CMS v1.1 Product Introduction

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Introduction

Imagine a scenario – there are 8 supermarkets located around the city, each of them containing 16 cameras and one network video recorder. By using ACTi NVR servers you get all the necessary functions and it is totally for free within 16 channels.

Now that you have 8 NVR servers recording videos from total of 128 cameras across the city, you might want to be able to access them all through a single display in the headquarters. It is now possible with newly released ACTi CMS (Central Management System) software that supports unlimited number of ACTi NVR servers and allows unlimited number of users to access the centralized live view of CMS.

Live View Monitor of ACTi CMS v1.1
Main Functions of ACTi CMS

- **Live view layouts** – it is possible to group specific cameras from different NVR servers into one CMS layout, for example the entrance cameras. You can even use an automated layout tour function to switch between the camera groups.

- **Receive events from all NVR servers** – video motion detection, passive infrared sensor and other alarm events from NVR sites will all be listed in CMS live view monitor together with the convenient one-click playback function.

- **PTZ control** – you can operate with all the PTZ cameras directly from CMS.

- **Dual Stream** – one of the main values of ACTi unified solution is the fully integrated dual stream system – while NVR servers are recording full resolution stream 1 from the camera for high quality evidence, the live view at NVR or CMS site can be done by the stream 2 from the camera with smaller resolution in order to reduce the traffic to remote site as well as reduce the loading of the computer that handles the live view.

- **E-map** – you can use the area maps of all the NVR sites together with camera icons and mini live views for convenient navigation in CMS. This way it is very easy to track the suspicious person who is walking from one camera view to another.

- **Two-way audio** – it is possible to hear the sound of all audio supported cameras and it is possible to talk to those cameras from the control room as well, in order to assist or warn somebody.

- **Other functions** – once you start using CMS you will discover many other convenient functions, such as synchronized playback, manual recording, manual snapshots and much more.
CMS Architecture

ACTi CMS v1.1 consists of …

- **CMS Server** – it is Windows based software with the database that contains information about all the NVRs and cameras that are accessible over the network. It also keeps monitoring the status of those NVR servers and maintains the log of user activity through CMS system. CMS server is able to manage unlimited number of NVRs and cameras. CMS server can either be installed in an independent computer (recommended for best performance) or in one of the NVR computers. CMS server is running as a background service in Windows platform and does not have its own user interface.

- **CMS Workstation** – it is the Windows based software with graphical user interface with the purpose of accessing CMS server over the IP network in order to do one of the following – request for live view of any of the NVR channels, do the playback of recordings from any NVR server, change CMS settings and much more.

  Unlimited amount of users may access CMS server by using CMS Workstations in their computers. Note that the computer that hosts CMS server also has to have its own CMS Workstation installed for basic configuration purposes, such as license management.

- **CMS Web Client** – it is the graphical user interface that does not require any installation – simply use Internet Explorer browser to access the IP address of the CMS server and the user interface that looks like CMS Workstation will be loaded to the browser instantly.

  With some slight differences, the CMS Web Client contains all the important functions just like CMS Workstation. Unlimited amount of users may use CMS Web Client to access CMS Server.

  The advantage of using CMS Web Client is the flexibility and convenience – no installation is needed in the remote computer and user interface can be loaded with the browser that is available in every Windows based computer. On the other hand, the advantage of using CMS Workstation is the speed – it does not require additional few seconds of time to load the user interface over the network before it is ready for service. Furthermore, CMS Workstation has a few more functions compared to Web Client.
Multi-site Management with CMS

Explanation of the CMS Architecture

In the example scenario above, there are three surveillance sites with one NVR server in each site doing the recording and providing the video stream for live view or playback for the guards in those sites through NVR Workstations.

There is also a control site (headquarters or main security office) with the CMS server that has an access to all the three NVR servers. The manager in the control site may use either CMS Workstation or CMS Web Client to do the monitoring of all the NVR sites.

The technical process of requesting live video or playback either for CMS Workstation or Web Client consists of following fully automatic steps:

1. CMS Workstation connects to CMS server to request video source
2. CMS Server notifies the CMS Workstation about location of the source (NVR server)
3. CMS Workstation will then directly connect to NVR server to request video stream
4. NVR will stream video directly to CMS Workstation without going through CMS server
How to Do Live Monitoring with CMS

Using Live View Monitor

The main benefit of CMS is to have convenient remote live view from unlimited number of NVR servers using just one display. The user may choose either CMS Workstation or CMS Web Client to do the live view.

Furthermore, it is possible to create special layouts for your own convenience, such as a layout that only contains “entrance views” or “parking lot views” of all the NVR sites. It is possible to switch between those layouts manually or let them appear on the screen in fully automated sequence.

