

**WatchNET**<sup>®</sup>

SECURITY SINCE 2000



**NetFLOW-EC**  
Enterprise Class Software

**Enterprise Class Security Solution**

PSIM: Integrated Security System with Distributed Architecture

## NetFlow-EC PSIM

Netflow-EC is an ultimate management platform for Physical Security Information Management system able to support integrated security systems of any level of complexity. With Netflow-EC, it is possible to combine fire/security alarms, perimeter security, access control, video surveillance, audio detection, and various industry-specific solutions (Retail, ANPR, ATM, Face Recognition and Video Analytics ). The open architecture makes it possible to add integration for other associated security & safety systems. Configuration, management, and monitoring of systems can be performed from a control center or from remote workstations.

### **Netflow-EC allows automating system management tasks, including with user-scriptable IF...THEN event reactions.**

A single script can involve multiple systems (fire/security alarms, access control, video surveillance, and more). This makes the security process seamless and more efficient than ever.

WatchNET integrates video surveillance, access control, fire protection and other specialized systems into an single information environment which supports interaction of all subsystems, intellectual information analysis and automatic control.

Netflow-EC system that's intelligent enough to interpret people, actions and events and enforces fast, automatic actions when necessary. A system that helps employees become more efficient, more vigilant, and more effective in reducing and preventing fraud, vandalism, accidents, and other issues.

An ultimate system have all these with extreme Simplicity, Flexibility and Scalability.

### **NetFlow-EC Applications:**

- Video Surveillance with audio recording and Video Analytics
- Access Control Integration
- Fire/Security Alarm System Integration
- Perimeter Security
- Face and License Plate Recognition
- Point-of-Sale / Retail Monitoring
- ATM network protection
- Comprehensive system monitoring
- Automatic recording of traffic violations
- Automatic number plate/license plate recognition for cars, railcars and cargo containers.

### **NetFlow-EC Overview:**

#### **HOW IT WORKS**

Netflow-EC software modules are installed on one or more computers, creating Netflow-EC video servers. Different hardware is connected to these servers. Servers manage hardware and perform all security system functions. A single system can contain anywhere from 1 to an infinite number of servers. Configuration, management, and monitoring of the system is performed on operator workstations, which can be either dedicated computers or the servers themselves. Monitoring can also be performed via the Internet, from a web browser, AppleTV or mobile app on iOS and Android devices.

Servers and workstations communicate using the standard TCP/IP protocol, over a LAN (local area network), WAN (wide area network), Wi-Fi, etc. Thanks to this, the geographic location of equipment doesn't matter. No matter where the modules are located physically, they communicate over the network.

Netflow-EC-powered security infrastructure allows securing large areas and ensuring dependable protection of complicated, geographically distributed sites. With Netflow-EC, it is even possible to combine several sites into a single system, monitoring and managing all facilities from a master control center.

## OPEN Architecture of NetFlow-EC PSIM

Having an open platform allows both integrating new hardware and creating new solutions based on Netflow-EC. All of this can be done by WatchNET or by our partners, independent software developers. WatchNET offers a Software Development Kit (SKD/API) for this purpose.

## Integration

Netflow-EC fits together all the pieces of the security puzzle. The system architecture is mix-and-match friendly: simultaneously manage all equipment with full use of all hardware-supported features, regardless of the equipment type, manufacturer, location, or specifications. Best of all, the entire range of hardware from diverse manufacturers is wrapped up in the centralized, user-friendly Netflow-EC interface.

## IP INTEGRATION: HYBRID SYSTEMS

Netflow-EC supports over 8,500 models of IP cameras and IP video servers, including approximately 2,750 IP devices integrated via proprietary manufacturer interfaces. Since many video surveillance systems still rely on pre-IP CCTV hardware, Netflow-EC goes the extra mile to make analog and IP equipment equally at home, even on the same system. This gives users the freedom to choose the equipment with best features and price, as well as gradually upgrade analog CCTV with IP cameras unit-by-unit without massive outlays or forced incompatibilities.

