Milestone
XProtect™

MIP SDK 2.0
Application Catalog

The Open Platform Company

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Scope for This Document

Milestone Integration Platform (MIP) enables fast and flexible integration between Milestone XProtect Video Management Software and other third-party applications. The MIP Software Development Kit (SDK) allows system developers to video-enable applications and security systems fast and easily.

The Milestone Integration Platform Software Development Kit includes a suite of Protocols, Components and Plug-ins for integration of various software and applications.

The document is intended as a combination of inspiration and a catalog of possible solutions when developing an integration. The document describes the scenario that could be the background for implementing a solution, as well as the prerequisites and what you need to implement the required solution.

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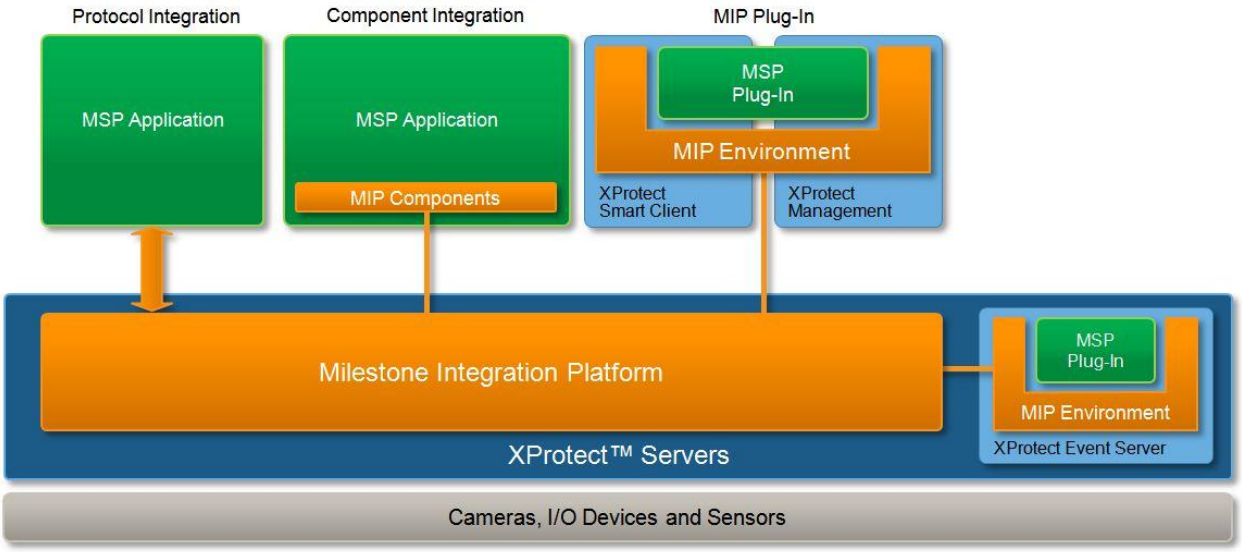
Introduction to Milestone Integration Platform Software Development Kit

Welcome to MIP SDK – your entrance to the Milestone Integration Platform (MIP) Software Development Kit (SDK). The MIP SDK helps you to find inspiration and a solution for your specific development task.



The Milestone MIP SDK operates with three ways of integration, which is reflected in the menu structure of the MIP SDK:

Integrate to MIP - Useful when you want to use a MIP plug-in to embed your C# code in a Milestone application.

Integrate MIP .NET Library into Your Application - Useful when you want link your Windows-based application to libraries from Milestone.

Integrate to Milestone Using Protocols - Useful when you choose to write code for any platform addressing the Milestone network protocols directly.

Integrate to Milestone Using Protocols

When a MSP application is executing on a non-Microsoft operating system, or developed using some other non .NET supported language, it is possible to access Milestone configuration, get live or recorded video, send control commands, and events to the Milestone server.

The following protocols are available:

- Server Command SOAP Protocol – for login and configuration access
- Recorder Command SOAP Protocol – for device control
- Image Server XML Protocol – for device control

- Image Server TCP/IP Raw Protocol – for access to live and recorded video

MSP Application

- Can run under any operating system
- Can be implemented in any language

Integrate MIP .NET Library into Your Application

When the end-user application is developed outside Milestone, the MIP components can be used to interact with the Milestone servers.

The components enable an application to:

- Display live and recorded video
- Send events to the Milestone system
- Issue control commands to the Milestone system or related devices, e.g. camera with PTZ and outputs
- Access Milestone configuration
- Get live video streams

The following components are available:

- ImageViewer ActiveX
- AudioPlayer ActiveX
- EngineManager ActiveX
- DirectShow filter
- MIP .NET Library

The ImageViewer activeX takes all the work out of setting up communication with the server, decoding all supported codecs and the display of the video. Each ImageViewer ActiveX handles one video stream.

