SALIENT

# CompleteView™ CompleteView Introduction Module 1

## Introduction to CompleteView

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**Module 1- CompleteView Introduction**



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February 2014 - Revised Format
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# Contents

## Module Objectives

Upon completion of this module the student will be able to:

1. Briefly describe five of the seven subsystems in CompleteView.
2. Identify all of the TCP ports used in CompleteView and their associated application and services.
3. Distinguish between a service and an application, as it applies to CompleteView.
4. Identify the single subsystem that is the heart of the CompleteView product.
5. Describe the license method used by CompleteView.

## Module Overview

This module introduces the student to CompleteView. Each of the seven CompleteView software sub systems will be divided into three parts. The parts include Services, Administration Applications and User Applications. We will review each of the three parts and their applications to understand what each of the services and applications do in the system. The module also describes the top four product differentiators and their benefits and gives a general overview of Salient Systems' CompleteView license model.

| ***Function*** | **Tools** | **Layer** |
|---|---|---|
| ***User Applications*** | **Admin Console**<br>**Video Client**<br>**Alarm Client**<br>**Web Client**<br>**CV Spotlight** | **3** |
| ***System Configuration*** | **System Configuration- Server Config**<br>**System Configuration- Client Config** | **2** |
| ***Windows Services*** | **Administration Service**<br>**CompleteView Server**<br>**Configuration Server**<br>**Web Client Video Proxy (optional)** | **1** |

## New Terms

1. **Admin Console Application –** A multi-server management tool for CompleteView. This server management application enables the administrator to monitor and update the total system from a single location. This management application is represented as part of layer two in the CV software model.
2. **Alarm Client –** A client application used to monitor live video of alarm conditions. This application enables the operator to monitor alarms based on a schedule.
3. **Client Configuration Application –** A configuration tool for CompleteView's Video Client. This configuration tool can be accessed through the System Configuration application and is part of layer two in the CV Software Model.
4. **CompleteView Admin Service –** A Windows Systems Service that provides remote software update capability and server status to the Admin Console.
5. **CV** - CompleteView
6. **CompleteView Config Server –** A Windows Systems Service that provides a central storage point for Video Client configuration. The Config Server enables roaming user accounts so that a user can log in from one location to another in a CV Pro or Enterprise and be presented with the same video views and controls upon log in. It also enables the administrator to centrally distribute Video Client software updates via the Admin Console instead of installing update manually on each computer running Video Client. This is an optional service.
7. **Administrator –** The individual assigned to install, configure, and manage the CompleteView system.
8. **CompleteView Server -** a background service that is the heart of the CompleteView software. Its primary job is to record cameras and provide video to the client applications.
9. **Server Configuration Application –** The configuration tool for CompleteView Server. This configuration tool can be accessed through System Configuration. This application enables the administrator to configure camera, user access and recording parameters for the selected server. This configuration tool is part of layer two in the CV software model
10. **Software Model –** A visual diagram that is intended solely for teaching how the parts of CompleteView interact with each other. The model describes layer by layer, the functions of the software subsystems. The model provides a clear and useful understanding of how each of the layers interacts. The subsystems that comprise each of the layers may indicate the common uses of each layer and in some cases may indicate the user or users of the subsystems in each layer. Learning the model will assist in the understanding of the software and its uses and operation.
11. **System Configuration Application –** An application used to access Client Configuration and Server Configuration tools. This application enables the administrator to open existing configuration files or create a new configuration for either a CompleteView Server (through the Server Configuration tool) or a Video Client application (through the Client Configuration tool). This application is part of layer two in the CV software model.
12. **Video Client –** The primary client application used to view live video and export recorded video. Live video can be viewed via any number of tiled video layouts or through a map interface. Many search and review tools, such as Smart Search and Multi Camera Playback, are provided to optimize video investigations.
13. **Video Player –** A tool to playback video recordings exported from CompleteView. Exported recordings can be played in any AVI compatible media player (such as QuickTime, Windows Media Player etc…)**.** Video Player provides the added capability of verifying recordings have not been tampered with using the digital watermarked added by CompleteView Server.

14. **Web Client** – A video viewing and export interface that does not require a software application to be installed on the user's PC. Web Client can be accessed through Microsoft Internet Explorer, Google Chrome, and Firefox.
15. **Windows System Services** – Server software that operates in the background of MS Windows. Typically Windows Services do not have a Graphical User Interface (GUI) and perform tasks in the background. CompleteView Server, Administrative Service and Config Server are all Windows System Services. They can be configured to launch *before* a user logs on to a Windows 2000/XP/Win 7/2003 system.

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## Welcome

Welcome to CompleteView training. The training is taught as one class that is broken into modules. The course is designed for approximately twelve hours of training as a one and one-half day class. All students will work side by side to learn the system and its capabilities.

At the end of the Server Configuration module the student will be required to complete a final checkpoint that will encompass the module objectives and count toward certification.

## Functional Test

At the end of the Server Configuration there will be functional test and coach session, which offers opportunities for the student to demonstrate to the instructor what they have learned. For certification, students must satisfactorily complete 100% of the functional test and be present at the end of the course. At the option of the instructor, a 30 question written multiple choice exam may be substituted for the functional test.

## Information Privacy

Class rosters and personal information gathered by the instructor are used solely for the purposed of tracking training, certification, CEU credits and are used only by Salient Systems Corporation. Information is kept for three (3) years to meet accreditation.

## Certification

Salient Systems certification is effective for two *(2) years* from the date of the original certification or *three major software revisions. When* certification expires, recertification is required. Certification is awarded to the student, not to the student's employer.

## Symbols

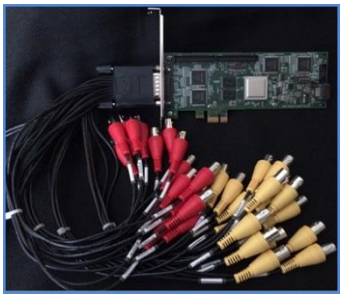
Student Hands-on Activity


Student should give their full attention to the information next to the Yield Sign.
(Graded check point)

## Product Overview

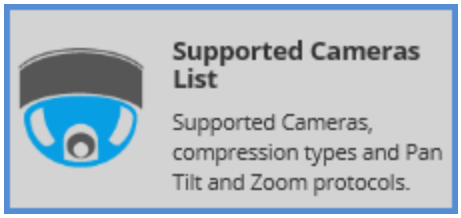
CompleteView is a hybrid Video Management Software (VMS) that provides management of analog and IP cameras, live and recorded viewing, and can record to a variety of storage mediums. CompleteView is a suite of seven software applications and three services that can be installed as one complete system on a single NVR on a commercial off the shelf (COTS) or virtual server.