## DRIVERS PACK

Support for third-party IP cameras is implemented in Netflow-EC thanks to the special Drivers Pack, which is regularly updated to add support for new devices. New versions of Drivers Pack can be downloaded free of charge from the WatchNET website and dropped (hot-installed) onto an existing Netflow-EC installation. Since Drivers Pack is independent of the Netflow-EC release cycle, support for new IP devices can be added on a frequent basis, without needing to reinstall Netflow-EC on system servers. Drivers Pack updates are released approximately six times per year, each release adding support for around 50 new IP devices

## INDUSTRY STANDARDS

NetFlow-EC is compliant with all key industry standards: ONVIF device connection protocol, GB/T28181 and RTSP, and the widely used MJPEG, MPEG-4, JPEG2000, H.264, and H.265 codecs. NetFlow-EC also supports General Device protocols from such brands as WatchNET, Axis, Bosch, Panasonic, Samsung, Sony and VIVOTEK. NetFlow-EC also uses its own Motion Wavelet codec, with powerful features for efficiently adapting video streams based on bandwidth loads and CPU capacity.

## ONVIF

WatchNET is a member of ONVIF (Open Network Video Interface Forum), an organization dedicated to developing and popularizing interface standards for IP security and surveillance systems. As a contributing member of ONVIF, WatchNET actively participates in shaping the direction of the industry.

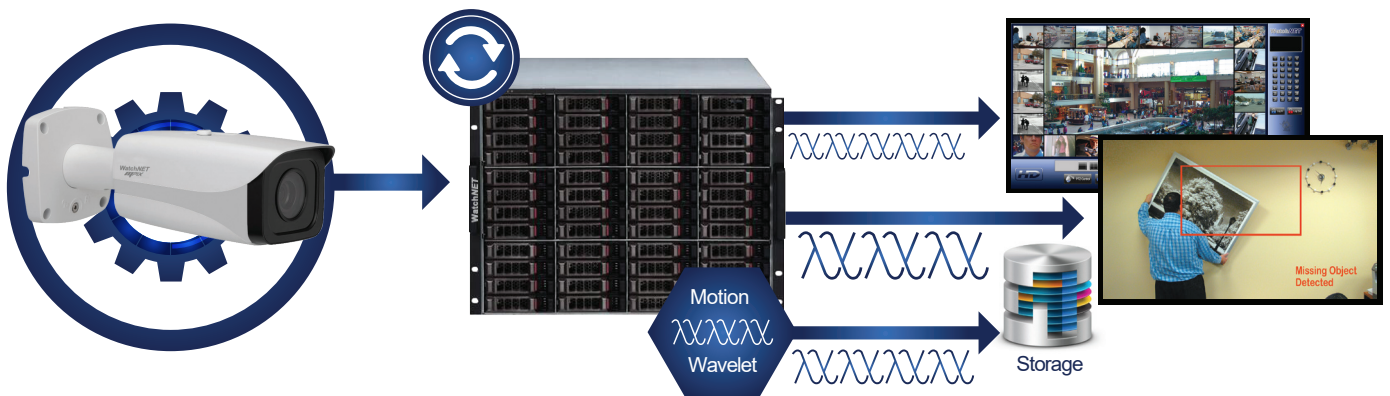
The importance of an open protocol for data exchange, one that is standard between manufacturers and devices, can hardly be overstated. This protocol dramatically simplifies integration of new IP devices and implementation of new functionality. ONVIF-compliant IP devices can be plugged in to an Intellect system and used as-is, without any device-specific integration required. Simply connect the device to a TCP/IP network and add it to the system using the Intellect wizard.

Intellect is the first PSIM in the world to make it to the ONVIF Profile G compatibility. ONVIF Profile G defines the requirements for onboard video storage and retrieval.

## VIDEO ANALYTICS

Rich tools for video analytics in Intellect automate video surveillance and reduce the room for human error inherent to traditional methods. Over 10 video detection tools allow configuring video management systems to automatically recognize and monitor situations of concern. Forensic Search makes it possible to find video nearly instantly based on user-set criteria regarding object behavior in the field of view. Compared to the traditional method – rewinding hours of video to find an event of interest – this is a massive timesaver. Intellect also supports edge (on-camera) video analytics and specialized video analytics devices. Using situational analytics, Intellect can create an unlimited number of detection tools.