The AudioPlayer activeX takes all the work out of setting up communication with server, decoding all supported codecs and playing the audio on the client PC. Each audioPlayer supports one audio stream.

The EngineManager activeX assists in getting the base configuration and performs the login process on the servers. It is often used for HTML based applications.

MSP application

- Could be IE HTML page
- Could be any Microsoft-based application

ActiveX (Milestone)

- ImageViewerActiveX
- EngineManagerActiveX
- AudioPlayerActiveX

DirectShow

- DirectShow filter for video access

.NET Library

- Access to Milestone server configuration
- Control commands
- Event triggering

Integrate to MIP

Integration to MIP enables you to utilize the Milestone administration tools, Event Server and Smart Client for hosting your application. This allows improved ease of use and help towards a common look and feel for the end user.

A MIP plug-in is able to execute in a number of Milestone products, making it easy to support multiple products with a single developed plug-in.

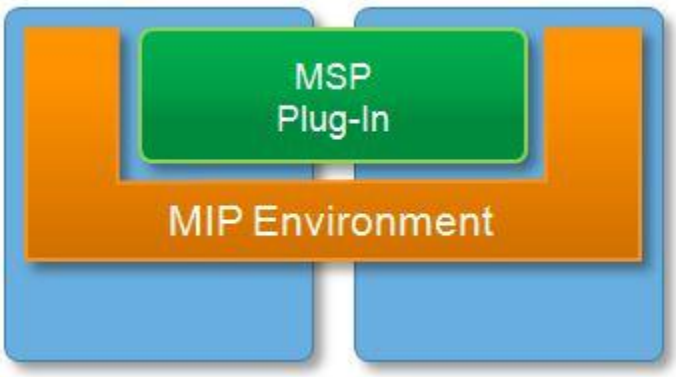
The MIP Environment supports:

- An easy and more detailed access to configuration
- A simple way to control a system, e.g. devices with PTZ, events and outputs
- A possibility to store MSP developed configurations
- A Possibility to share MSP configuration between applications

- The same administrator look and feel for both XProtect Enterprise and XProtect Corporate
- A possibility to add specific user controls to Smart Client side panels:
  - Live panel
  - Playback panel
  - Setup panel

- A possibility to add options menu configuration for common parameter setup:
  - User private
  - Shared between all users

- A possibility to make graphics overlay on top of live or recorded video, e.g. for analytics
- An easy access to recorded images for post processing management



MIP enabled Applications

- Smart Client
- XProtect Enterprise administrator
- XProtect Corporate management client
- XProtect Event Server

MIP Environment

- Unifies the environment for the MIP Plug-ins

MIP Plug-in

- Plug-ins developed MSP's

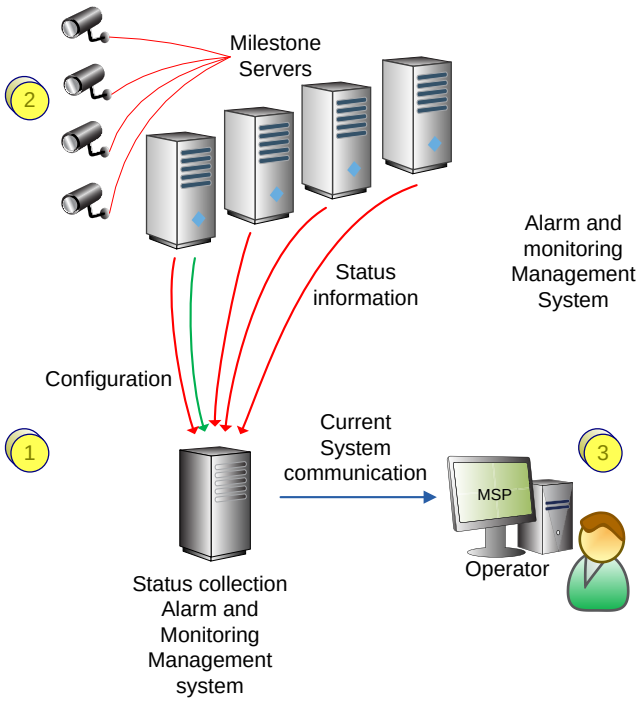
Note: MIP Environment is enabled on Microsoft C#.