Salient Systems also sells a high density capture card that is designed by Salient Systems and can manage up to 32 cameras in both 32-bit and 64-bit operating systems.



The capture card converts analog video to digital video just like a video encoder would convert analog to digital IP video. Each channel and its associated analog camera may be individually configured to the user's preference. All configuration and encoding is completed on the capture card resulting in less load on the CompleteView server and rendering improved server performance. The capture card comes as a free addition when analog licenses are purchased. Each analog license may be converted, at no cost & with a few mouse clicks, to an IP license.

CompleteView server software can be installed independently on a standalone computer or jointly with all other CompleteView applications on one computer; it is not however recommended that the server also double as a user workstation. CompleteView supports 32-bit and 64-bit Microsoft Windows operating system and MJPEG, MPEG4 and H.264 compressions starting at QCIF (176 x 120) and extending to all current Megapixel resolutions. Lastly, CompleteView supports a wide variety of Pan Tilt Zoom (PTZ) control protocols. Any fixed cameras can be configured to do digital PTZ.




CompleteView supports both analog and IP cameras in NTSC and PAL formats; the current list (below) of supported IP camera includes 60 manufacturers. To see the most recent list of supported cameras, visit, www.salientsys.com

## CompleteView One

CompleteView ONE (CV ONE) is a single server version supporting any combination of one (1) to thirty-two (32) IP and analog cameras. *CompleteView ONE* offers a viable video surveillance solution for the small business. CompleteView one may be upgraded to CompleteView Pro or CompleteView Enterprise.

## CompleteView Pro

CompleteView Pro is a fully scalable Video Management Software and can be scaled to support an unlimited number of users, and any mix of IP and analog video cameras. CV Pro installations currently exist that have hundreds of servers and thousands of cameras.

CompleteView Pro permits the use of unlimited cameras, servers and clients. With regard to storage, it can be used with Network Attached Storage (NAS), Storage Area Networks (SAN), Salient Systems ( External) Direct Attached Storage (DAS) System or storage that is internal to a DVR.

## CompleteView Enterprise

CompleteView Enterprise, a true enterprise solution, offers the same scalability as CompleteView Pro with the same features but also includes the added advantage of Microsoft Active Directory for a more secure and robust management of users and groups, Web Server Video Proxy, which allows viewing of many servers video via Firefox, Internet Explorer or Google Chrome and Structured Views, which allows video to be segmented and parsed by geography. Structured Views is most beneficial for big box retail and other large enterprise business but can be employed by Universities, transportation, and government whose locations are geographically dispersed.

## CompleteView Cloud

CompleteView Cloud is a cloud based IP camera solution that supports an unlimited number of IP cameras and permits viewing across multiple servers. CompleteView Cloud supports the Video Client, the Silverlight web client, and video proxy for viewing live video. Video streaming is completed using Axis One-Click and remote multi-server administration and configuration are supported. CompleteView Cloud does not support Active Directory, Alarm Client, CV Spotlight, or Quick Track recording.

## Upgrade Process

Users of CompleteView ONE or Pro can upgrade their system to any upward edition of CompleteView for the difference in license cost. This allows the users of CompleteView to start with a lower edition of CompleteView and expand their surveillance system without incurring the full MSRP cost to upgrade. Upgrades come in .bin file and .exe format. The .bin file is deployed remotely from the Admin Console and the .exe file is deployed when the installer is standing at the server. Upgrades may also be done by uninstalling the existing CompleteView software and reinstalling a new full version. When uninstalling with a full version, the configuration files are left in the CompleteView folder and will remain intact when the new software version is installed.

## Cost of Ownership (TCO)

CompleteView is one of the most cost effective VMS solutions in today's Security Industry. The amount of time required for the security personnel to learn to use any surveillance system is directly tied to service and installation cost. Salient Systems is aware of this fact and designed CompleteView to be easy to install, learn, and use. In fact, most actions can be accomplished with an average of three mouse clicks. To assist, Salient has implemented no-cost, factory designed, online, and end user training through Salient University.

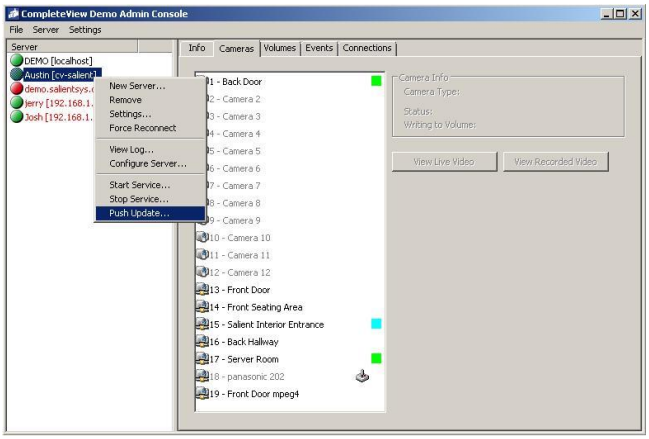
End users may, at any time, login to Salient University to review any of the Video Client, Alarm Client, or Web Client Features. www.salientsys.com

## Differentiators

Every product has some unique feature or function that makes it stand apart from other similar products. In this regard, CompleteView is no different. In total Salient Systems web site lists fifteen product differentiators. We shall concentrate on the top four, which are Single Seat Administration, Stable Recording Architecture, Dynamic Resolution Scaling and Licensing.

## Licensing

**Administration Console (Admin Console)**



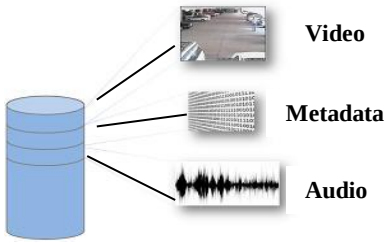

License fees are very competitive and are based solely on camera connections (also called channels) and by CompleteView license versions. CompleteView One is less expensive than CompleteView Pro, which is less expensive than CompleteView Enterprise. CompleteView software applications may be installed as often as the user wants without additional cost. Licenses are not tied in any way to hardware or camera MAC address. Our philosophy is simple, "*the customer bought it and it should be theirs to use as they wish*." There are no additional costs associated with CompleteView making TCO for CompleteView the best in class. Conversion from Analog to IP is also no cost and is typically no need for technical support intervention; it simply requires that the camera be changed out from analog to IP and few click of the installer's mouse and the task is complete.