## MOTION WAVELET CODEC



NetFlow-EC is a remarkably advanced distributed physical security information management (PSIM) software platform that combines intelligent video analytics, universal IP connectivity and event-driven automation capabilities in a single environment.

The purpose of NetFlow-EC is to help your business attain a higher level of security than ever before — with less cost, and less effort.

NetFlow-EC PSIM software platform succeeds in giving you these results because it has the built-in intelligence to recognize events as they occur, and the ability to respond appropriately. It also has the capability to distil and present information to support smart, timely decision-making. It achieves this by aggregating data from a wide range of devices and systems, analyzing data more intelligently, and automating processes that could never be automated before.

Because it's built on an object-oriented architecture, the software is easy to install, use and manage and can be easily scaled to match your changing requirements. It's extremely flexible, so you get all the functionality and capabilities you need without paying for features you don't want.

And, because NetFlow-EC is an integrated IP-based platform, you increase the value of your existing systems and avoid the cost and effort of replacing legacy systems. As a result, you can better protect people and facilities, prevent asset loss and damage, and improve business efficiency, all at the same time.

# 1) Specifications

Functionality	NetflowEC Intellect Enterprise
Total number of servers in the distributed system	Unlimited
Total number of cameras in the system	Unlimited
Total number of cameras per server	Unlimited
Total number of audio channels in the system	Unlimited
Total number of audio channels per server	Unlimited
Number of remote clients	Unlimited
Number of servers which simultaneously transmit video images to a client	Unlimited
Number of camera views displayed simultaneously on a client's screen	Unlimited
Number of PTZ devices used	Unlimited
x64 version	Available for video.run and vmda.run
Synchronous playback of video footage by several cameras	Supported
Playback with fast or slow motion in forward or reverse	Supported
Video compression algorithms	<ul style="list-style-type: none"> <li>• MJPEG</li> <li>• Motion Wavelet</li> </ul>
Video decompression algorithms	<ul style="list-style-type: none"> <li>• MJPEG</li> <li>• Mpeg-4</li> <li>• H.264</li> <li>• H.264 SVC</li> <li>• Motion Wavelet</li> <li>• Mxpeg</li> </ul>
Video export	AVI
Frame export	<ul style="list-style-type: none"> <li>• JPEG</li> <li>• BMP</li> </ul>
Available video image resolutions	Resolutions supported by the video cameras
Hardware video decompression	nVidia CUDA
Taking video directly from a camera for displaying	Supported
Multi-streaming support	Supported
Stream selection for archive recording including different streams for alarm recording and continuous recording	Supported
Stream selection for analytics	Supported
Green Stream	Supported
Archive size	Unlimited
Archive depth limitation	Supported
SolidStore file system	-
Network archiving support	Supported
Edge storage support	Supported
Backup Archiving	Supported
I/O management	Supported
Webserver Monitoring	Supported
Web reports service	Supported
Failover functionality	Supported
Health check functionality	Supported
System restart service	Supported
LDAP support	Users import only
Micro-module architecture	Partially
Launch mode	Server side: service or application Client side: application
OS shell replace	Supported
Alarm notification	<ul style="list-style-type: none"> <li>• SMS</li> </ul>

	<ul style="list-style-type: none"> <li>• Sound</li> <li>• Phone</li> <li>• E-mail</li> </ul>
User management	Multilevel access to system
Events online protocol	Supported
Macros (event management)	Fully featured event management
Scripts (advanced scenario responses)	Supported
Schedules	Supported
2D map	Supported
Scene (frame merge)	Supported
Base video analytics	<ul style="list-style-type: none"> <li>• Motion detection</li> <li>• Changed background</li> <li>• Blind detection</li> <li>• Tampering detection</li> <li>• Image quality loss</li> <li>• Abandoned object</li> <li>• Face capture</li> </ul>
Advanced video analytics	<ul style="list-style-type: none"> <li>• Line crossing</li> <li>• Motion in the area of interest</li> <li>• Loitering</li> <li>• Entrance to the area of interest</li> <li>• Exit from the area of interest</li> <li>• Object appearance in the area of interest</li> <li>• Object disappearance in the area of interest</li> <li>• Stop in the area of interest</li> <li>• Abandoned object</li> </ul>
Embedded video cameras analytics	Supported
Base audio detection	<ul style="list-style-type: none"> <li>• Noise detection</li> <li>• signal detection</li> </ul>
Two-way audio	Supported
Advanced audio detection (Audioanalytics)	<ul style="list-style-type: none"> <li>• Car alarm detection</li> <li>• Glass breakage detection</li> <li>• Aggression detection</li> </ul>
Forensic Search	Supported
Fisheye video dewarping	Supported
Video capture cards support	<ul style="list-style-type: none"> <li>• FS series</li> <li>• FX series</li> <li>• WS series</li> <li>• Stretch series</li> </ul>
IP device support	IP cameras and IP video servers from various manufacturers— more than 1000 devices.
Automated device discovery	Supported
POS integration	<ul style="list-style-type: none"> <li>• Event database integration</li> <li>• Title view</li> <li>• Title search</li> </ul>
Integration with access control and fire alarm systems	Supported
Face recognition	Supported
LPR recognition	Supported
Traffic control	Supported
4-eyes rule for authentication	Supported
iPhone, iPad application	Supported
API/SDK	IIDK