Solution Catalog Items

This section describes a number of possible solutions when developing an integration with a Milestone VMS. The short scenario outlines the prerequisite, what you would like to develop and whats need to be developed and how big (or small) a task it could be.

Alarm and Monitoring System

You want your system to provide an overview and monitor a set of Milestone installations.



Prerequisites

You have an existing alarm and monitoring system

Proposed Solution

The development effort can focus on the operational status of the Milestone servers and cameras, it could include video content alarms as well and it may include management of video analytics alarms.

Alarm Management System (1)

- As an add-on to this system, the Milestone status and central protocols need to be implemented.
- The red lines indicate that status information is sent from Milestone servers regarding the servers and attached devices (cameras) to the alarm management system.
- Events must also be sent in this flow, supporting dry contacts or result of rule configured alerts.

Milestone Servers (2)

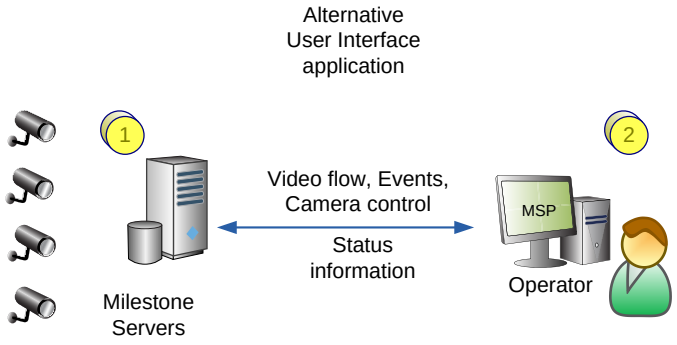
- A set of Milestone servers that needs to be monitored. No further development done here.

Operator UI (3)

- The operator continues to use well-known UI. Video Content management can be added, but may not be required.

Alternative User Interface Application

You can create an alternative user interface for your operators to use. This might be relevant if you are on a non-Windows platform, you would like a browser-based application, you would like your own design and layout, or you just want to fine tune the interface to suit your particular needs.



Prerequisites

Your operators have access to a non-Milestone client.

Proposed Solution

An end-user application as an alternative to the Milestone Smart Client can be developed utilizing a set of Milestone protocols. You can choose for this application to use some of the MIP components that encapsulate the protocols or you can access the protocols directly.

The main protocols you need are: the Image Server protocol, Server Command protocol and Recorder Command Protocol. If status and monitoring are also required, you should also include the Status and Central protocol.

Milestone Server (1)

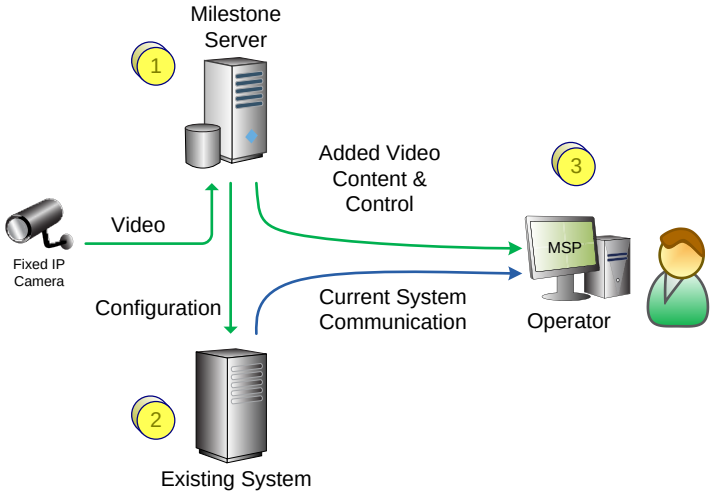
- No development is required here

Operator Application (2)

- The entire application needs to be developed, and Milestone components may or may not be used. If this application is running on a Linux operating system the activeX components cannot be used, but for Windows-based application some of the activeX's and other components may be relevant and can be used.

Adding Video Content to an Existing Application

You have an existing system with a well-known user interface and you would like to add video for further clarification, identification or documentation of incidents. This system could be a HTML based client for access control management, a retail statistics application written C++ or a transportation overview and status application.



Prerequisites

You have an existing system where operators are handling some kind of events and alarms

Proposed Solution

Expand this application with video content to the user interface.

Milestone Server (1)

- No further development.

