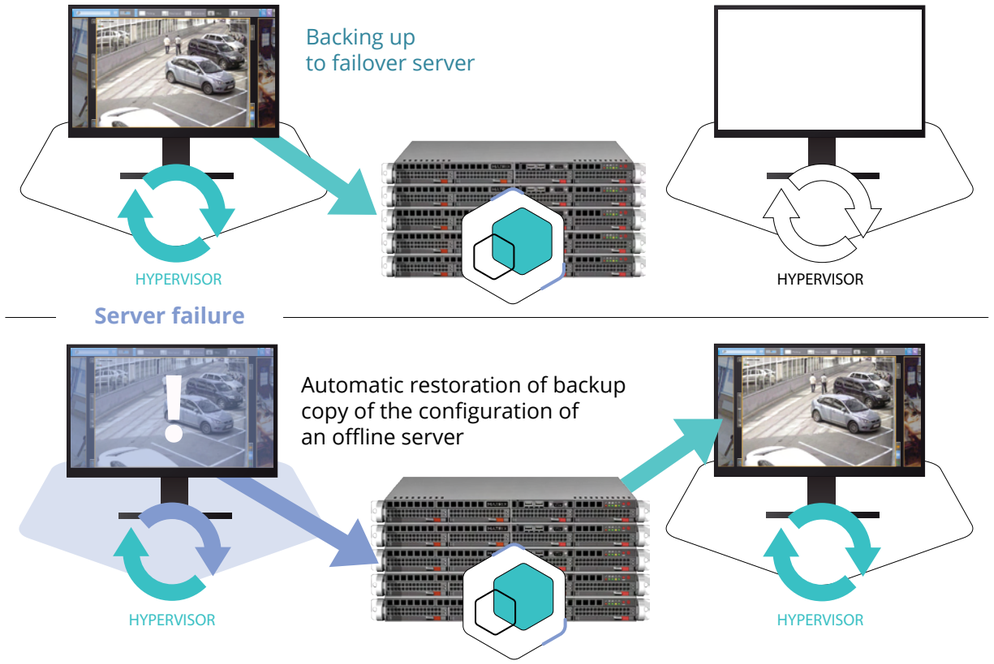


- **The new look of the IP Device Discovery Wizard** offers a better experience with bulk camera addition and configuration. The new interface allows for easy creation and configuration of video archives.



FAILOVER

Maximum VMS redundancy



A server can be selected during system configuration to act as a hot standby in case of failure of a main server. The failover server automatically steps in, performing all the functions previously handled by the hardware that is temporarily off-line or malfunctioning. A special hypervisor service monitors the health of all servers in a domain.

NETWORK ARCHIVES

Video archiving has become even more reliable in Axxon Next 4. **Video recording to NAS: video storage can be hosted on a local server disk or network disk.** To use NAS storage, specify the relevant network path when creating an archive or select a disk in the system.

DATA REPLICATION

Replication of recorded video — safe, centralized storage of security footage

Recorded video can be duplicated from the server on which the video is stored. With replication, video, audio and metadata is copied from one (or several) video archives to another, user-specified archive. Replication can be performed in two ways: either automatic sync of all archive data or manual selection of a particular archive fragment for its copying. This offers a failsafe option for long-term video storage.

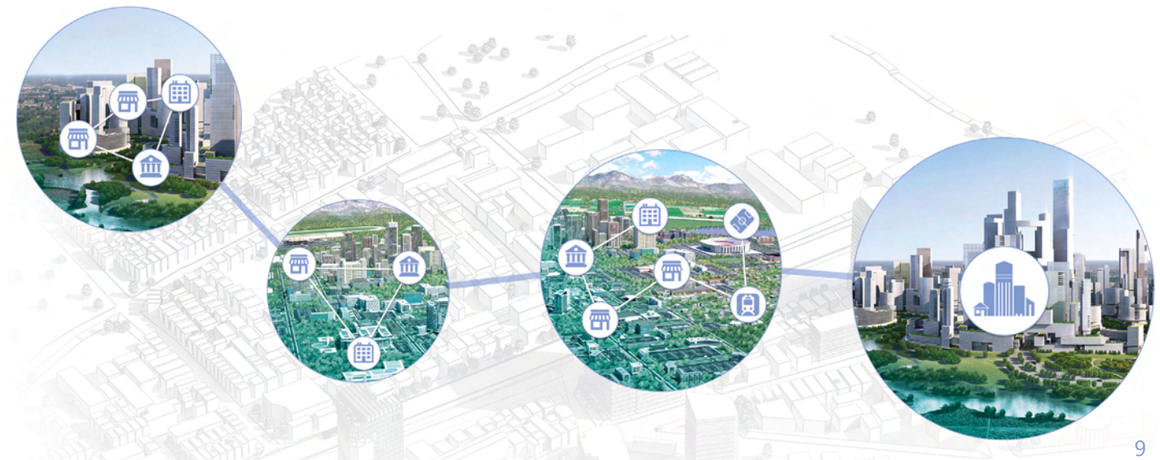
CROSS-SYSTEM CLIENT

More options for security systems management

Cross-System Client empowers operators or administrators to connect from a single client workstation to multiple surveillance servers on different domains that are not part of the same system. All settings and cameras associated with these servers are consolidated in a single convenient view.