To make the CMS usage even more convenient, all the events from NVR servers, such as motion detection alarms, will be listed directly under live view area, where each of the events is clickable for instant playback of the recorded video clip.

It is also possible to control PTZ cameras on the same display, open or close the motor-controlled doors with DO button and listen or speak to any of the audio-supported cameras.

Flexible permission system allows creating unlimited number of users and permission rules for CMS system – it is possible to define which NVR servers are allowed to be accessed by each user and whether that access is limited to live view only, or it is also permitted to do the playback or even change the settings of the system.

It is important to know that CMS server is not a video recorder. Recording process is done by NVR server. However, in case NVR is not scheduled to record the video stream, there is a convenient button in CMS live view window to activate instant recording in NVR server.

That’s not all – it is even possible to capture instant snapshots from any of the live view windows with one click and they will be saved in the computer that runs the Workstation or
Web Client.

**Using E-Map View**

When an incident occurs in one of the NVR sites, there is nothing better than E-Map system of CMS to have a quick and clear overview of the site.

The visual maps of the NVR site with camera icons and mini live views help the guard track the ongoing incident while the intruders move from one camera’s view to another.

This way it is even possible to predict in which camera the intruder will show up next and take necessary actions. E-Map system is also available in each NVR server.

It is possible to create hyperlinks between maps so that you can intuitively switch from one map to another while tracking the intruder.

You won’t miss any events while being in E-Map mode because it has its own Event Panel – all incoming events will be listed there and are clickable for instant playback just like in case of Live View monitor.

You may even consider using two monitors in control site – one for displaying the multi-channel layout of live video and another for showing E-Maps of NVR sites.
Technical Information

Save Bandwidth Cost with Dual Stream System

There are two factors that have an impact on the cost of the multi-site project with CMS:

- The cost of the computer that is doing the live view on the control center site.
- The cost of the Internet access from both camera site and control center site depending on the required bandwidth.

To reduce the cost of these factors, we aim to:

- Reduce the computing power consumption of live view computer so that the more budget friendly computer with less powerful CPU could be used instead.
- Reduce the bitrate of the live video stream from camera site to control site so that the low-bandwidth Internet access could be used for lower cost.

The best solution is to use dual stream system that is supported by ACTi TCM-series cameras, NVR and CMS by which it is possible to record megapixel resolution video with highest quality as video evidence while reducing the cost of the live view computer and Internet bandwidth at the same time. The graph below illustrates the flow of dual stream system.
It is possible set two streaming configurations in TCM-series cameras. For example, you can set the first stream (media 1) to be with megapixel resolution and compressed with H.264 so that when it is streamed to NVR server then this stream can be recorded as high quality video evidence with best possible compression rate that can save the cost on storage space. Such high quality evidence can later easily be exported as AVI video or snapshots over the local network or Internet.

At the same time, you can set the 2\textsuperscript{nd} stream (media 2) in the camera to be with smaller resolution, for example VGA and with lower bitrate setting. NVR server will receive media 2 from camera and forward to all the clients who request live view, including the NVR Workstation and the CMS Workstation. In case CMS Workstation is located at the control site that has an access to NVR server over the public Internet, the bitrate of media 2 becomes a key factor in optimizing the bandwidth cost of using Internet access. The smaller is the bitrate of media 2, the cheaper Internet access package you can purchase from local telecom.

Will low bitrate and low resolution stream look worse in live view window compared to high resolution and high bitrate stream? The answer is “no”. Because live view layouts that contain at least 2 cameras have to fit everything on screen, each “cell” in that layout is already physically smaller than VGA anyway, therefore there is no visual difference at all.
To sum up: with dual stream system it is possible to save several thousands of US dollars in each multi-site project.

**Data Storing under CMS Architecture**

Since CMS system usually involves several computers, some of which are working as servers and some as remote or local clients, you might want to know where are the videos, snapshots and log files saved in such multi-computer architecture.

The table below gives a brief overview about the data storage.

<table>
<thead>
<tr>
<th>Activity Category</th>
<th>Activity Type</th>
<th>Save to ...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NVR Server PC</td>
</tr>
<tr>
<td>Video Recording</td>
<td>NVR Scheduled</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>NVR Event</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>NVR Manual</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>CMS Manual</td>
<td>Y</td>
</tr>
<tr>
<td>Snapshot</td>
<td>NVR Event</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>NVR Manual</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>CMS Manual</td>
<td>Y</td>
</tr>
<tr>
<td>Media Export</td>
<td>Video Export</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>Snapshot Export</td>
<td>Y</td>
</tr>
<tr>
<td>System Log</td>
<td>NVR User Operations, Events</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td>CMS User Operations</td>
<td>Y</td>
</tr>
</tbody>
</table>
License Management

Although NVR Enterprise servers do not require license for hosting up to 16 cameras per server, the CMS server requires one license per each NVR server it manages.

