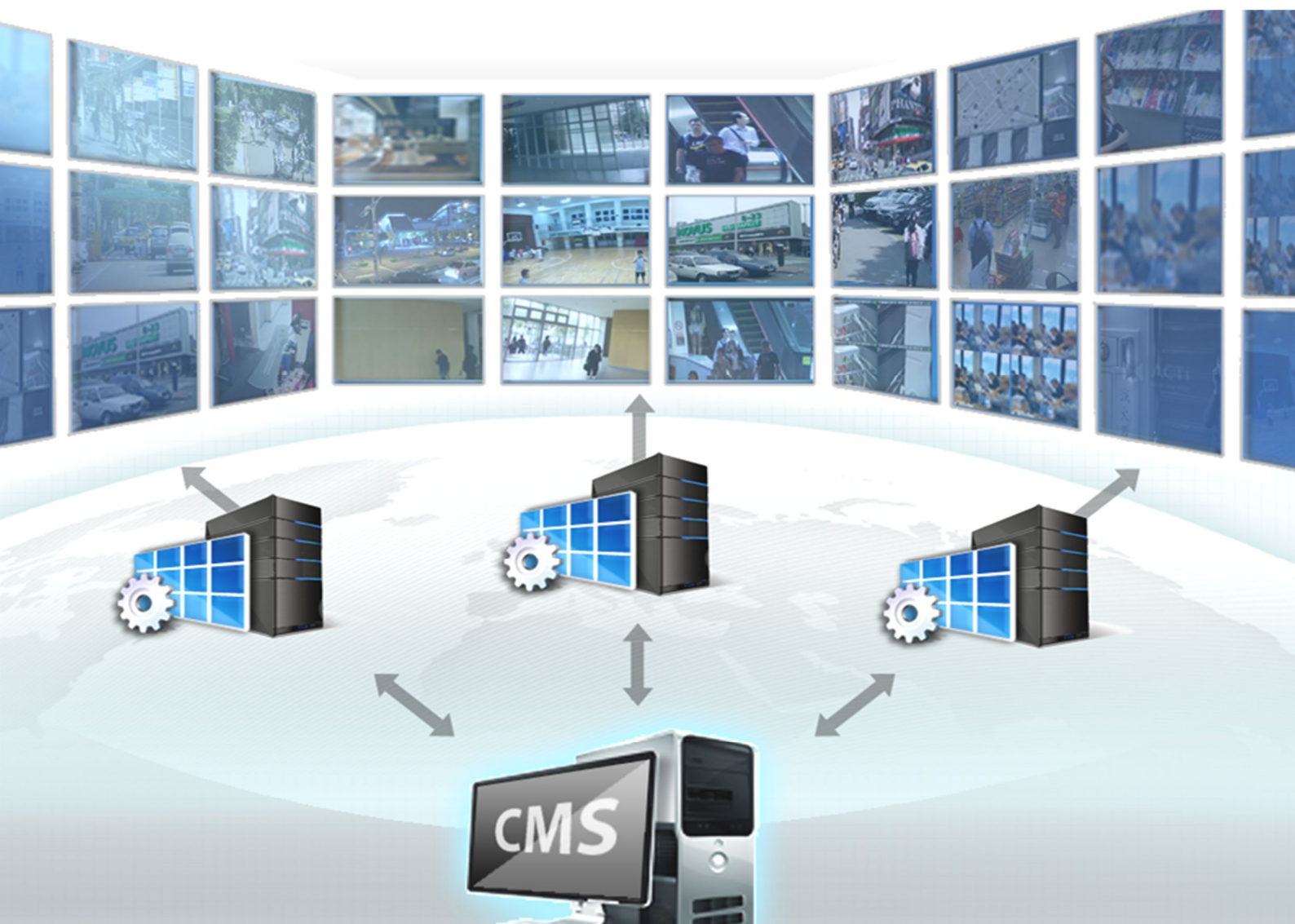




TV WALL

System Administrator's Manual

For V1.0.06 Version



Legal Notice

Disclaimer

- The information contained herein is subject to change without notice.
- The English version of this document is the official one for all purpose. All the translated versions are provided as a convenience. Any discrepancies or differences created in the translations of any other languages are not legally binding.

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About This Manual

Target Audience

This manual is intended for **System Administrators** who are responsible for installing and setting up **TV Wall Server Stations**. The reader is expected to know the fundamentals of IP surveillance system integration and the skills of setting up the multi-monitor environment, as well as to own the administrative privileges of CMS server in order to access the **TV Wall Server** settings and layout arrangements.