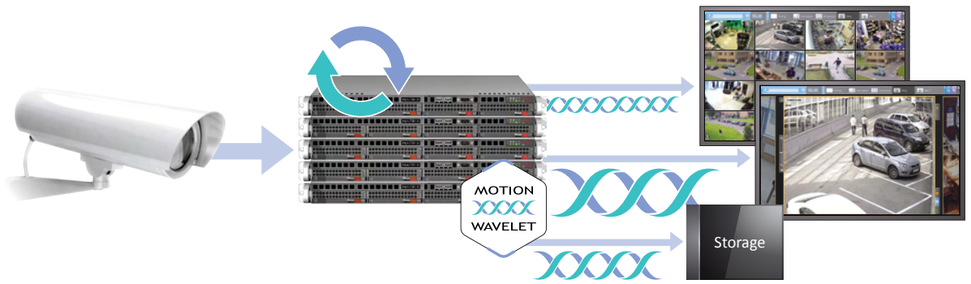
So operators can access multiple independent surveillance systems simultaneously, even if the customer cannot or does not want to combine these systems. This is particularly useful at geographically distributed sites or a large number of facilities, when bulk configurations are practical. This feature may come in handy for retail chains and gas station networks. Now the customer does not have to create a complex distributed configuration that, combines all the servers in a single Axxon domain.

Thanks to this capability, operators can make use of all system functions and, as necessary, configure remote surveillance systems from their workstation without needing to connect to each server.



MOTION WAVELET TRANSCODING

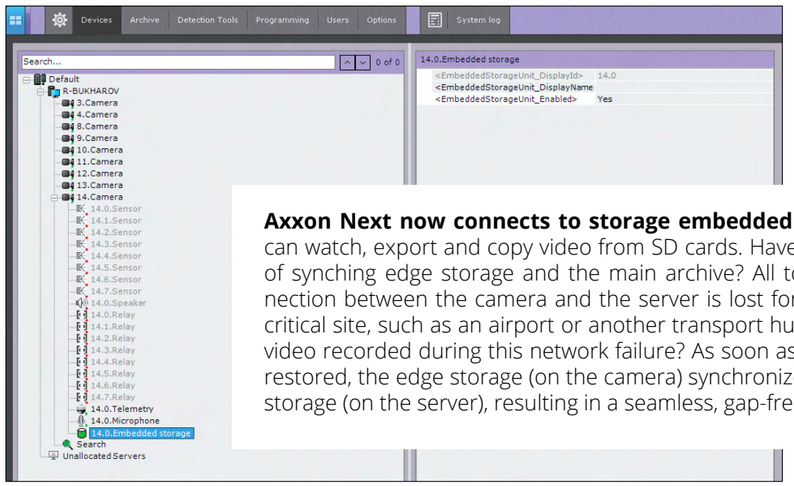
Version 4 adds support for recompressing and saving video in Motion Wavelet format, which allows for greater flexibility in selecting the quality for client-requested video based on current conditions. GreenStream now offers a third stream with Motion Wavelet video, which changes to suit current network conditions and client resolution requirements.



Motion Wavelet is an efficient video codec based on wavelet conversion, providing more flexible selection of the quality of video to stream to remote clients. It is best used with with **GreenStream**.

GreenStream saves bandwidth and client CPU resources. The GreenStream feature automatically chooses a video stream from the server for a client depending on the resolution at which the video is currently displayed on the client.