The flow of obtaining the license is shown below:

<table>
<thead>
<tr>
<th>License Purchase Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refer to the ACTi official price list for license information</td>
</tr>
<tr>
<td>Contact either local distributor or ACTi sales representative for license order</td>
</tr>
<tr>
<td>The license will be sent to you by e-mail first and followed by the CD and official license card via regular mail.</td>
</tr>
</tbody>
</table>

Once you have received the license key and you have also completed the installation of CMS, then you can activate the license key by using either “online activation or “offline activation”.

Online Activation

It is very convenient; however, it requires CMS Server to have an access to public Internet.

<table>
<thead>
<tr>
<th>Online Activation Flow</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you do not have a member ID in ACTi website yet, you can register one for free at <a href="http://member.acti.com/">http://member.acti.com/</a></td>
<td>ACTi website</td>
</tr>
<tr>
<td>Go to CMS Server's PC, open CMS Setup's license tab, select “Online Registration” and key in the license key, member ID and password.</td>
<td>CMS Setup</td>
</tr>
<tr>
<td>Done!</td>
<td>-</td>
</tr>
</tbody>
</table>
**Offline Activation**

It has more steps, but works even if CMS Server does not have an access to public Internet. During this process, you still have to find any other computer that has an access to Internet so that some steps could be performed at ACTi website.

<table>
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<th>Online Activation Flow</th>
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<tbody>
<tr>
<td>If you do not have a member ID in ACTi website yet, you can register one for free at</td>
<td>ACTi website</td>
</tr>
<tr>
<td><a href="http://member.acti.com/">http://member.acti.com/</a></td>
<td></td>
</tr>
<tr>
<td>Check the network card address (MAC) of the CMS server PC by using license tab of CMS</td>
<td>CMS Setup</td>
</tr>
<tr>
<td>setup. You will need it below.</td>
<td></td>
</tr>
<tr>
<td>Go to “CMS Registration” page under “Support” section of <a href="http://www.acti.com">www.acti.com</a>.</td>
<td>ACTi website</td>
</tr>
<tr>
<td>You will be asked to log in with member ID.</td>
<td></td>
</tr>
<tr>
<td>Input the license key and the MAC address into the form and submit it.</td>
<td>ACTi website</td>
</tr>
<tr>
<td>You will receive an automatic e-mail with the activation code file in the attachment.</td>
<td>Mailbox</td>
</tr>
<tr>
<td>Go to CMS Server's PC, open CMS Setup’s license tab, select “Offline Registration”.</td>
<td>CMS Setup</td>
</tr>
<tr>
<td>Press “Import Activation Key” button and load the “.lic” file from the e-mail attachment into CMS server.</td>
<td></td>
</tr>
<tr>
<td>Done!</td>
<td>-</td>
</tr>
</tbody>
</table>
Questions and Answers

Q: How do I get the CMS server?
A: It is available at http://www.acti.com/product/detail/Application_Software/ACTi_CMS

Q: Can NVR server and CMS server be in the same PC?
A: Yes, but remember to define different port number for each of them during the installation process.

Q: Do I need to configure Internet Information Service (IIS) manually during installation?
A: No, IIS will be automatically configured during installation process for Windows Vista, 2008 and 7.

Q: Why can’t I open the CMSMonitor after successful installation?
A: Use CMSSetup first and activate license key. After that you will be able to open CMSMonitor.

Q: How can System Integrators purchase the license key?
A: Please contact your regional distributor and they will handle the purchase process for you.

Q: What to do if customer changes the server PC for CMS/NVR server?
A: Contact technical support via www.acti.com/chd for assistance.

Q: Can the existing license key still be used after software upgrade?
A: Yes

Q: What to do if license key is lost?
A: Contact technical support via www.acti.com/chd for assistance.

Q: Will the license key expire if customer doesn’t activate the license immediately?
A: No, there is no expiry date.

Q: Can the license key be used multiple times once the customer has activated the license key?
A: Each license key can only be activated once.

Q: What is the difference between Basic and Advanced mode in CMSMonitor?
A: To save computing resources of the client PC, the basic version does not have several functions, such as PTZ control, audio out and broadcast, system monitor. Also, the maximum
layout size is limited to 12.

**Q:** What if I do not receive an e-mail after activating license key on www.acti.com website or my mailbox is no longer available?

**A:** Contact technical support via www.acti.com/chd for assistance.