Technical Support

If you have any questions during system installation, please feel free to contact our engineers via our **Customer Help Desk** platform <http://global.level1.com/getsupport.php?action=init>

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Introduction

Product Overview

In a video surveillance deployment, especially with hundreds or thousands of cameras monitoring vast areas, it is ideal for the control center to employ a TV Wall display system. As the TV Wall system offers multiple screens to display good picture clarity and distinguished details of numerous channels, the security personnel is benefitted a lot when monitoring unusual activities and analyzing video data. With the adoption of large screens, it also allows a group of viewers to watch simultaneously, which is not likely to be carried out on a single normal-sized monitor.

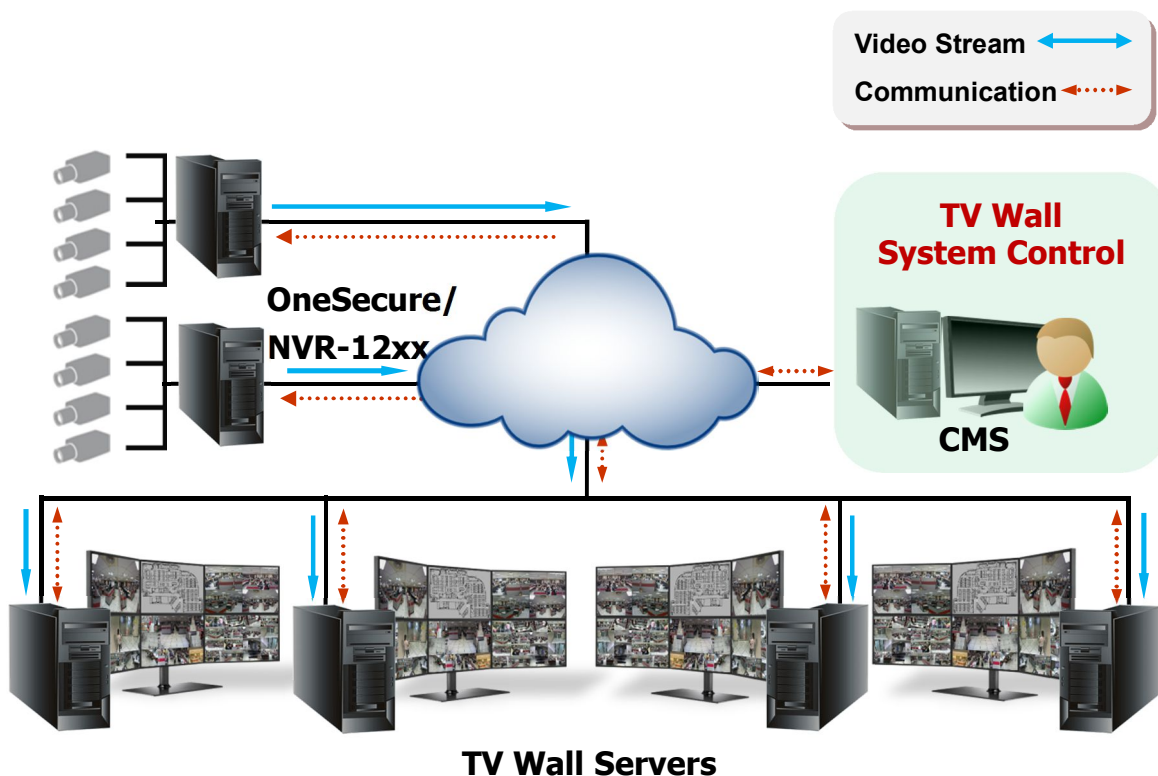
To ensure that your central management system is compatible with future-proof display deployment, **TV Wall**, an add-on of CMS server, enables multiple CMS preset views to be displayed on different monitors at the same time. A system operator no more needs to switch between layouts on the same screen with the help of **TV Wall**, which indeed brings more operational efficiency and gets the viewer more awareness of occurring incidents.

Installed on a separate server computer, **TV Wall** application is scalable and flexible due to its hardware independency. In other words, the number, types, as well as configurations of the adopted monitors are totally up to the installer's decision and installation budget for the project's display needs.

System Architecture

Within **CMS** system, a **TV Wall Station** acts as a **CMS Client**, it consists of a **TV Wall Server** computer (where **TV Wall Server** program is installed) and multiple monitors. As the **TV Wall** service starts up, **NVR Servers** will be requested by **CMS Server** to stream video to **TV Wall Station**.