## Single Seat Administration (SSA)

Single Seat Administration is the process of managing an entire network of CompleteView Servers, cameras and volumes from a single location by one person. This process can be centralized or decentralized depending on the customer's needs. The feature is unique; it can be used to save on administrative time and personnel expense. Single Seat Administration can be completed in both CV Pro and CV Enterprise.

## Stable Recording Architecture

**Competitive Recording Architecture**

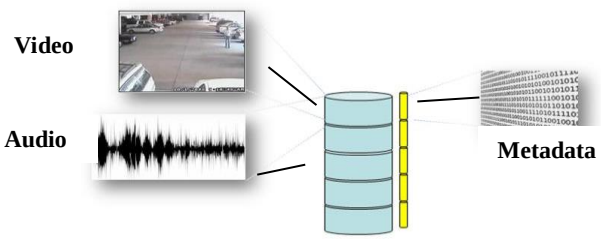



Storage is a hot topic with respect to the amount of storage needed and the type of hardware used to do the job. However, little is said about how data is saved. Salient Systems has, from inception, designed CompleteView to be network friendly and reliable. During the software design, significant consideration was given to additional failsafe processes required to protect recorded video and audio data.

The recording architecture employed by a Video Management System can have a big impact on the system's usability.

Most video systems employ a single database to store both data and metadata (information about the data used to maintain the database). Furthermore, the data is often kept as a single large contiguous data as illustrated in figure three. This type of database comes with significant risk. If corrupted, the data base will often take many hours to rebuild.

**CV Stable Recording Architecture**




Keep in mind that if the metadata and data become jointly corrupt, database recovery might never occur. The database format can cause issues specific to video recording. Recording high frame rates over many cameras requires a high number of consecutive "writes' to the database, which increases the likelihood of the database becoming corrupted. Common factors that result in database corruption are:

1. Poor structure of the software that interfaces with the database
2. Power outages
3. Interruptions or crashes while "writing" data to the database

When a database becomes corrupted in a video management system, the VMS must attempt to rebuild the database to permit video access and to continue to record more video. This process involves reading all the data in the database in an attempt to rebuild or remove missing data or structural information. The process often takes hours because of the large amount of information to sort and recording new video often becomes a secondary process that may not occur while the database is being rebuilt. If the repair process fails, all video data is lost and the database may need to be deleted and rebuilt.

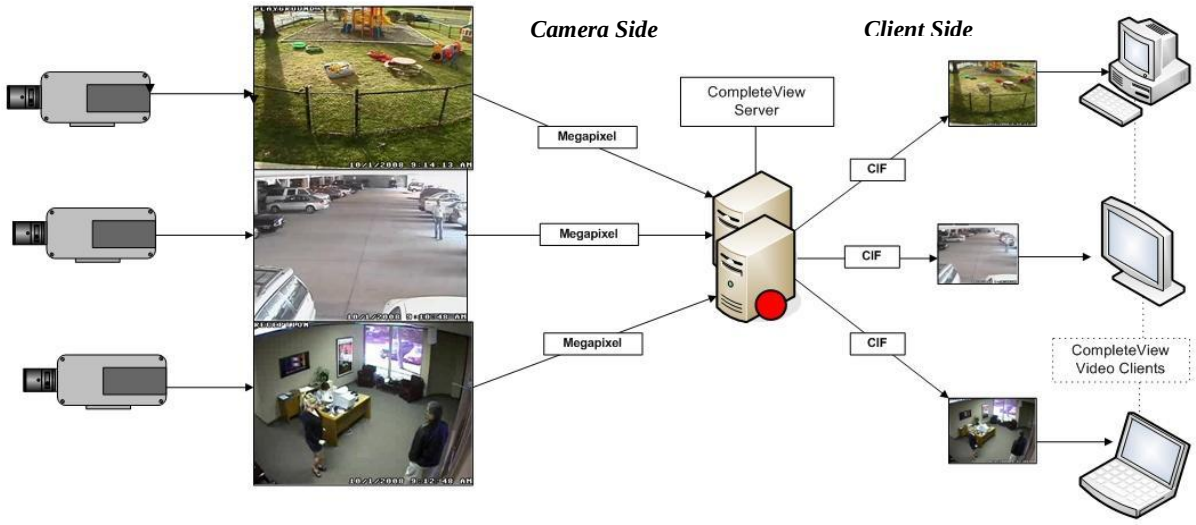
To avoid these issues, CompleteView uses a unique recording architecture, which stores video in a flat file structure outside the database. CompleteView uses a database for metadata only. The database is linked to the video file structure. Video is stored in three minute segments lowering the possibility of any significant portion of a video clip becoming unreadable. However, Video is played back in one continuous clip. Long database repairs and corruption of video are not a problem with CompleteView.

## Dynamic Resolution Scaling

Dynamic Resolution Scaling is an automated process that is managed by the CompleteView Main Server. Megapixel cameras produce large data streams on the network. These streams come to the CompleteView Server in their original size. (See figure 5, Camera Side). However, when client views are defined, the size of each camera's viewing tile generally require smaller video streams to fill the tile, than the full size of the native video stream from the camera (See figure 5 Client Side).

Other Video Surveillance Systems would stream the full data stream of the original video to the client regardless of the tile size, consuming more bandwidth than needed to support the customer's needs. With Dynamic Resolution Scaling, the CompleteView Server recognizes the size of the viewing tile and supplies just the right amount of data within the video stream to fill the viewing tile to produce a quality image. The process reduces the amount of video being streamed over the network to the client. The process does not change the size or quality of recorded video.

**Dynamic Resolution Scaling of Video**




## Dynamic Video Decoding (DVD)

Dynamic Video Decoding, introduced in CV version 4.5, works to lessen the work load on the server's processor for viewing live video. By default, video streams from all cameras are processed by the server and then sent to the video client for viewing. In versions of CompleteView prior to 4.5, steam processing, which also includes decoding of video streams, Dynamic Resolution Scaling, name and time overlays on live video, snapshots with email notification and other live viewing processes, were turned on and continually active.

With the introduction of DVD, an individual camera by camera process is put into effect which enables stream processing for a camera when streaming live video occurs or when other stream processes are required. Otherwise stream processing is active but not enabled and video is sent directly to the recording volume.

Dynamic Video Decoding activates live video stream processing if or when one of the following conditions occurs.

- One or more live video steams is being viewed from any CompleteView video application that permits live viewing. They are the, Alarm Client, CV Spotlight, Video Client, Web Client, or TouchView mobile.
- Any analog or IP camera is configured to provide server-based motion detection. Camera based motion detection does not require server stream processing.
- Agent VI is used and requires support from a CompleteView server. Only those cameras requiring support for Agent VI are affected.
- Server based email notification is configured to send a jpeg image within the email.
- When SureView Immix is enabled; DVD is disabled for all cameras
- When a camera's stream is transcoded from one stream type to another, by the server, and prior to recording
- Video dewarping is required for a camera.