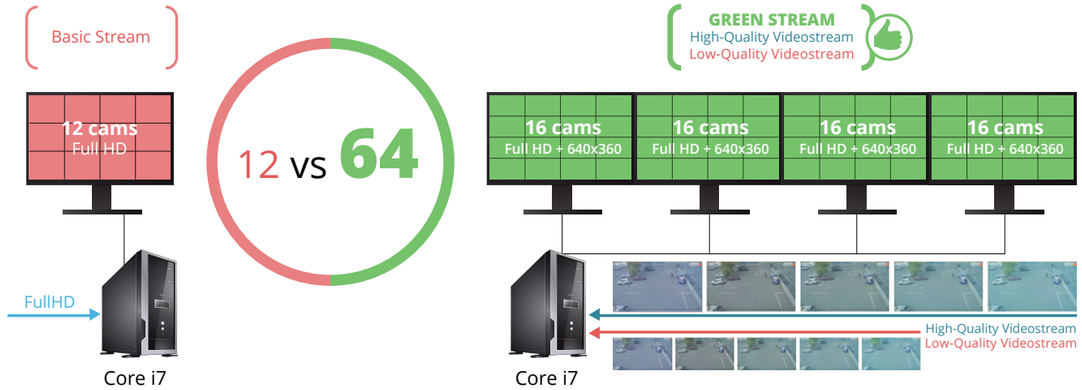
SUPPORT FOR ON-CAMERA STORAGE



Axxon Next now connects to storage embedded in cameras. You can watch, export and copy video from SD cards. Have you ever thought of synching edge storage and the main archive? All too often, the connection between the camera and the server is lost for a short time at a critical site, such as an airport or another transport hub. What about the video recorded during this network failure? As soon as the connection is restored, the edge storage (on the camera) synchronizes with the central storage (on the server), resulting in a seamless, gap-free video recording.

GREENSTREAM

Save bandwidth and client CPU resources

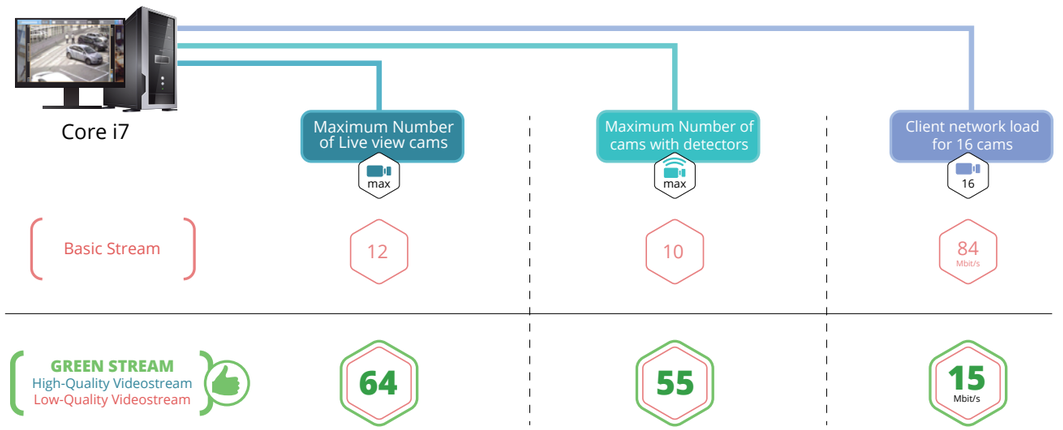


The GreenStream feature automatically chooses a video stream from a camera to the server, and then to the client, depending on the resolution at which the video is currently displayed on the client.

Many modern IP cameras are capable of multistreaming. The streams can be of different resolutions and frame rates, or even be compressed in different codecs. At the same time, remote monitoring workstations do not always show camera feeds at full resolution. If a client has a screen resolution of 1920x1080 pixels and it has a 4x3 camera layout, the resolution of each camera's window is only 480x360 pixels. So there is no need to burden the network by transmitting all these camera streams at full resolution and then consume CPU resources by decoding the video and rescaling it to fit the 480x360 resolution in each cell.

GreenStream automatically selects the smallest stream with sufficient resolution for display. And if the user decides to bring the camera feed to full screen, a high-resolution stream is automatically selected instead.

In addition, you can lock the stream that is transmitted to the client; the stream will not be calibrated to the client's screen resolution. GreenStream is a massive bandwidth-saver for lower capacity networks or asymmetric connections.

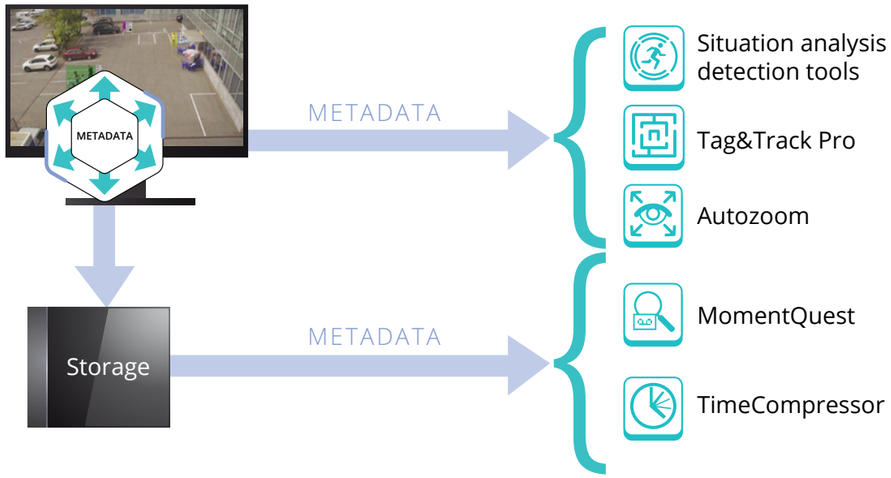


IP DEVICES METADATA SUPPORT

Video analytic tools are available and unique — and making security systems more effective than ever

Metadata is generated on board cameras themselves, which eliminates the need to de-compress video on the server side. The CPU burden on the video server is significantly reduced, which allows the server to handle more video streams.