Existing System (2)

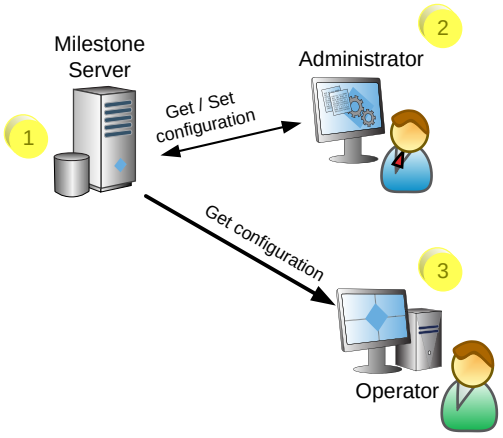
- The Milestone configuration is retrieved, and an application that can link between cameras and existing system devices need to be developed.
- A method for sending relevant camera id's to the client is developed.

Operator Interface (3)

- The operator application needs to be developed to embed the Milestone ImageViewer activeX at relevant place or in pop-up window when an icon is pressed. The application gets relevant Milestone server and camera IDs from existing server and video content directly from Milestone Server.

Smart Client Enhancement

You want to add user controls that enhance usability and ease workflow to the Smart Client.



Prerequisites

You are using the Smart Client.

Proposed Solution

Adding enhancements to the Smart Client in the form of user control: selecting cameras, sending commands or simply adding view items with buttons.

Sample

- ServerSideCarrousel, VideoReplay, InstantExport, DynamicView

Milestone Server (1)

- No Plug-in development on the server side

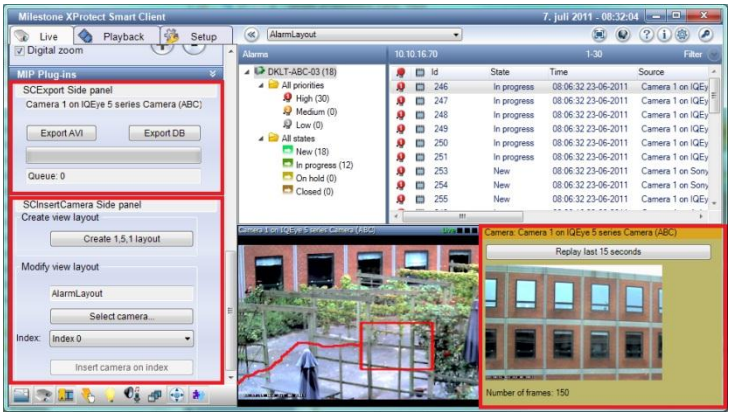
Administrator (2)

- Optional plug-in development for setting up some common ways of doing things and presentation. Could be some common information that needs to be configured for all Smart Clients, or configuration that only an administrator should setup.

Smart Client (3)

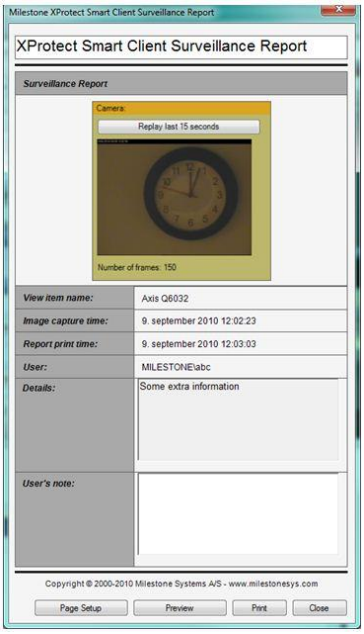
- Plug-in development required for a ViewItem to create a user control, side panel, or overlay function.

Screenshots



Smart Client extensions shown in this example:

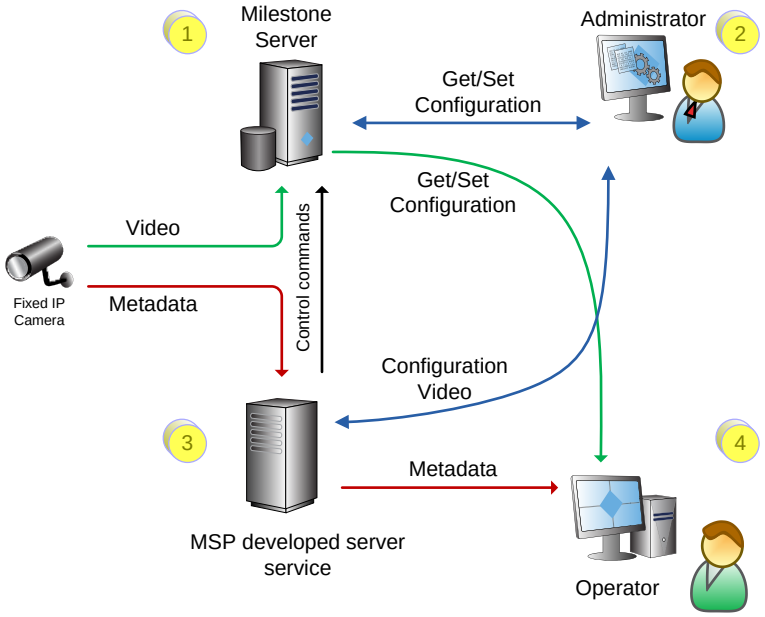
- Side panel to ease workflow
- Overlay to existing video
- View Items with specific functionality