DVD applies exclusively to live video streaming and has zero impact on recorded video or recorded video during playback.

### Dynamic Frame Throttling (DFT)

When Dynamic Frame Throttling is enabled, the CompleteView Server monitors incoming video queue length. When queue length exceeds a certain threshold, DFT engages and processes only key video frames until the queue length is restored to normal levels. This helps reduce video latency, maintain video quality, and reduce CPU load. The frame throttling only affects live video to CompleteView clients. Playback is unaffected, and all video data is available for review. By default DFT is on when IP cameras are installed.

### QuickTrack with Audio


QuickTrack allows users to track an event by dragging and dropping video feeds into the QuickTrack camera location on their monitor and capture the video and audio recording for playback as a single video feed. QuickTrack gives security professionals the ability to record live video across multiple cameras and servers which can later be reviewed and exported as a single video clip for investigations. Record both video and video with audio clips seamlessly for powerful forensic use.

## Product Additions

### Transaction Tracker

TransactionTracker from Salient Systems provides a powerful loss prevention solution by integrating

CompleteView™, Salient's Video Management System, with point of sale systems. TransactionTracker delivers clear insights and actionable detail for a sophisticated loss prevention strategy. Exception list alerts, quick investigations with associated video, incident reporting and remote access puts the power of loss prevention security in the hands of loss prevention professionals.

TransactionTracker is a fully integrated video solution that can synchronize POS transactions, video data and exception-based reporting systems with accurate time stamps which enable auditors to quickly find what they need. This increased capability will capture shrinkage and fraud and acts as an enforcing preventive system for retail operations.

From the Live View Dashboard, loss prevention security professionals can view all transactions in real time, filter by POS terminal, view Daily Exception panel counts and alerts for threshold breaches.

### Hardware Solutions

Salient offers a wide variety of server chassis (turnkey solutions) that when purchased, come with

CompleteView installed and partially configured, saving time on site for each installation.

### TouchView Mobile Apps

Salient Systems offers mobile apps for the iPhone®, iPad®, iPod® touch and Android™ smartphones. Bring your video viewing and playback experience along with you wherever you go. TouchView™ Mobile combines the power of Salient's CompleteView™ video management system with the freedom of mobile access to live video, recorded video and PTZ camera control from a powerful, fully integrated interface.

Users can instantly access, monitor and review live and recorded video from any camera connected to any

CompleteView recording server in the system. And, cameras from multiple servers can be accessed simultaneously with PTZ control. CompleteView's powerful DRS (Dynamic Resolution Scaling) automatically sizes the video for live viewing, significantly reducing network usage and providing higher frame rates over mobile connections.

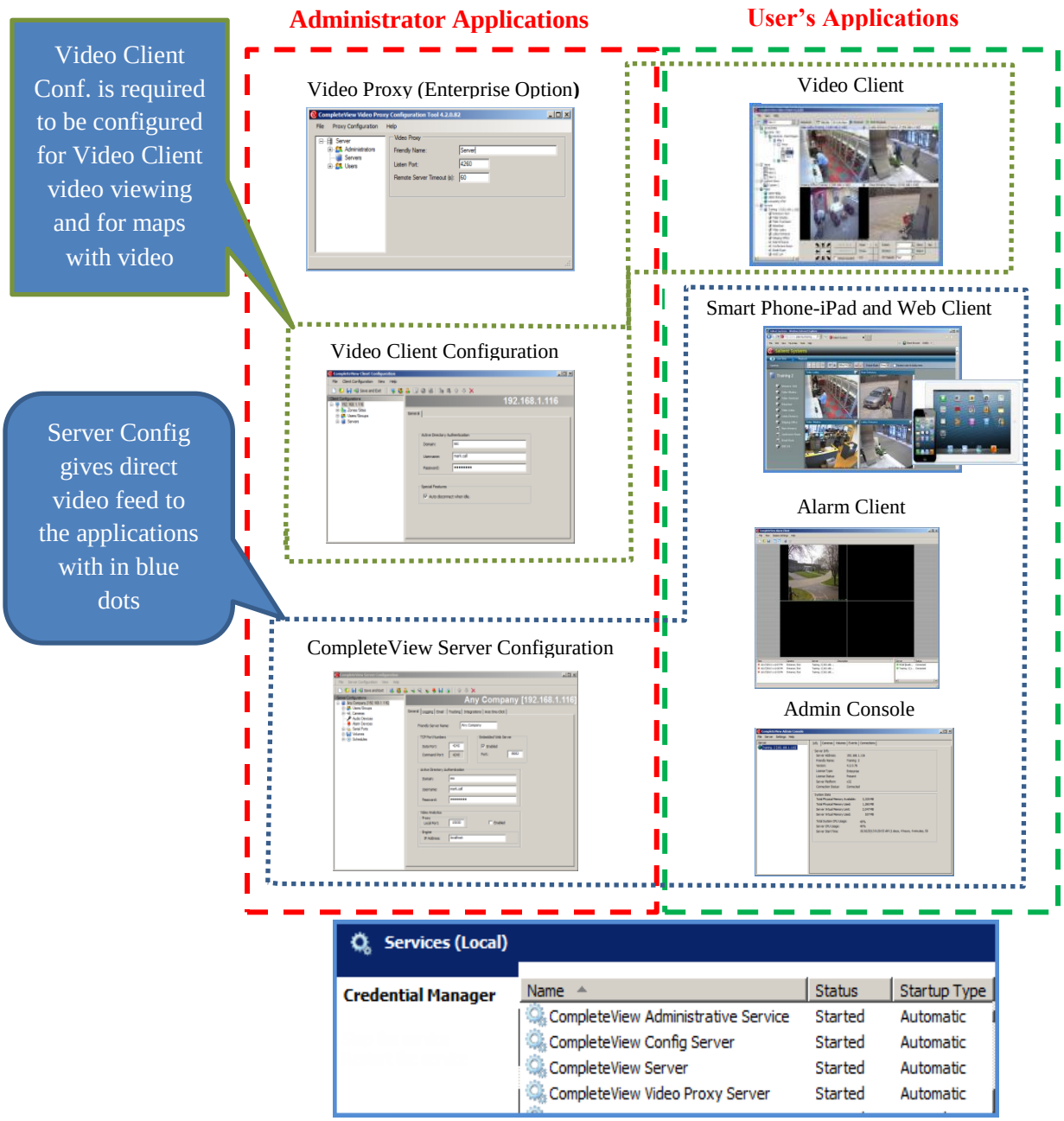
## CompleteView Architecture

The CompleteView architecture is designed around three primary Windows services that are the foundation of the CompleteView Product.