Thanks to free CPU, Axxon Next's power video analytics can get a foothold on your machines:



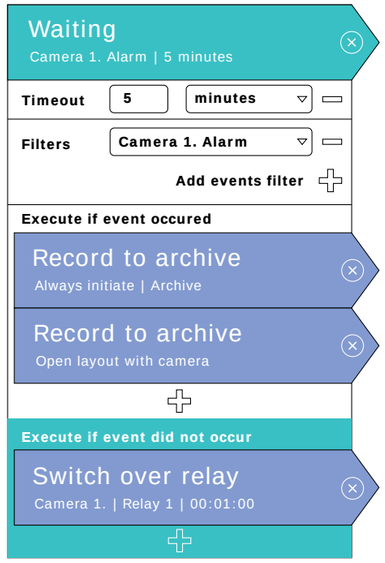
Situation analysis detection tools — a bunch of detection tools used to analyze movements in a came-ra's field of view. This includes abandoned object and line crossing detection.

MomentQuest — generate metadata at the moment of recording for fast, precise analysis. To find an event of interest, just enter the necessary criteria: motion in zones, crossing of a line, size, color, direction, speed of object motion, and more. Thumbnails of relevant video are shown in seconds.

TimeCompressor — get quick visual summaries of all moving objects in a scene. A short video clip shows all VMD events with true-to-life speed of objects. Click an object of interest to jump to the relevant source video.

Autozoom — easily monitor moving objects with automatic digital zoom. Autozoom shows close-in video for parts of the FoV that contain a moving object and follows it as it moves, just as a movie camera does when doing a close-up shot.

Tag&Track Pro — lock on to and track moving objects, simultaneously getting the "big picture" of everything happening at a protected site while obtaining detailed imagery of the objects moving around it *(more information on page 11)*.



MACROS

The new version of Axxon Next supports flexible configuration of complex system reactions to any specified set of events. **The user can create a macro that automatically performs an unlimited number of actions in the system using IF... THEN logic.**

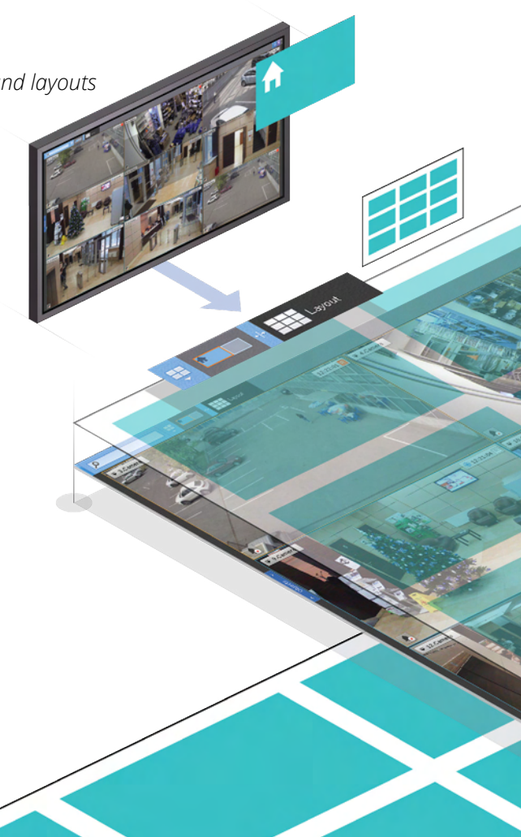
Macros allow programming algorithms to control reactions to particular events at the system and device level.