- Add new print reports to the Smart Client

Analytics Integration with Own Server

You have an analytics solution with cameras sending metadata to your server for storage and would like to overlay this metadata on live video in the Smart Client.



Prerequisites

You have cameras that are capable of sending metadata to the server.

Proposed Solution

Analytics integration where the camera provides metadata, and the analytics rules are based on this metadata.

Milestone Server (1)

- No plug-in development required on the server
- Some configuration stored here to understand how to contact the server at 3)

Administrator (2)

- Plug-in development required for selecting the cameras and passing on relevant connect information to the server at 3) – e.g. IP address and camera model.

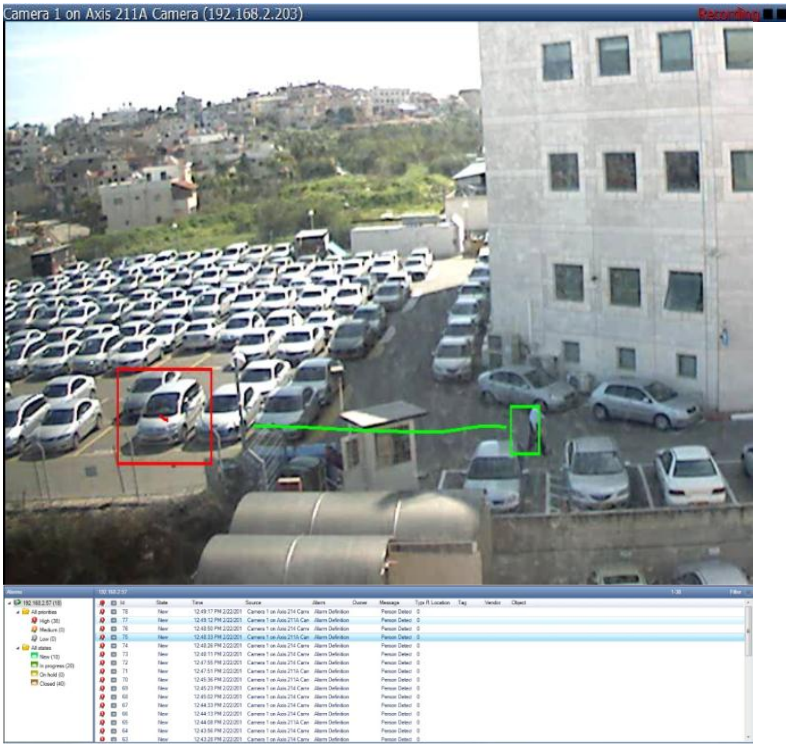
MSP Developed server service (3)

- Use configuration stored from 2) to connect to camera and retrieve metadata
- May use the MIP SDK to fire control events to 1), e.g. "Start Recording"

Smart Client (4)

- Get configuration from 1), to connect to server at 3), and understand relationship between camera and analytics data.
- Plug-in development required for a ViewItem to create an overlay add-on that can show meta data on top of video, and/or make a list of events/alarms.

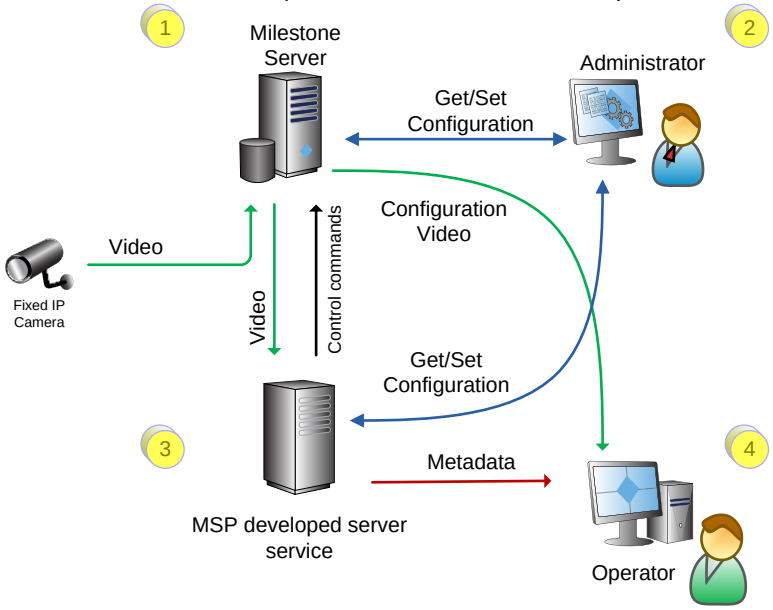
Screenshots



- Analytics from own server and with video from our ImageServer(DirectShow)