However, with the purpose of pure real-time monitoring, a **TV Wall Station** is more like a video recipient, for only live video and motion alerts are presented on **TV Wall** monitors; while other operations such as video playback or PTZ control are performed via genuine **CMS Client** interface (as **Web Client** or **Workstation Client**).



System Requirement

The performance of TV Wall display quality is largely determined by the computer hardware capability and number of live channels. The table below provides basic guidelines for selecting proper hardware for **TV Wall Server** computer **(1*)**.

Minimum PC Spec	Live Channel Number ^(*3)	Standard ^(*2)	Advanced ^(*2)
CPU	<100	Intel Core 2 Quad 2.4 GHz	Intel Core i5 2.4 GHz
	100-200	Intel Core i5 2.4 GHz	Intel Core i7-920 2.67 GHz
	>200	Intel Core i7-920 2.67 GHz	Intel Core i7-3970X 3.5 GHz
RAM	1-400	4GB	
	>400	8GB ^(*4)	
Operation System	Windows 7, Windows 8, Windows Server 2008, Windows Server 2012 ^(*5)		
Network	Ethernet 1000 Base-T		

***1** These specifications are based on following camera settings:

1280x1024, 3Mbps, 18fps, MPEG-4

***2** In some cases, the dropping of frames on live view is done purposely to avoid system instability caused by CPU overload. **TV Wall Server** program will automatically activate “**Decode I Frame Only**” mechanism for all live channels when the server’s CPU loading is over 80%. The computer system at **Standard** level may occasionally switch to “**Decode I Frame Only**” mode, which provides fewer frames per second but still enough to tell significant movements and original image resolution; while an **Advanced** level computer allows live channels to display at original video frame rate all the time due to a more powerful CPU.

***3** The total concurrently displayed channels of all monitors. For example, a station of **6** monitors whose layout using the arrangement below will have **1x1 + 2x9 + 3x16**
= total **67** live channels

1 monitor displaying 1x1 layout
2 monitors each displaying 3x3 layout
3 monitors each displaying 4x4 layout

***4** Please use 64-bit Windows operation system if your TV Wall Server computer has more than 4GB RAM.


Microsoft Windows Operation System has limits on memory and address space, regardless of the real or virtual memory available on a particular computer. Take Windows 7

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Professional for example, the maximum physical memory for a 32-bit(X86) system can address is 3.5 GB even though 16 GM of RAM has been installed on this computer. Therefore, if you consider increasing the computer's multi-tasking capability by adding more RAM, you'll need a 64-bit version of Windows to take advantage of it all.

Please visit the link below

http://msdn.microsoft.com/en-us/library/aa366778%28VS.85%29.aspx#physical_memory_limits_windows_7 for more memory limitations on various Windows platforms.

Besides the limitation mentioned above, you may find the usable memory displayed on  → **Computer** → **Properties** is still less than actual installed memory.

This is a common symptoms of all Windows platforms, please find explanations and solutions in this Windows official support document

<http://support.microsoft.com/kb/978610/en-us> ;

<http://windows.microsoft.com/en-us/windows7/taking-the-mystery-out-of-64-bit-windows>

*5 Please make sure your operation system is fully patched with the latest service packs.

Installation

The installation process involves two phases – setting up **TV Wall Station** and configuring **TV Wall Views**.



TV Wall Station

1. Connect the Monitors
2. Adjust the Display Settings
3. Install TV Wall Server Program
4. Activate TV Wall License
5. Start TV Wall Service
6. Disable Windows Screen Saver and Monitor Sleep



CMS Client

1. Add TV Wall Servers
2. Create TV Wall Views
3. Assign Views to Monitors

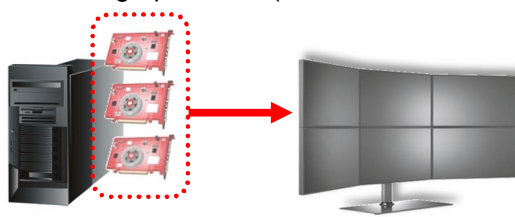


Connect the Monitors


The setup of multiple monitors involves several different sources – hardware, software and configurations; hence, there is no real limit to the scale of a TV Wall Station. With the employment of dedicated appliances, a professional personnel can even implement a high-end video wall in CMS system.

To leave the most flexibility and scalability for multi-monitor installation, TV Wall application is designed as a seamless solution to go with any level of TV Wall Station. Installed with TV Wall Server program, a windows server computer can turn into the CMS client, without extra adjustments made on the computer itself.