VIDEOWALL

Effective management of video walls and layouts at large distributed sites

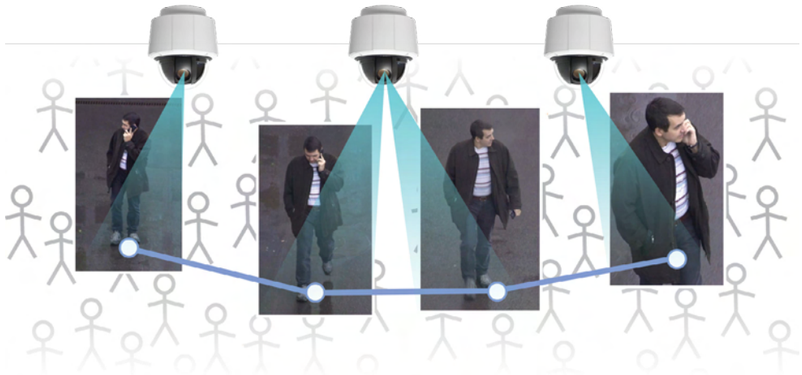
With this technology, operators can select a layout that has been created in the system and send it to the monitor of any client computer currently connected to any video surveillance server. Videowall is incredibly useful for managing extensive geographically complex sites with large monitoring hubs that require multilevel video monitoring. Sending a layout to an operator allows drawing that person's attention to an event captured by one of the cameras in the layout. Similarly, an event can be shown to all operators by sending the relevant layout to a video wall.

Users now have new features for video walls as well. It is now possible to designate any client computer with sufficient monitors as a video wall. Any user with sufficient access rights can manage the video wall. A remote client connected to any domain server can be used. So the video wall is always functional and operators do not have to spend time on reconfiguration.



TAG&TRACK PRO

Stay on top of shifting conditions with many moving objects



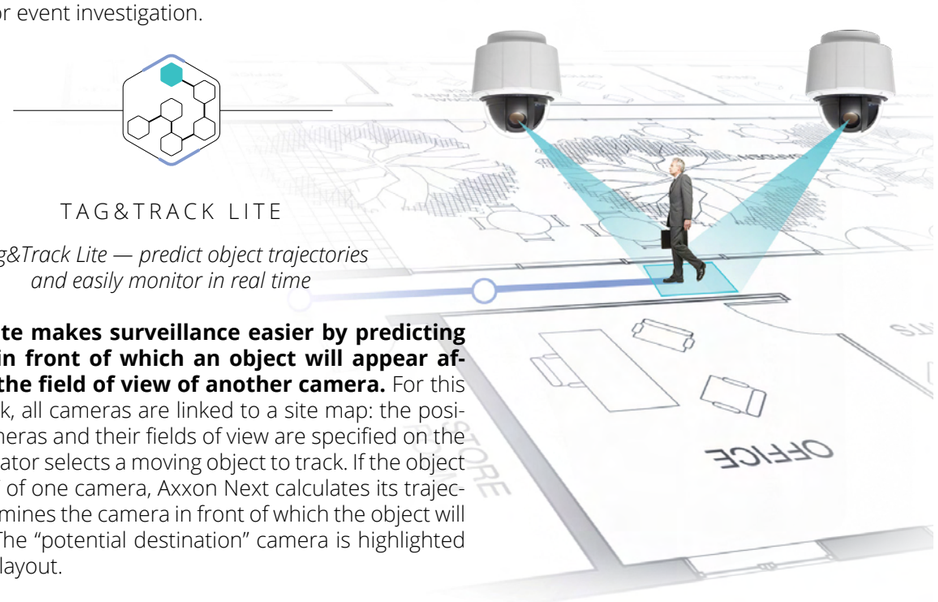
The new version of Axxon Next allows tracking multiple moving objects simultaneously with the help of Tag&Track Pro.

Tag&Track Pro allows simultaneously getting the "big picture" of everything happening at a protected site while obtaining detailed imagery of the objects moving around it, by locking onto them and continuing to track them across multiple cameras. Both sets of images can be recorded for later use, which is important for event investigation.

The feature requires at least two cameras: one is a panoramic camera, the second one a PTZ camera. The panoramic camera is configured with a tracker, which detects objects moving in the frame and calculates their coordinates. Several panoramic cameras can be linked with a single PTZ unit.