1. CV Server
2. CV Administration Service
3. CV Configuration Server

These services provide the necessary foundation for the Admin and Configuration Tools and System User Tools with exception of the Web Client, which uses Internet Explorer, Firefox or Chrome, the Admin, Configuration and System User Tools are Windows Applications that, when installed, have separate icons on the user's desktop.

**CompleteView Architecture**

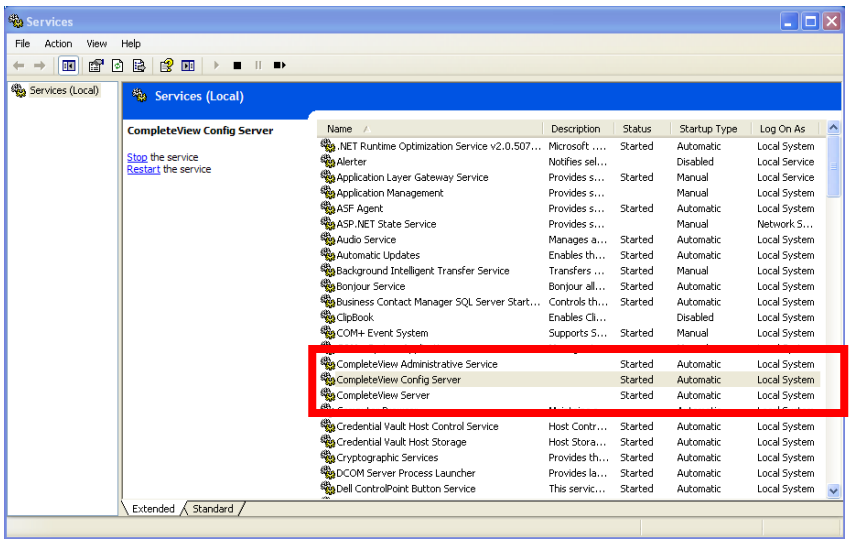


## Services

Window's Services displays the foundation of CompleteView Video Management System.

1. CompleteView Administration Service.
2. CompleteView Config. Server
3. CompleteView Server.

**Windows Administration Services**




## CompleteView Server TCP Port 4242 and 4243

The *CompleteView Server* is the heart of the CompleteView software suite. This service is responsible for all aspects of acquiring video, performing video motion detection, camera and video management, validating users (not Active Directory Users and group) and groups and many other tasks.

This application is installed by selecting the *CompleteView Server* component in the setup program.

CompleteView Server uses TCP Port 4242 and 4243. These ports must be open at the network firewall for the system to work correctly and to be accessible from a remote location for administration outside the local systems intranet. Port 4242 may be changed but port 4243 may not be changed.

## Administrative Service TCP Port 4255

The ***CompleteView Administrative Service*** enables the Admin Console to start and stop the CompleteView Server, and perform remote updates of the CompleteView software suite.

The *CompleteView Administrative Service* is installed automatically whenever the *CompleteView Server* component is selected during the setup process unless the system is licensed as CompleteView One. CompleteView One is a single server system does not require the services of the Admin Console.

The administrative service, by default, operates on TCP port 4255. This port must be available and open at the network firewall for the system to work correctly and to be accessible from a remote location for administration outside the systems intranet. Ports are configurable and must also be open in the local system if a local firewall is enabled.

## CompleteView "*Client*" Config Server (Configuration Server) TCP Port 4250

The *CompleteView Config Server* is a centralized configuration file that contains the *viewing layouts, map configuration and server & camera access permissions* for every user of your system. In addition to the benefits offered by centralized storage of user video display configurations, it also grants your users the ability to roam to any computer in your enterprise on which a *CompleteView Client* is installed, while retaining their individual user experience, and pushes updates out to the video client.

The *Config Server* is also an important component in CompleteView's software update strategy.

The ***Config Server*** is a Window's service that should not be confused with the *Server Configuration Tool. They are markedly different and provide different services for the installer and user of CompleteView.*

Each ***CompleteView Video Client*** that utilizes the configuration server can be configured to check for newer client software during the login process. If a newer version of the client application is found, then the user will be prompted to update their client software. The actual process of updating the client software is entirely automatic and does not require administrator intervention.

CompleteView is designed to permit the Config *Server* to be installed on any CompleteView Server. Config Server uses TCP port 4250. This port must be available and open at the network firewall for the system to work correctly and to be accessible from a remote location for administration outside the local network. Ports are configurable and must also be open in the local system if a local firewall is enabled.

## Silverlight Policy Service (TCP Port 943)

Microsoft Silverlight is used to support the newest CompleteView version 4.5 web client. For the web client to be viewed over the Internet, Silverlight Policy Services must be port forwarded via TCP port 943.

## Web Client 4.5 (TCP ports: 4502 – 4535)

The new CV version 4.5 web service/client for CompleteView version 4.5 exclusively utilizes the following range of TCP ports: 4502 - 4535.

## Administrative Tools

CompleteView's Server Configuration, Client Configuration and Admin Console enables the CompleteView installer and administrator to:

- monitor the system performance
- fully configure the CompleteView servers and live view configuration
    - add cameras
    - create users and groups
    - establish credential rights for video
    - add and configure analog and IP cameras
    - configure audio
    - configure the serial ports
    - create maps
    - add cameras to the maps
    - configure the clients with established views and maps
    - add servers and create recording volumes

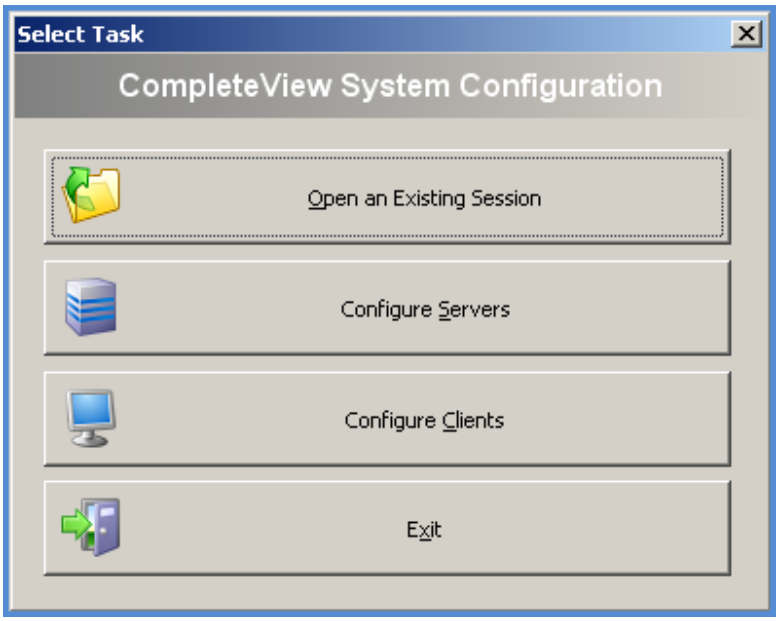
The system, in its entirety, offers a great deal of flexibility and features.