In general, the key factor determining how many video outputs a server computer supports are the number and capabilities of graphic card (on-board or external).



Please make sure your equipments can fulfill the required number of monitors, and consider the following means to have all your components work smoothly together:

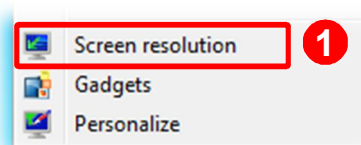
1. The computer's motherboard supports your required number of graphic cards. It is recommended that you use the same model of graphic cards to avoid problems caused by mixing different models. For example, a TV Wall Station of 6 monitors requires all the following conditions:
 - a. A computer whose motherboard supports 3 graphic cards.
 - b. 3 graphic cards, each capable of outputting to 2 displays at the same time.
 - c. 6 monitors whose video inputs match the graphic cards' output port types.
2. Go to [Microsoft Update](#) to install any related hardware updates and operation system device packs.
3. Visit the manufacturer's website to update the graphic cards' drivers to the latest. By now, your computer should have recognized all the connected graphic cards and show them under  **Display adapters** on **Windows Device Manager**.
4. Power on all the monitors, and connect them well with the computer.

Adjust the Display Settings

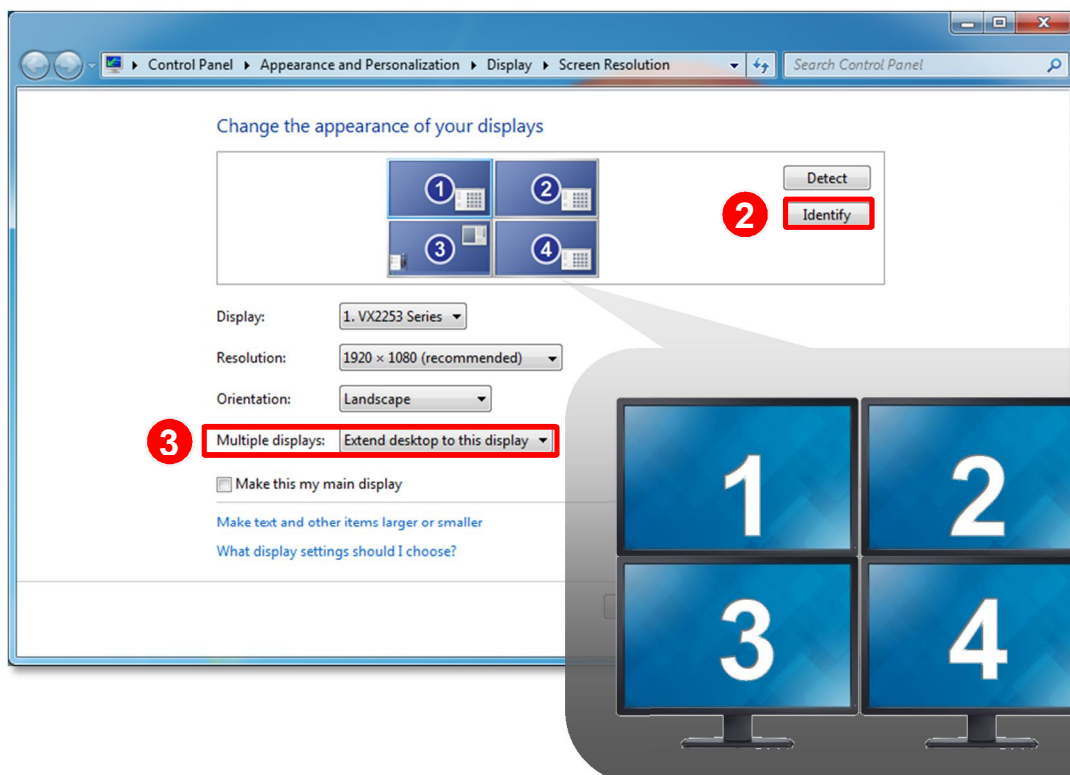
After connecting the monitors, have your computer identify them and arrange them to fit your display needs.

The instructions below will give you the fundamentals of how to adjust Windows display settings on the server computer. Despite the fact that the demonstration of settings shown here is for **Windows 7**, all the mentioned settings are available for other Windows operation systems.