## 2) SMaP: Security Management Platform

The Security Management Platform, or SMaP, is designed for the deployment of industrial scalable, flexible (adaptable) integrated security systems, based on digital video surveillance and audio monitoring systems.

The SMaP shall have the following core functionality:

1. Integration of digital video surveillance and audio monitoring systems with existing data systems, various security equipment, and auxiliary software of other developers, using integrated open interfaces for data exchange.
2. Compatibility with diverse security hardware and data systems, in particular: fire and security alarm and access control systems, video cameras, data analysis systems, and video analytics systems for tracking and recognition of objects (events).
3. Single-source registration and processing of events plus generation of notifications and system responses based on flexible macros.
4. Open programming platform that allows integration with necessary applications through an SDK and complete control over all parts of the subsystem, as well as handling events and sending commands (reactions).
5. Single-source registration and processing of events received from subsystems, plus generation of notifications and system responses based on flexible macros for subsystem reactions.
6. Unlimited capacity for scaling, task-based customization, and reallocation of resources in the event of changes in the number or quality of monitoring tasks with diverse hardware at guarded sites.
7. Support for failover clusters, that ensures the system's operability if a core subsystem component fails.
8. Remote interaction between core components of the subsystem, with automatic replication of internal databases (containing system configuration settings and data about events recorded in the system) that are part of the SMaP.
9. Creation of a single, central database of system settings.
10. Software and hardware monitoring of the functioning of the system's central components.
11. Multilevel hierarchical mapping of the guarded site on an interactive map, to provide:
  - 11.1. Automatic switching and recursive search for relationships on the map
  - 11.2. Active graphical representations of devices, allowing for device control via a functional shortcut menu
12. Event log maintenance
13. Support for generating reports based on events
14. Automatic notifications by:
  - 14.1. SMS (Short Message Service)
  - 14.2. Email
  - 14.3. V-dial auto dialing service
  - 14.4. Audible/voice notification
15. Centralized administration (Administrator Workstation) of system components and user rights/privileges.
16. The system shall be highly configurable, allowing for the basic functionality of the SMaP to be expanded by means of custom programs and macros.
17. It shall be possible to switch the localization language of the system interface.
18. Modules developed specially for 64-bit operating systems shall be supported.

### 3) Main SMaP subsystems

The SMaP shall consist of the following subsystems:

1. Video/audio surveillance subsystem.
2. Monitoring and access control subsystem.
3. Fire and intrusion alarm subsystem.
4. Perimeter security subsystem.
5. POS (monitoring of cash desk transactions) subsystem.
6. Recognition of vehicle license plate numbers.
7. Facial recognition subsystem.
8. Subsystem for recognition of registration numbers on rail cars and tank cars.
9. ATM Protection Subsystem.
10. Face Recognition Subsystem.
11. Time and Attendance Subsystem.
12. Visitor Management Subsystem.
13. Web Report Subsystem.