TAG&TRACK LITE

Tag&Track Lite — predict object trajectories and easily monitor in real time

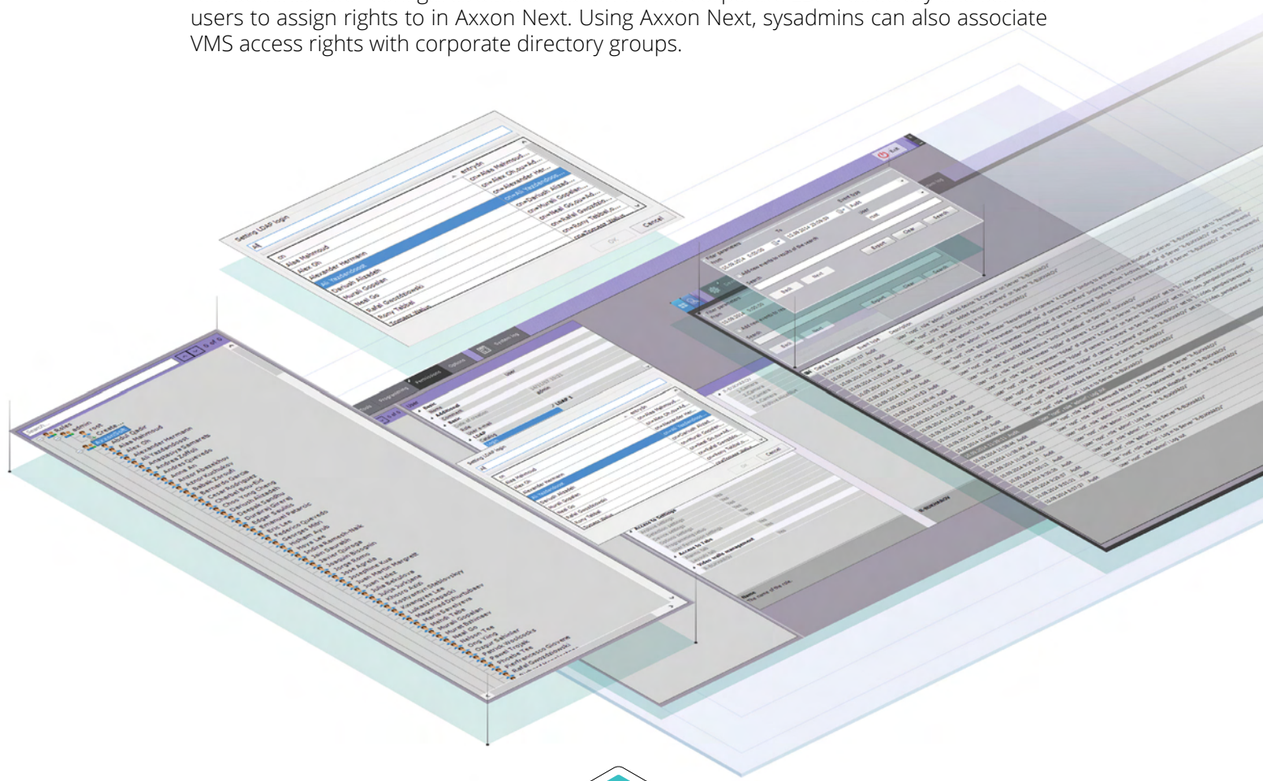


Tag&Track Lite makes surveillance easier by predicting the camera in front of which an object will appear after it leaves the field of view of another camera. For this feature to work, all cameras are linked to a site map: the position of the cameras and their fields of view are specified on the map. The operator selects a moving object to track. If the object leaves the FoV of one camera, Axxon Next calculates its trajectory and determines the camera in front of which the object will appear next. The "potential destination" camera is highlighted in the current layout.

LDAP AUTHENTICATION

Integration with existing enterprise network services

This feature allows deduplicating user administration tasks for sysadmins at large companies. Operators can log in to a surveillance system by using the standard Axxon Next users and rights system or by entering their domain credentials. The system administrator configures authentication via the corporate LDAP directory and selects users to assign rights to in Axxon Next. Using Axxon Next, sysadmins can also associate VMS access rights with corporate directory groups.



UDP VIDEO STREAMING BETWEEN SERVERS AND REMOTE COMPUTERS

The new version of Axxon Next features a whole range of tools for reducing bandwidth consumption and making security systems more efficient.

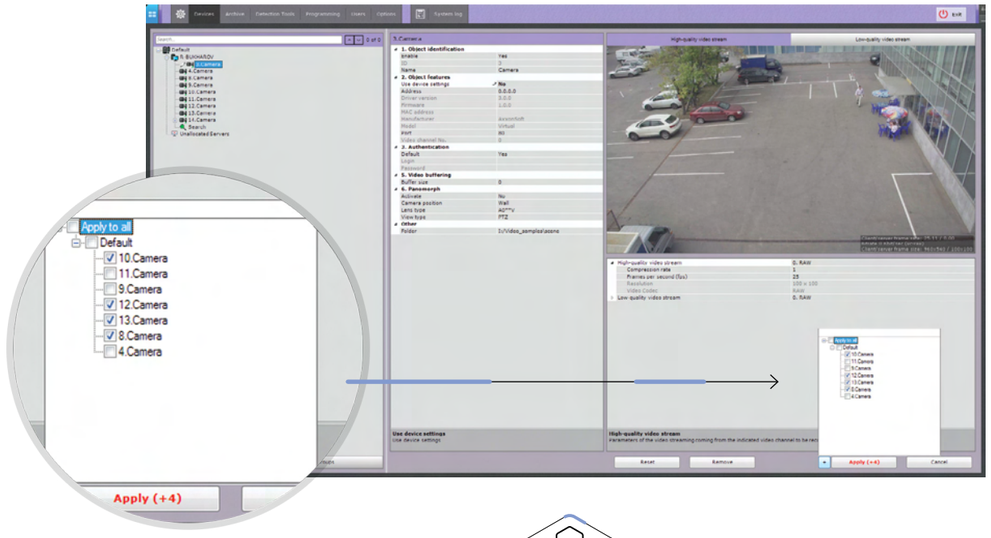
Live video can be streamed from a server to remote computers via UDP. Multicasting is supported as well. Multicasting frees up network capacity and optimizes resource use.