1. Right-click on the **Desktop** and select **"Screen resolution"**.



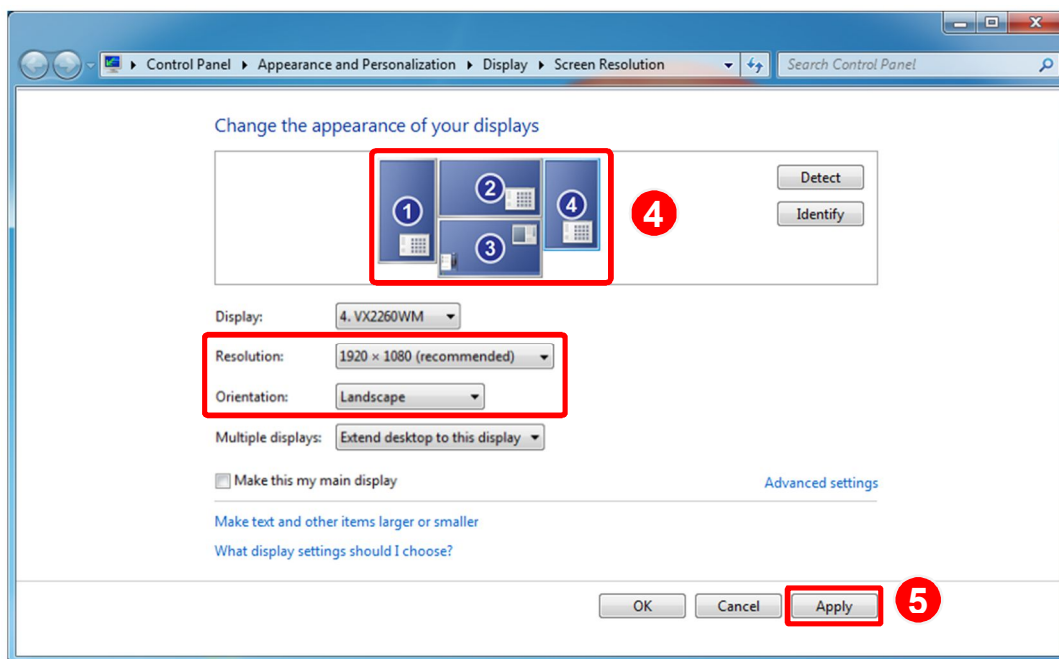
2. On the **"Screen Resolution"** panel, click **"Identify"** to match the physical monitors against their identity numbers. The monitor IDs will appear on physical screens for a while.



3. Select **"Extend desktop to this play"**, this will enable each monitor to become a separate display unit.

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4. In the displays arrangement area, drag and drop the monitors to fit their actual position. When arranging the position, please put the order of monitor IDs into consideration, for this order determines how the mouse move between the monitors. You may also adjust the screen orientation and dimension by modifying **Orientation** and **Resolution** properties.



5. Click **Apply** to save the settings. You may click **Advanced settings** to modify advanced monitor profile.

You may visit these links for articles about adjusting display settings for multiple monitors on different Windows O/S:

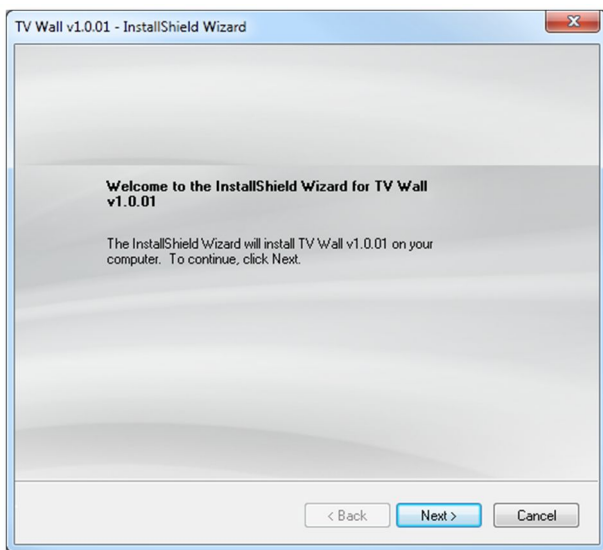
Windows 7

<http://windows.microsoft.com/en-us/windows7/work-and-play-better-with-multiple-monitors>