### 4 SMaP Components

#### 4.1 Server

1. The Server shall receive and process video signals arriving from analog and IP video cameras. It provides several options: audio signal receipt and processing, PTZ unit control, security services, and custom auto functions (macro commands and scripts).
2. The Server shall record video through Motion Wavelet, Motion JPEG, MPEG-4, and H.264 video compression, in the following modes:
  - 2.1. continuously
  - 2.2. real time (for specified events)
  - 2.3. alarm recording triggered by an alarm event or by the Operator's command, with pre - history/post-history (pre-event recording/post-event recording) support
3. The Server shall support the ONVIF standard.
4. The Server shall support recording video archives to local disks.
5. The Server shall support recording video archives to network disks.
6. The Server shall support recording video archives to USB drives.
7. The Server shall guarantee the capacity to compress camera video streams for storage on the Archive Server (intra-frame coding for Motion Wavelet and MJPEG and inter-frame coding for H.264 and MPEG4).
8. The Server shall allow Clients to view video recordings, with support for searching the video archive by time, event, and video camera.
9. The Server shall allow Clients to view recorded video from multiple video cameras simultaneously;
10. The Server shall measure the recording time of archive video.
11. The Server shall be able to perform Motion Wavelet or MJPEG compression of video when serving data to a Videogate or Video Surveillance Monitor.
12. The Server shall be able to perform multistreaming, i.e., process multiple video streams from cameras and then use different video streams to display video on a Video Surveillance Monitor, to record video to archives, and to send video to remote clients.
13. In a distributed system, the Server shall be able to synchronize the system time with the synchronization source in the distributed system or be able to itself serve as the synchronization source.



14. The Server shall allow selecting the video stream to be displayed on the Video Surveillance Monitor based on the resolution that is requested by the Monitor. The selection shall be made from among the streams intended for sending to remote clients and for display on the Video Surveillance Monitor.

## 4.2 Client Workstation

1. Client Workstations are used as operator workstations and shall provide remote video surveillance and audio monitoring: video and audio monitoring, sensor status control, control of cameras and PTZ units, etc.

## 5 SMaP component interaction

1. Interaction between SMP components shall be configurable.
2. Database replication and event exchange must be supported.
3. SMP component interaction must be configurable from the administrator's workstation.

## 6 Video surveillance functionality

### 6.1 Live video

1. Display of video from multiple cameras (from one or more Servers) simultaneously in a split-screen image displayed on a single monitor (display).
2. An appropriate video stream for display in the Video Surveillance Monitor shall be automatically requested from the server based on the size of the video in the Video Surveillance Monitor (Green Stream).
3. Prioritized automatic selection of displayed video images from alarm or active cameras to bring the required scenes into Operator focus (selection of images depending on set parameters).
4. Configuration of number of Viewing Tiles and their layouts. Shall support the following layouts: 1x1, 2x2, 3x3, 4x4, 5x5, 6x6, 7x7, etc.
5. Priority camera window magnification (Video Tile), magnified Viewing Tiles slideshow option for a selected camera.
6. Color-coding a Viewing Tile (camera window) to indicate its status: "armed", "alarm", "recording", etc.
7. Remote access to audiovisual streams from any workstation, with both local and remote archive recording options.
8. Freeze-frame by Operator's command selection plus viewing snapshots without interruption of recording.
9. Display of information in the Video Surveillance Monitor window:
  - 9.1. Current time
  - 9.2. Current date
  - 9.3. Camera No (ID)
10. Real time viewing of images from video cameras.
11. Priority-oriented viewing of critical video stream based on alarm detection.
12. Web interface-based surveillance.
13. Video image processing.
14. Management of end devices using:
  - 14.1. Third-party programmable interface panel
  - 14.2. Universal control panel for end devices
  - 14.3. Mouse control device
  - 14.4. Joystick control device

15. Viewing on all workstations of video footage from all System servers over TCP/IP.
16. Storage and export of single frames and video sequences.
17. Integrated use of various types of multi-zone detection tools.
18. Detection zone(s) masking.
19. Pixelation of face/privacy masking in video footage.
20. Image de-interlacing.
21. Analog video-signal output.
22. Display dewarped video from fisheye cameras.
23. It shall be possible to get video stream directly from the camera while displaying video signal on Video Surveillance Monitor. If camera operates in multistreaming mode (including multicast transmission of video streams), it shall be possible to choose a required video stream for display.