Analytics Integration with Own Server and Video from Image Server

You want to be able to process video from a variety of camera manufacturers in one protocol.



Prerequisites

You are developing video analytics.

Proposed Solution

This solution lest you use just one protocol to manage several cameras letting you focus on developing analytics technology.

Milestone Server (1)

- No Plug-in development required on the server.
- Some configuration stored here to understand how to contact the server at 3).

Administrator (2)

- Plug-in development required for selecting the cameras and passing on server 3) address to the Smart Client plug-ins.

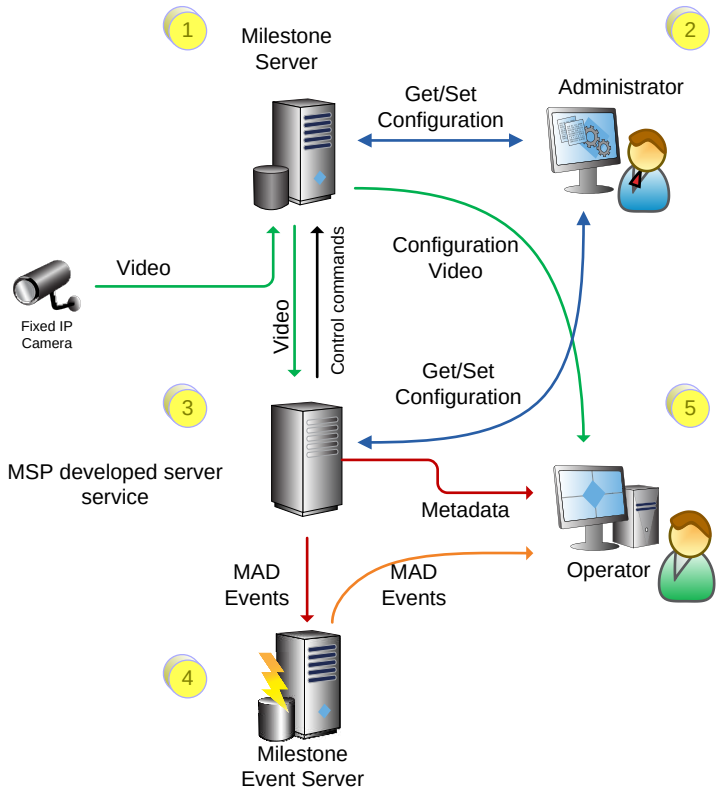
MSP developed server service (3)

- Use configuration stored from 2) to connect to ImageServer and retrieve live or recorded video.
- May use the MIP SDK to fire control events to 1), e.g. "Start Recording".

Smart Client (4)

- Get configuration from 1), to connect to server at 3) and understand relationship between camera and analytics data.
- Plug-in development required for a ViewItem to create a ViewItem that can show meta data on top of video, and/or make a list of events/alarms. Could also show metadata on top of existing camera view item.

Analytics Integration with XProtect Event Server



Prerequisites

You have a Milestone ImageServer.

Proposed Solution

Integration using DirectShow filter or connecting directly to the Image Server API. The analytics events data is sent to XProtect Event server for storage and alarm management.

Milestone Server (1)

- No plug-in development is required on the server.
- Address information stored on 1) for how to connect to 3).

Administrator (2)

- Plug-in development required for selecting the cameras and passing on to server 3).

MSP Developed server (3)

- Retrieving video from the Milestone ImageServer via DirectShow filter or direct TCP/IP connection to the Milestone ImageServer. Analytics results are sent to the XProtect Event server via MIP SDK used on server 3).