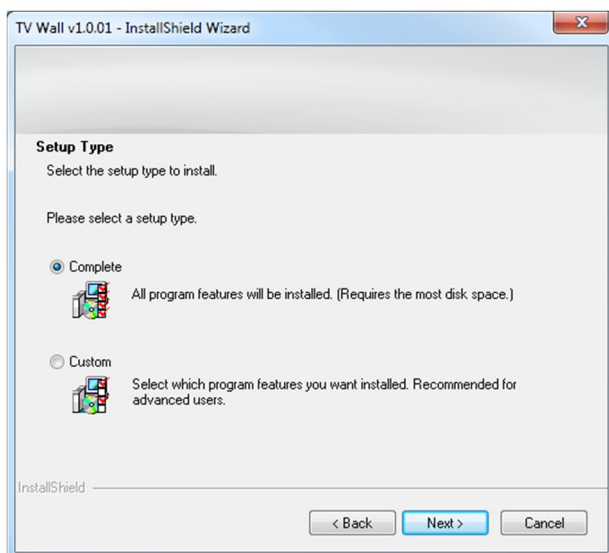
Windows 8

<http://windows.microsoft.com/en-US/windows-8/how-connect-multiple-monitors>

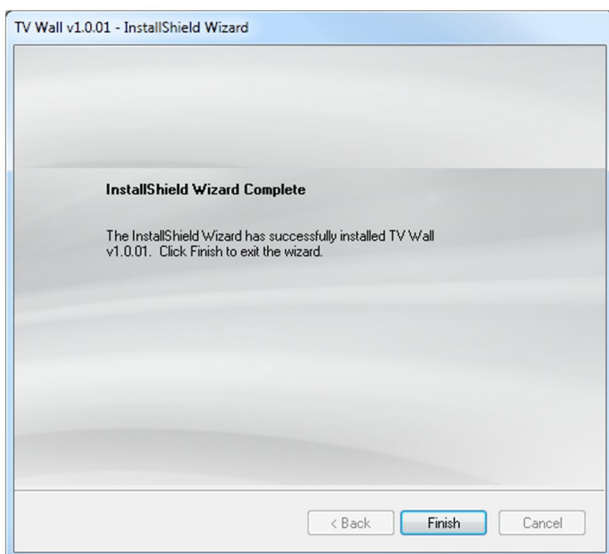
Install TV Wall Server Program



Execute the install shield on the TV Wall server computer.



Select **“Complete”** for **Setup Type**



Click **“Finish”** when the installation is complete.

After successful installation, the **TV Wall Administrator Tool** icon will appear on your **Windows Status Bar**.



Activate TV Wall License

TV Wall Server requires a license for this single TV Wall Server computer. The license is matched against the MAC address of the Network Interface Card (NIC) on this server computer. Once this license key is used, it cannot be activated with another MAC.

Contact sales representatives to purchase the license and obtain the License Key. Upon the activation of license with the License Key, TV Wall server will automatically start up.

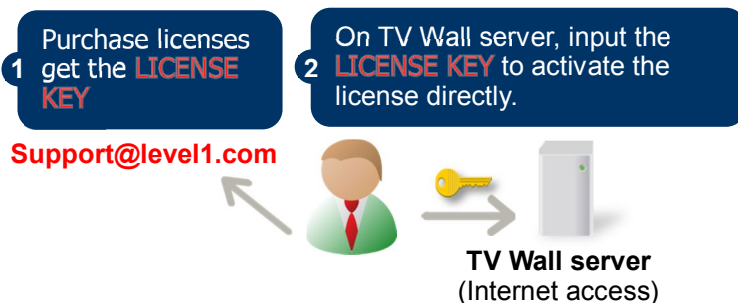
Please note, for a TV Wall Station

- Only **one** TV Wall license can be activated on a single server.
- This license allows unlimited number of monitors.
- This license allows unlimited number of concurrently displayed channels.

There are two ways to activate TV Wall license depending on your network condition:

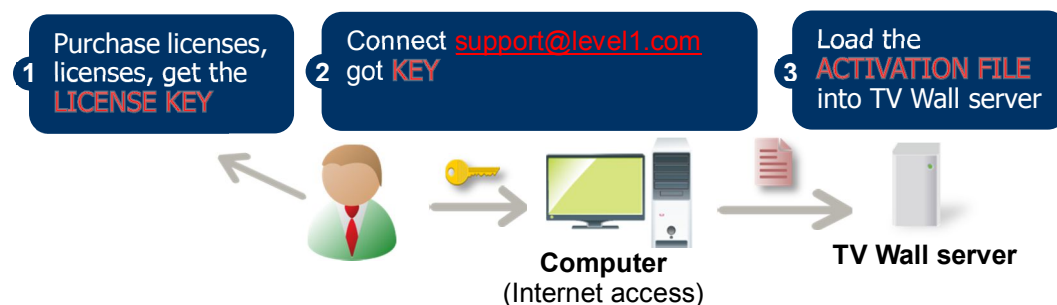
Online Activation

If there is available Internet access your TV Wall Server computer, choose online activation.