## System Configuration

Server and Client configuration applications are represented in Layer Two of the CompleteView Software Model. The process of configuring the both CompleteView Servers and CompleteView Video Clients are accessed with the CompleteView *System Configuration Application*.

***System Configuration*** is the tool used to launch both CompleteView Server and Video Client configuration or to open an existing CompleteView Server or Client Configuration session file.

**CompleteView System Configuration Application**



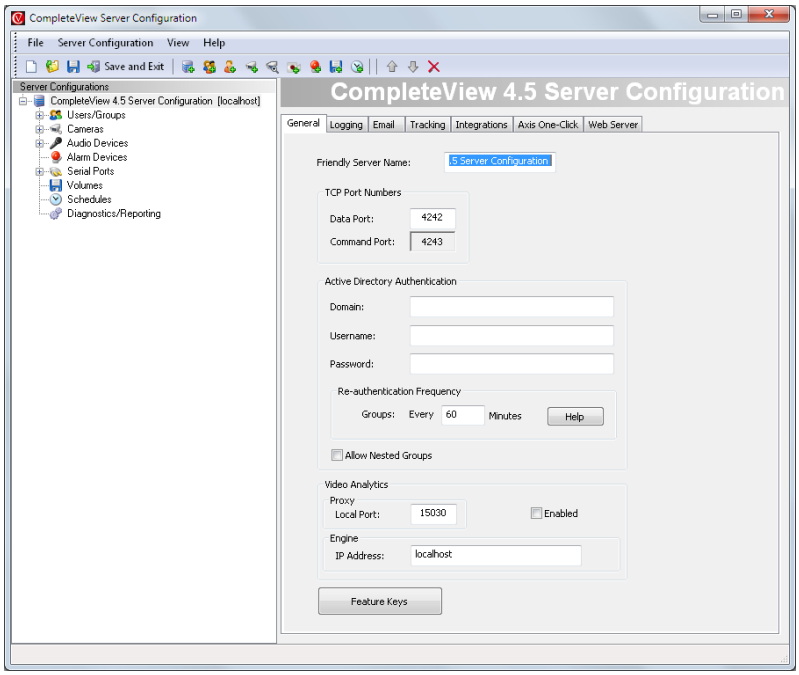

## Server Configuration

The Server Configuration application is represented as the second tool in Layer Two of the CompleteView software model. The Server Configuration Application provides the Administrator with the ability to add and configure parameters for:

- Volumes
- Cameras
- Users and Groups
- Active Directory
- Licensing
- Alarm devices
- Audio Devices
- Web Server
- Serial ports
- View Server Diagnostics

The Administrator can also establish schedules for recorded video and associating video to motion or external alarms.

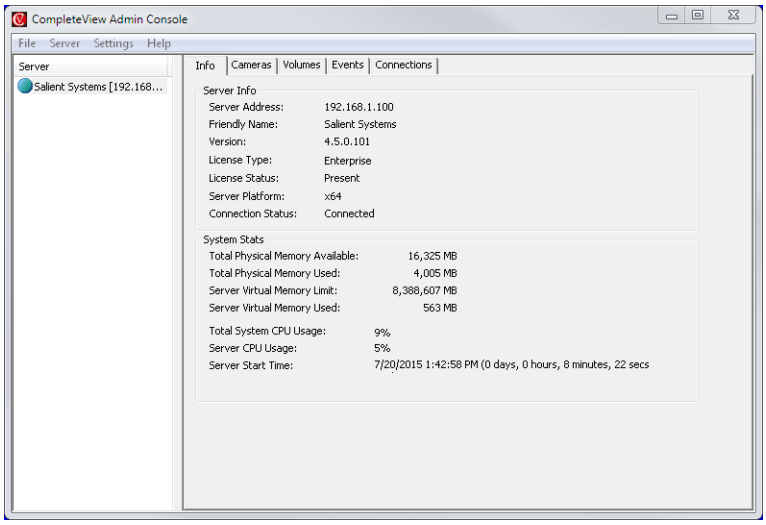
**CompleteView Server Configuration Application**




From a single seat, the server configuration application can be used to remotely configure any server in the system. This unique tool also permits movement of licenses from one license dongle to another.

## Administration Console (Admin Console)

**Admin Console**




The Admin Console is used by the Administrator to monitor the CompleteView system health, troubleshooting, server management, and deploying software updates.

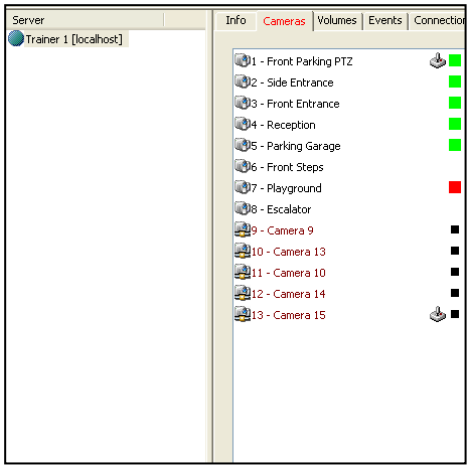
It is the "power user's" management and monitoring tool. It allows the Administrator to:

- monitor all the servers in the system
- observe faults that may occur
- force a restart of the system
- upgrade server software from a remote location
- remotely start and stop the CV server
- remotely force a server reconnect
- set up email notification
- view logs
- observe server connections


Admin Console is a feature of CompleteView Pro and CompleteView Enterprise. CompleteView ONE does not include the Admin Console.