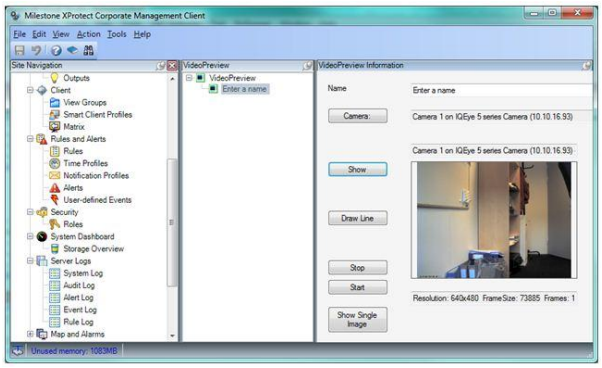
Milestone XProtect Analytics (4)

- Milestone XProtect Event server stores MAD alerts. No plug-in development required here. Alarm rule and management as for all other events.

Smart Client (5)

- No plug-in development required here because the standard plug-in for alarm management is used to display analytics alarms.

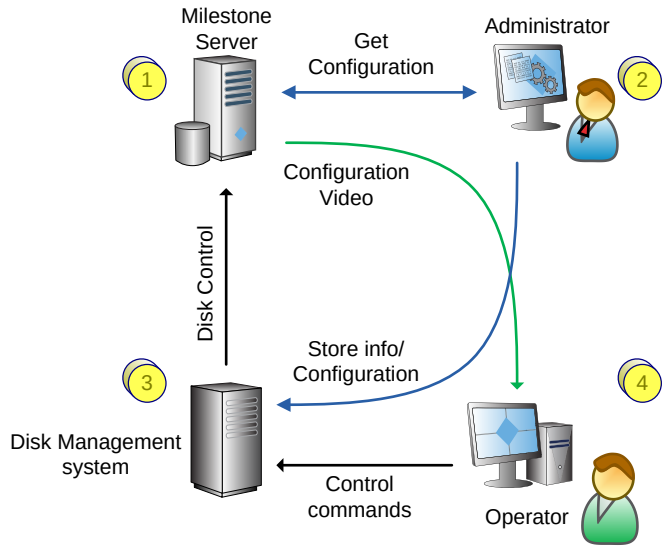
Screenshots



- Configuration within Management Client

Disk Management Integration

You would like to finetune the disk management system and therefore you would like to understand the Milestone VMS disk requirements and usage.



Prerequisites

You are developing disk storage systems.

Proposed Solution

Use the Milestone VMS Management Client/Administrator to get detailed information about configuration and usage.

Milestone Server (1)

- No plug-in development is required on the server.

Administrator (2)

- Plug-in development required for getting disk-size information out of the Milestone configuration. Folder paths, camera lists, frame rate and resolution can be picked from the configuration and stored on the 3) Disk management system, or on the Milestone server for the specific plug-in, e.g. the plug-in's own configuration contains a copy of relevant parameters.

Disk Management System (3)

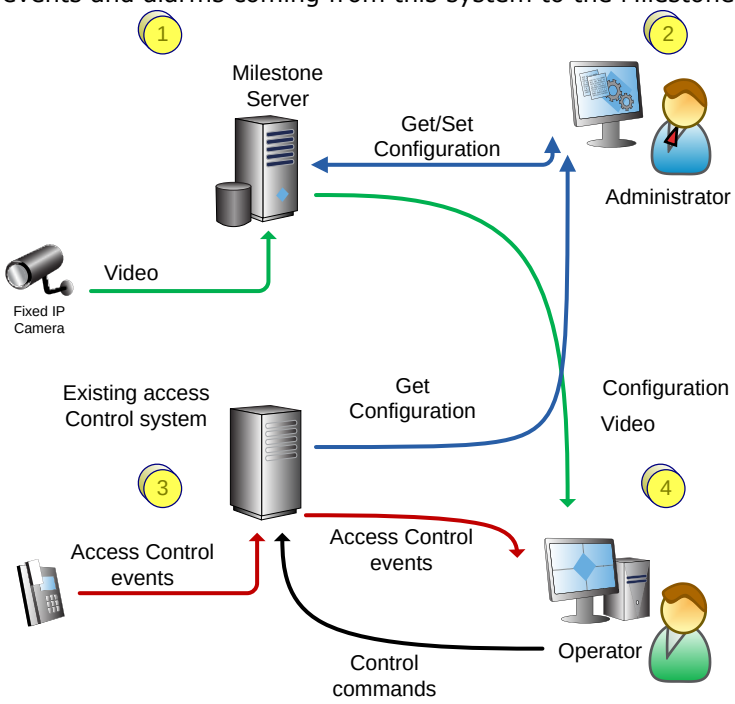
- The configuration items from the Milestone system can either be fetched via the MIP SDK when stored as a specific plug-in configuration, or have it sent when the administrator application is running.