## 6.2 Video Archive

1. Video recording can be performed:
  - 1.1. Continuously (extended recording)
  - 1.2. Real time (for specified events)
  - 1.3. On alarm or by Operator's command with a pre-event (pre-history) recording option
2. Deletion of video from the archive:
  - 2.1. Through the Video Surveillance Monitor interface
  - 2.2. After expiration of recording storage period
  - 2.3. By loop recording
3. Audio- and video-archive management.
4. On-demand video recording.
5. Viewing of recorded video with search and retrieve options (time/event type/camera ID criteria).
6. Synchronized playback of footage recorded by multiple cameras.
7. Recorded time calculation.
8. Timestamp-based footage search.
9. The video archive shall be located on local Server disks or on network drives. As the disk space allocated to the archive is filled up, the archive shall be written over in "ring" order, so that the earliest video is erased first during overwriting.  
Before archiving video to the Server archive, the video signal shall be compressed by the
10. Before archiving video to the Server archive, the video signal shall be compressed by the software.
11. Pre-event (pre-history), post-event (video recording of event aftermath), and Hot (higher frame rate) recording shall be supported for more effective post-event analysis of evidence footage.
12. The video archive shall be kept in a folder determined by the software, on a selected system disk.
13. The contents of the folder shall be named in the format "DD-MM-YY HH", i.e., "DATE TIME". These subfolders shall contain the archive files for the specified hour.
14. The extension of the video recording file shall indicate the ID of the camera from which the archive has been recorded.
15. The software shall provide an audio and video synchro recording option. Audio signal recording shall begin at the start time and end at the end time of video signal recording.
16. The software shall provide an audio and video synchro recording option. Recording of the audio signal shall be sound-activated (start when the incoming audio signal exceeds a threshold value).

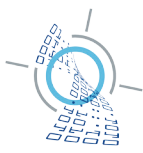
17. The software shall support viewing the video archive from the internal storage of IP devices (NVR video recorders).
18. The software shall support receiving video and audio archives from mutually unconnected Servers by means of removable disks. When replicating an archive, recordings for a specified period shall be copied from the Source Server to the Destination Server.
19. The software shall support creation of a backup video archive, with or without accompanying audio.
20. The priority of commands to start and stop writing of video shall be configurable.
21. The software shall provide protection against loop rewriting of important video recordings (bookmarks).
22. The software shall support export of video recordings for a specified period; overlaying date and time titles on the exported video recording as well as adding comments.

### 6.3 PTZ configuration

1. To expand the zone of video surveillance through mechanical PTZ, PTZ units must be used.
2. PTZ units shall be controlled by means of the following interface objects:
  - 2.1. Video Surveillance Monitor
  - 2.2. Telemetry panel
  - 2.3. PTZ controller
3. PTZ control shall be performed through the following devices:
  - 3.1. Mouse and standard keyboard (during use of the Video Surveillance Monitor and Telemetry panel interface objects)
  - 3.2. Specialized devices designed specially for PTZ control, such as PTZ controllers and joysticks
4. To ensure that operation of PTZ units is consistent when multiple users are active, it is necessary to designate priorities to be applied when controlling PTZ units by means of the objects listed in paragraph 2 objects.
5. The number of PTZ units connected to the Server shall be indicated in the activation key.
6. During PTZ configuration, it shall be possible to specify the speed of focus and zoom in/out for the camera lens.
7. It shall be possible to specify a list of presets.
8. Control of PTZ units shall be possible with the Operator Query Pane.
9. It shall be possible to map commands for PTZ control to joystick keys.
10. It shall be possible to map commands for PTZ control to mouse buttons and their combinations.
11. It shall be possible to disable PTZ control in the Video monitor using the mouse.

## 7 Audio Monitoring Functionality

1. Audio monitoring.
2. Audio and video synchro recording.
3. Sound-activated audio recording.
4. Manually activated audio recording.
5. Export of audio recordings.
6. Use of audio analytics.
7. Audio recording from two microphones into one stream.



**WatchNET**<sup>®</sup>  
SECURITY SINCE 2000

**NetFLOW-EC**  
Enterprise Class Software

**Integrated Security Management  
Solution & Automation**  
Single source from a Global Brand.



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**Storage**



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