## Admin Console

**Lost Camera Connection**



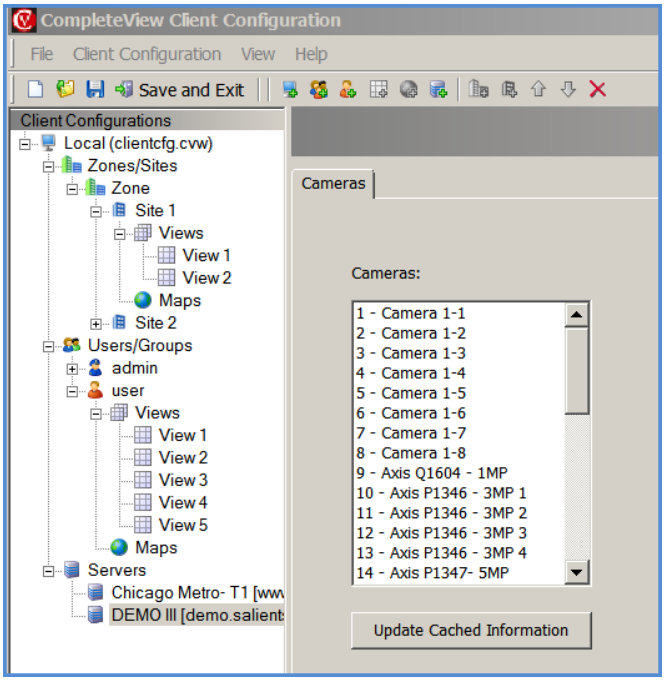

Color codes in Admin Console help the Administrator diagnose potential system difficulties. For example, a *Server Name displayed in* ***red letters*** indicates a storage volume or a camera attached to the server requires service. Highlighting the server with your mouse will cause a tab to display red lettering. The red lettering/text will indicate the part of the Video Management System that needs attention.

In figure 11, the camera tab is displaying red lettering, which would indicate to the Administrator that there is a potential fault with that server's cameras. When selecting the camera tab the administrator would see that *camera 15* is not connected as indicated by the black square on the right side of the camera. The complete color code scheme will be reviewed later in the training.

## Client Configuration

***Client Configuration*** is an administrator tool that is used to define how the Video Client Video is presented in layouts and maps. Using the Client Configuration application, the Administrator can also import maps for use with video cameras and add servers from which clients can see video. Group and user credentials are also assigned in the client.

**Client Configuration**

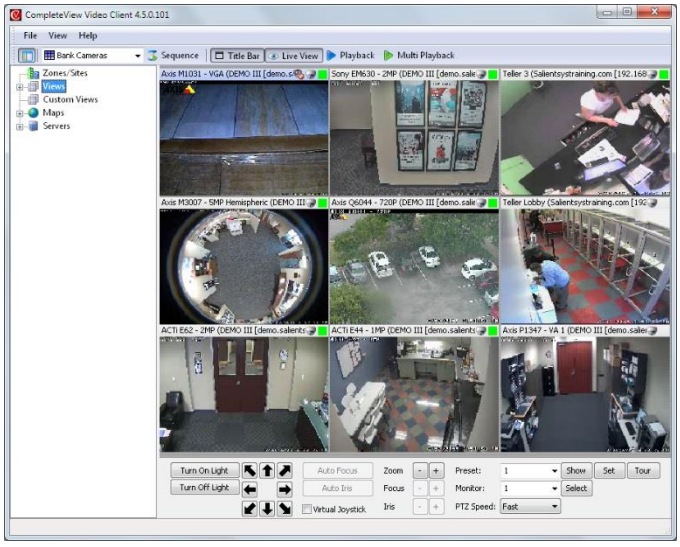



## User Applications

The Video Client, Alarm Client, CV Spotlight and the Web Client are represented in the fourth layer of the CompleteView Software Model. These three tools permit "*end users"* to view video, respond to external alarms and motion that is detected by cameras, and to transfer video to a DVD or optical drive for export to be passed along to police for evidence.

## CompleteView Video Client

**Video Client displaying Live Video**



The video client is the first of the three user tools for the end user to view video and maps from various CV servers. The Video Client is versatile and powerful.

**From this screen, you will be able to perform the following functions:**

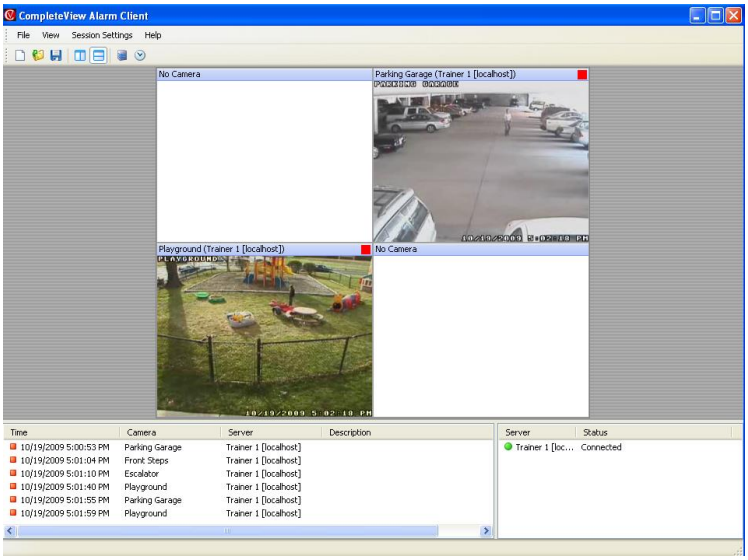
- Switch among live camera view layouts that have been configured by an administrator.
- Create custom live camera view template and add audio.
- Enable/disable automatic switching (called sequencing) of live camera view layouts.
- Monitor the recording status of each camera.
- Move pan-tilt-zoom capable cameras that you have the permission to control.
- Listen to a live audio that is associated with a particular camera.
- Search for recorded video events.
- View video on maps.

- Search for motion within recorded video events (Smart Search).
- Easily export video events to a standard .AVI file format on a variety of media, including:
    1 Export to file.
    2 Export to recordable CD or DVD data discs.
    3 Export still images taken from recorded video events as standard .BMP or .JPG files.
    4 Print annotated still images taken from recorded video events.
    5 Perform time-synchronized playback of recorded video events on up to four simultaneous video sources.