BULK CONFIGURATION OF CAMERAS

Save configuration time at large sites

Bulk configuration for a large number of cameras can be a time-intensive task, especially at large sites. So why can't you configure them as a group, making changes to multiple selected cameras at the same time? With Axxon Next, now you can. Changes to cameras of the same product line can be applied in a single click.

Configure one camera as needed and then, in the list, select the other cameras of the same line that you want to configure. Just click Apply! Changes will be automatically saved for all the selected cameras.



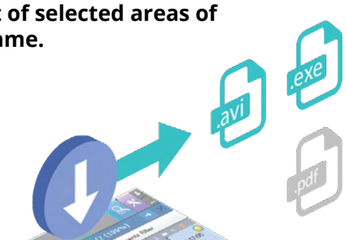
EXTERNAL EVENT SUPPORT

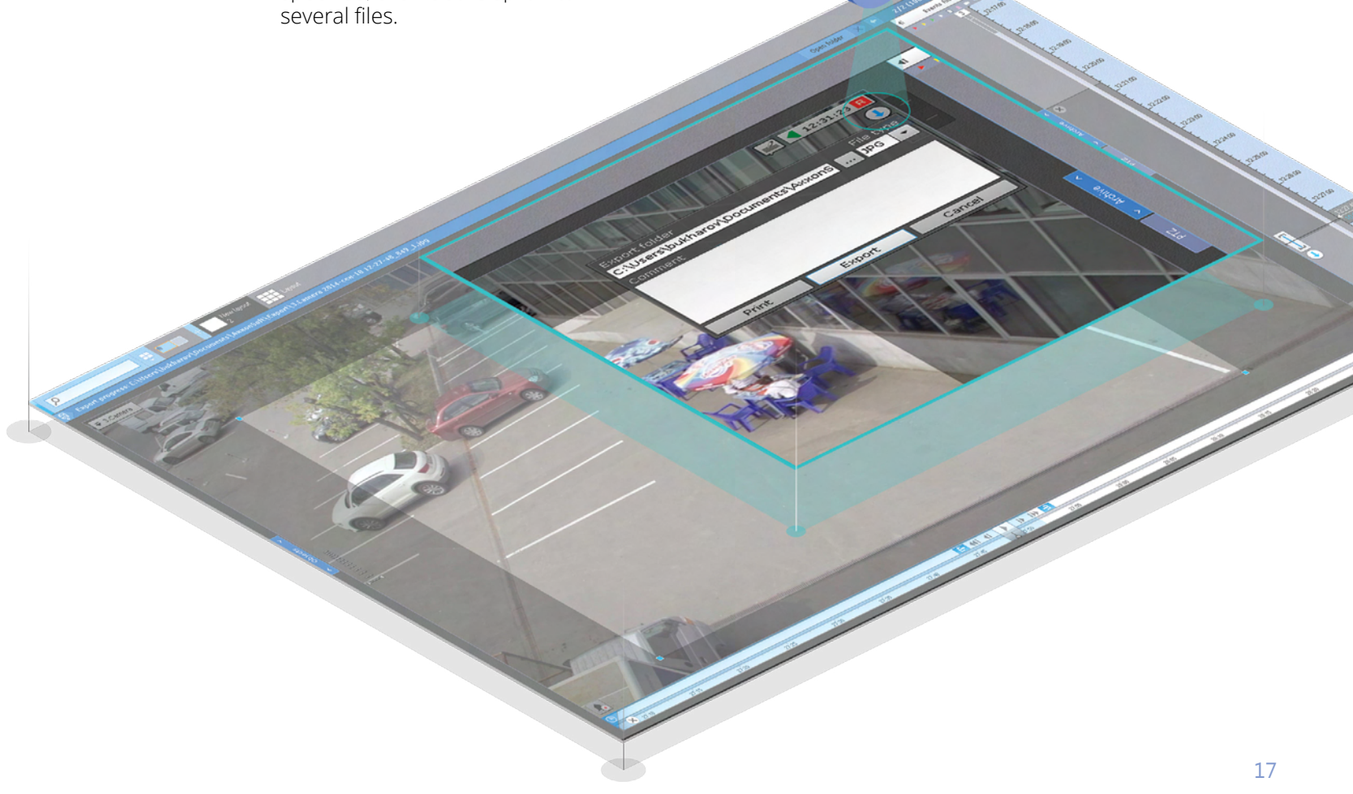
Axxon Next includes a number of new features for getting events from external devices and systems: cash registers / POS devices, access control devices, third-party software, and more. These capabilities allow quickly and simply integrating the product with third-party systems. Axxon Next can accept external events, save them to its database, cross-reference events with recorded video, search events by text, display events in real time in a separate pane, or show events as captions on top of video.