Smart Client (4)

- No plug-in development required here, unless the disk management system can display status or some overview relevant for the operators.

Access Control Integration

You have a non-Milestone access control system that cannot be modified and you want to integrate events and alarms coming from this system to the Milestone system.



Prerequisites

You have a non-Milestone access control system and a Milestone Server.

Proposed Solution

In this drawing we assume that the Access Control system cannot be modified, e.g. the MSP developer could be a consultant that needs to develop this outside of the access control system application.

Milestone Server (1)

- No Plug-in development is required on the server.

Administrator (2)

- Plug-in development required to link access control known devices and doors with relevant cameras.
- Address of 3) is needed by Smart Client and should be saved on 3).
- Filter functions should be developed and stored on 3).

Existing Access control system (3)

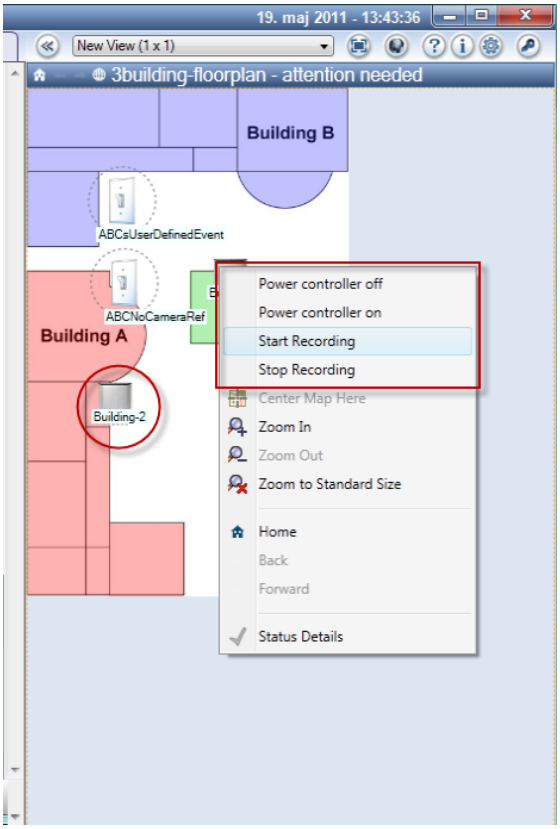
- No plug-in development can be done.

Smart Client (4)

- Plug-in development required to display list of events and alarms generated by the access control system.

- The configuration made by 2) and stored on 1), is used to connect to 3) and retrieve relevant information.
- The configured link between access control system devices and doors, and the Milestone cameras are used when operator selects events and alarms on the displayed list.

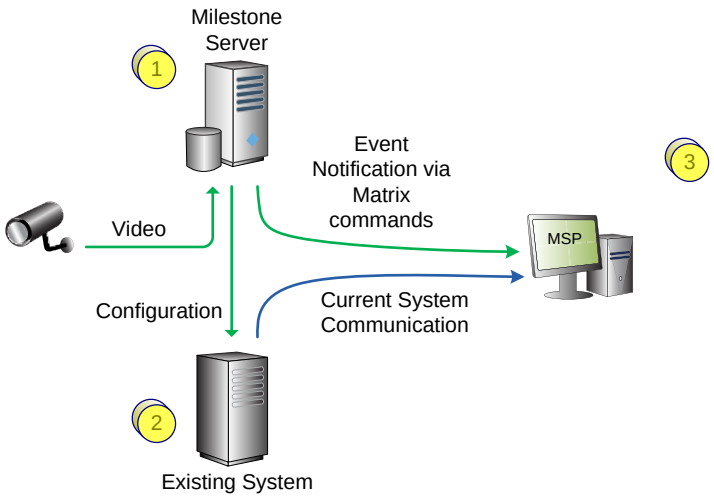
Screenshots



- AccessControl – add items to map

Matrix Wall Notification

You would like to add notifications and display video based on events generated by Milestone.



Prerequisites

You have your own application and would like to receive notifications on particular video events.

Proposed Solution

A VMS Matrix server service can be implemented in the current MSP application to receive matrix events and start showing live video.

Milestone Server (1)

- No Plug-in development is required on the server.

Existing Access control system (2)

- Some configuration development on the matrix-server may be required for the MSP client application.

Existing MSP client application (3)

- The application needs to listen for matrix commands coming from the VMS system, and handle the commands as appropriate, e.g. stat showing live video.

Milestone Systems offices are located across the world. For details about office addresses, phone and fax numbers, visit www.milestonesys.com.

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