## Alarm Client

The CompleteView Alarm Client is designed to display video only when motion is detected by a camera or when an external alarm condition is sensed by a CompleteView interfaced alarm generating program that is external to CompleteView. This tool requires that motion recording be enabled and that a motion zone, for each camera to be displayed in this application, be set. *The Alarm Client can be used to set motion sensitivity when employing motion recording in the server.*

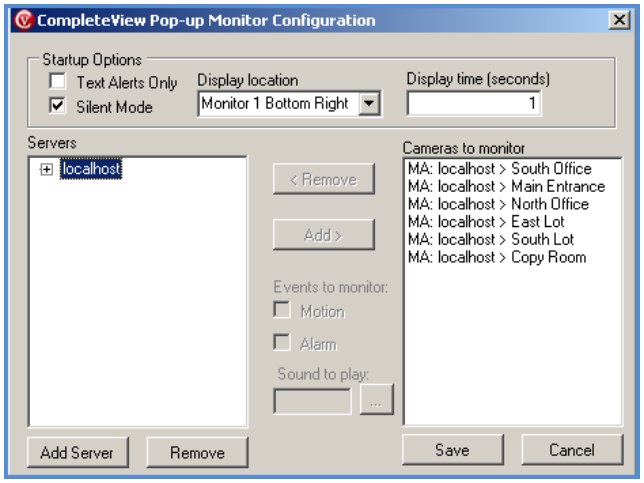
**Alarm Client showing Alarm Video Displayed**




The display of video occurs exclusively during user-definable time periods that are configured in a schedule. In addition, the Alarm Client maintains a history of the one hundred most recent camera alarms. You may quickly recall the video for any of these alarms, which is then shown in a side-by-side display with live video from the associated camera.
Users may add servers to the alarm client and monitor alarms from that server. The user configures the application to monitor alarm events on one or many servers. Based upon user-configurable monitoring schedules, live video is displayed when an alarm event occurs.

## CV Spotlight

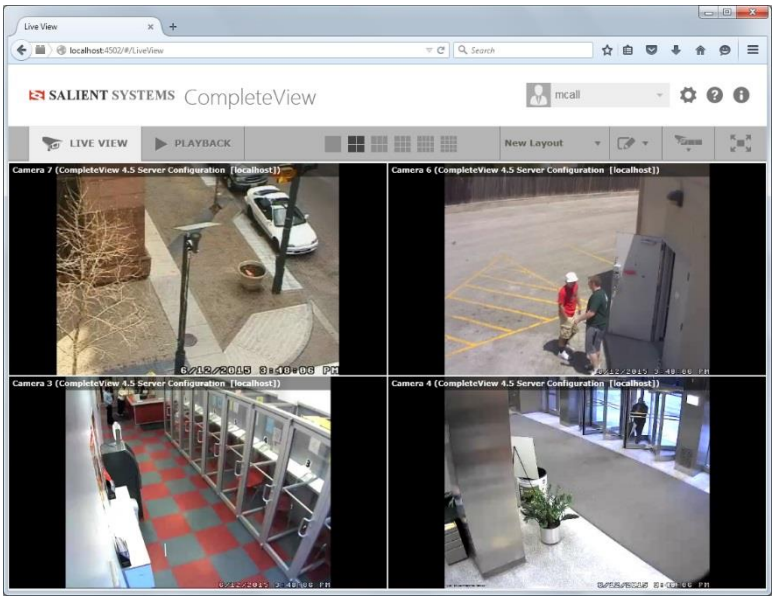
CV Spotlight provides a single pop up video on motion or alarm. The pop up dwell time can be adjusted to the customers liking. The pop-up video can be disabled and enabled by the customer. This is an end user tool that can be setup by the user and does not require administrator intervention. It is a 32-bit application that can be installed with the full CompleteView suite or as a standalone client on any workstation.




## Web Client

The Web Client application permits anyone with Microsoft Internet Explorer, Mozilla Firefox, or Google Chrome to view up to sixteen cameras live and recorded video from any enabled server, and at any desktop, in the system. Java is employed for CompleteView 4.4 and prior to steam and display video in MJPEG format. Beginning with CompleteView version 4.5 Microsoft's Silverlight plugin is used to steam and display video in MJPEG and H.264 format. The new 4.5 browser is displayed to the right. Commencing in CV 4.4.0.80, the web browser can be viewed using HTTPS.

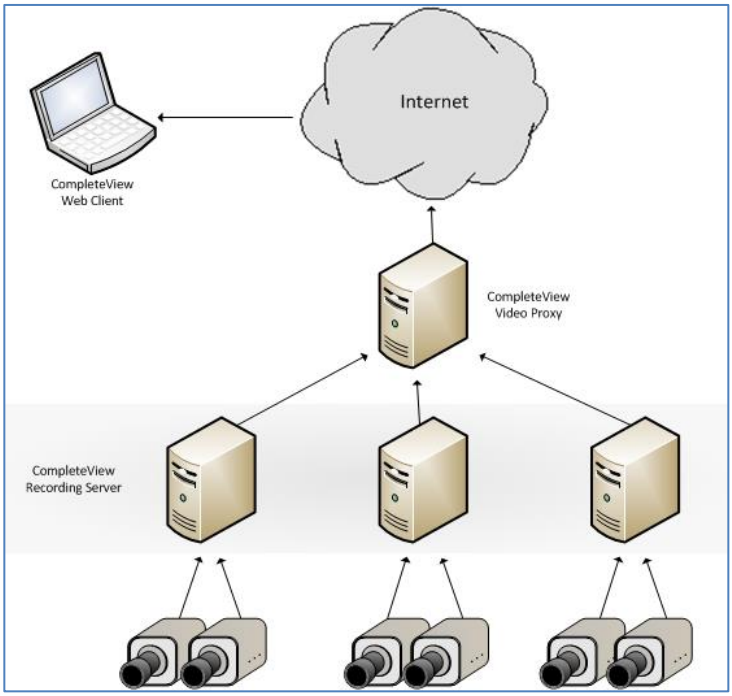
**CompleteView (v. 4.5) Web Client displaying Live Video**




Using Internet Explorer, Firefox, Chrome and Safari the Version 4.5 Web Client allows users to live view up to 16 cameras and manage live and recorded video in much the same way as the software installed Video Client with many of the same menu feature. Prior to CompleteView version 4.5 the web client was restricted to accessing a single server, but with the advent of CompleteView 4.5, the Web Client can host, display and play back video from multiple servers. Playback can display up to 4 video feeds, much like the Video Client Multi Playback. Dynamic Resolution Scaling is supported for both live viewing and playback. Configuration files can be originated and configured in one browser and exported for use in other browsers.

## Video Proxy Server

Video Proxy is an *optional* server that resides between the CompleteView servers and the end user. It takes video feeds from one or more CompleteView servers and streams the video from all attached server out to web browser clients, smart phones, both Apple and Droid, and iPads with the no-cost TouchView Mobile app installed. A user account for each user wishing to access video must be on the servers that are streaming video and the servers embedded web client must be enabled. The Video Proxy allows the CompleteView administrator to customize the presentation of the video with company logos and the like.




## Module Summary

This module discussed CompleteView's build and interaction. The foundation of CompleteView is represented in Window's services, which contains CompleteView's Administrative Service, CompleteView's Configuration Server and the CompleteView Server (the main NVR server). Each of the CompleteView applications were described. There is no quiz for this module.