NEW EXPORT FUNCTIONS

Enhanced export features for recorded video in Axxon Next 4:

- **Instant export:** Images and video can now be exported from Live Video mode or from Archive mode with just a single click. Setting a time interval is optional — if no limit is set, export will continue until the user stops it.
- **Video export to .avi and .exe:** Play back exported video on any computer using popular video players.
- **Snapshot export in .pdf** with configurable export templates. Users can select the position of the frame in the PDF, add comments and dates, and select a font and background image.
- **Configurable size limit on exported video files:** If the size of the video to be exported exceeds the maximum value specified, the video is split into several files.
- **Frame dropping of exported video.**
- **Privacy masking:** before exporting, the user can select areas that will be masked (pixelated) in the final video or image.
- **Export of partial frames** (including dewarped fisheye frames).
- **Export of user comments about video.**
- **Export of selected areas of the frame.**





INTERACTIVE 3D-MAP

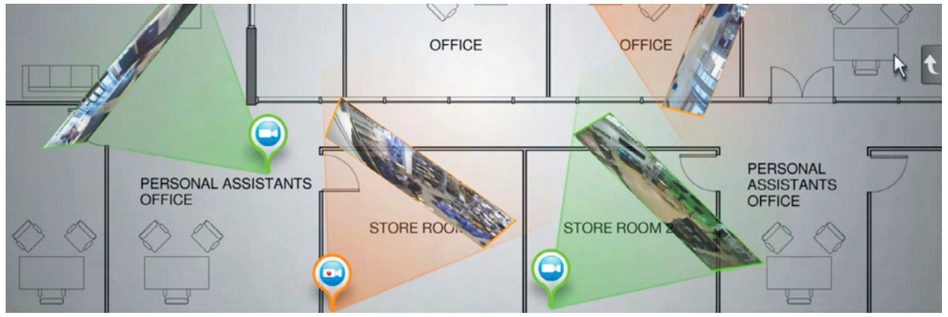
Visual overview of where your cameras on a site map

The interactive 3D-map is a set of ordinary raster blueprints for a site, placed on the screen under viewing tiles, which are displayed in a lifelike projection. On the map you can indicate the location of the cameras included in the layout, as well as mark sensors and detectors. Click a viewing tile to immediately see where the relevant camera is located on the map.

The interactive map lets you instantly find the location of an event recorded on a camera. This is particularly useful when cameras display footage of similar, hard-to-distinguish areas (such as visually identical building hallways).

IMMERSION MODE

See how motion of objects in-frame is reflected as movement on a site map



Immersion mode represents a leap beyond the standard functionality of the interactive map. In this mode, semi-transparent video is overlaid above a map which remains partially visible. This allows easily seeing where an object is located and where it is going. For closer correspondence of video renderings to the map, you can match points in the video to points on the map. Then the map in immersion mode will be displayed so that the points in the video and on the map coincide.

When using immersion mode with panoramic cameras, users feel as if they are observing from inside the camera dome. The screen shows the part of the virtual dome that is located directly in front of the observer. The «in-dome observer» can turn by moving parts of the image off-screen, which is equivalent to ePTZ use in immersion mode.

If the field of view in immersion mode shows a part of a map for which a camera icon has been added, click the icon to immerse yourself in that camera's view. Thus operators can track an object's movement across cameras without leaving immersion mode.

HARDWARE ACCELERATED VIDEO DECODING

Hardware Accelerated Video Decoding offloads video decoding to a dedicated hardware GPU, providing faster results and reducing the video footprint on server CPU performance. Since Hardware Accelerated Video Decoding supports Full HD and even higher-resolution video, servers can handle more concurrent video streams at improved resolution. These performance gains also allow driving additional analytic capabilities in Axxon Next. Server capacity (as measured by number of cameras) as well as video decoding times improve dramatically as a result.

GPU-accelerated computing offers very high application performance by offloading compute-intensive portions of the application to the GPU — applications simply run significantly faster. Also, support for Hardware Accelerated Video Decoding is particularly important given the ongoing megapixel race among IP camera manufacturers. Thanks to the CPU capacity freed up by this technology, more cameras can be connected to a single server, reducing hardware expenses and support issues.

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