Offline Activation

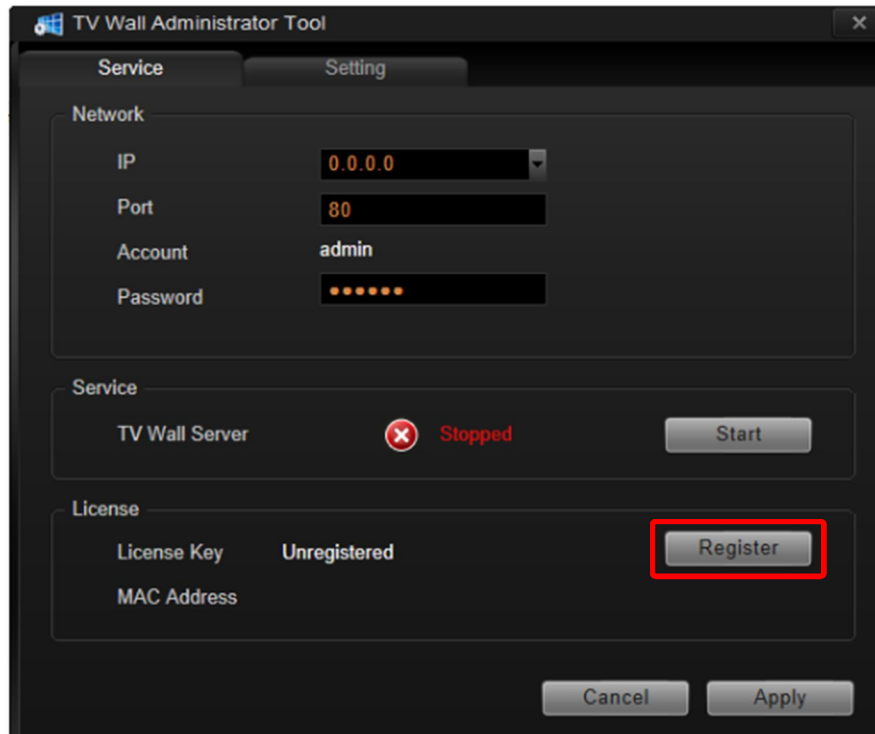
Offline activation does not require Internet access for TV Wall Server. It is used when TV Wall Server computer is located in network not connected to public Internet (e.g. in a military base). You will need to get an activation file from another computer and transfer it to TV Wall Server computer.



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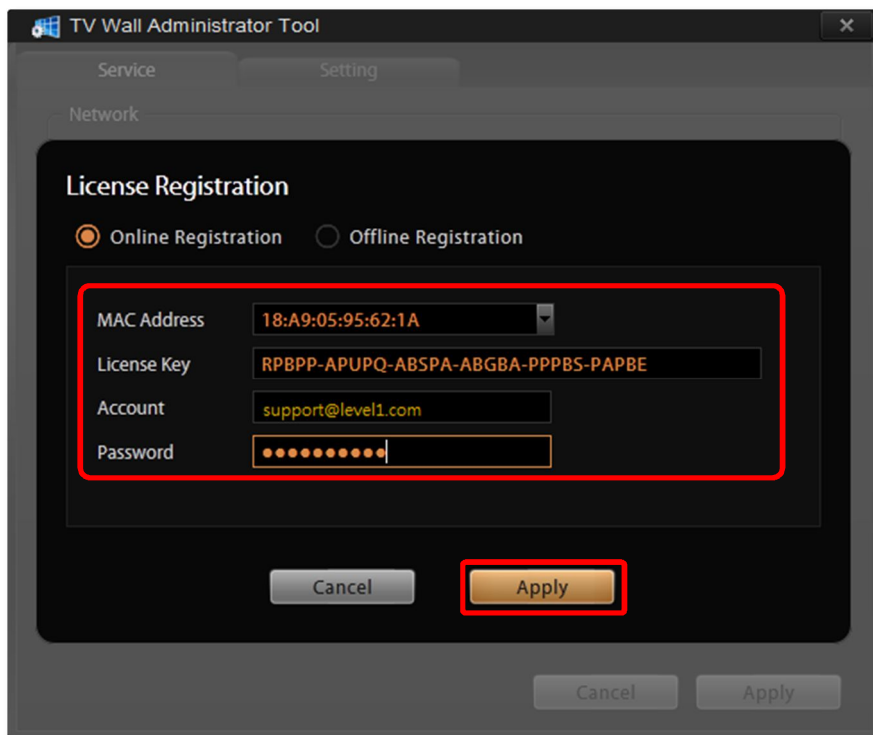
Step-by-step Online License Activation

1. On **Windows Status Bar**, double-click the icon  to bring up **TV Wall Administrator Tool** panel. On **Service** tab, click "**Register**".



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2. After choosing “**Online Registration**”, select a **MAC Address**, fill in the **License Key** information and **Account/Password** of account, and then click “**Apply**”.



The screenshot shows the 'TV Wall Administrator Tool' window with the 'Setting' tab selected. The 'Network' section is active, and the 'License Registration' dialog is open. The 'Online Registration' radio button is selected. The fields are filled with the following information:

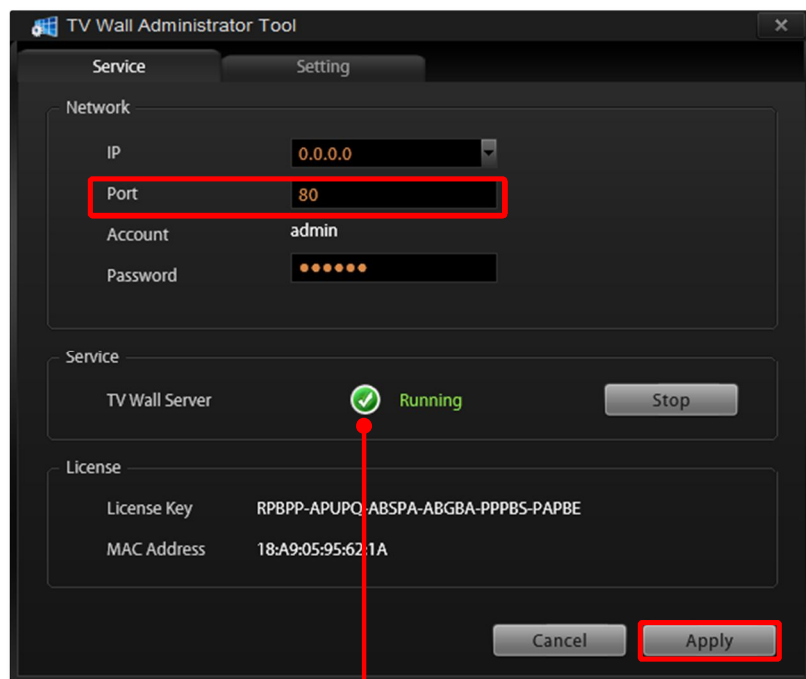
Field	Value
MAC Address	18:A9:05:95:62:1A
License Key	RPBPP-APUPO-ABSPA-ABGBA-PPPBS-PAPBE
Account	support@level1.com
Password	••••••••

At the bottom of the dialog, there are two buttons: 'Cancel' and 'Apply'. The 'Apply' button is highlighted with a red box. There are also 'Cancel' and 'Apply' buttons at the bottom of the main window.

Start TV Wall Service


Upon successful license activation, the TV Wall server will automatically start the service using local host **IP 0.0.0.0** and default **Port 80**.


Make sure the service is running in order that CMS server can connect this **TV Wall** server.



If the port **80** (of **TV Wall Server**) is being used by another service, you will have to define a new port in **Port** field, and then click **Apply**.

The service will start right away.

 Service has stopped

 Service is running

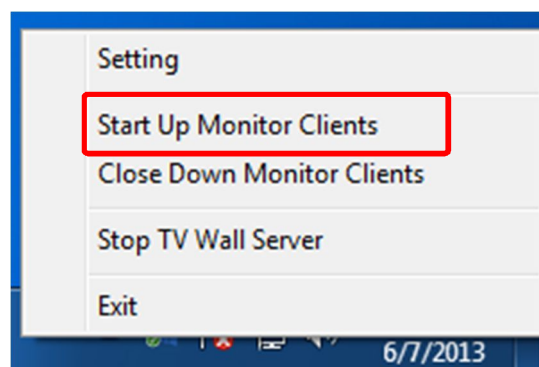
Bring up the Views

After the **TV Wall Server** starts its service, you have to bring up the Views.

On **Windows Status Bar**, right click **TV Wall Server** icon to open the quick menu.



By selecting **Start Up Monitor Clients**, all your monitors will display the Views in full screen.




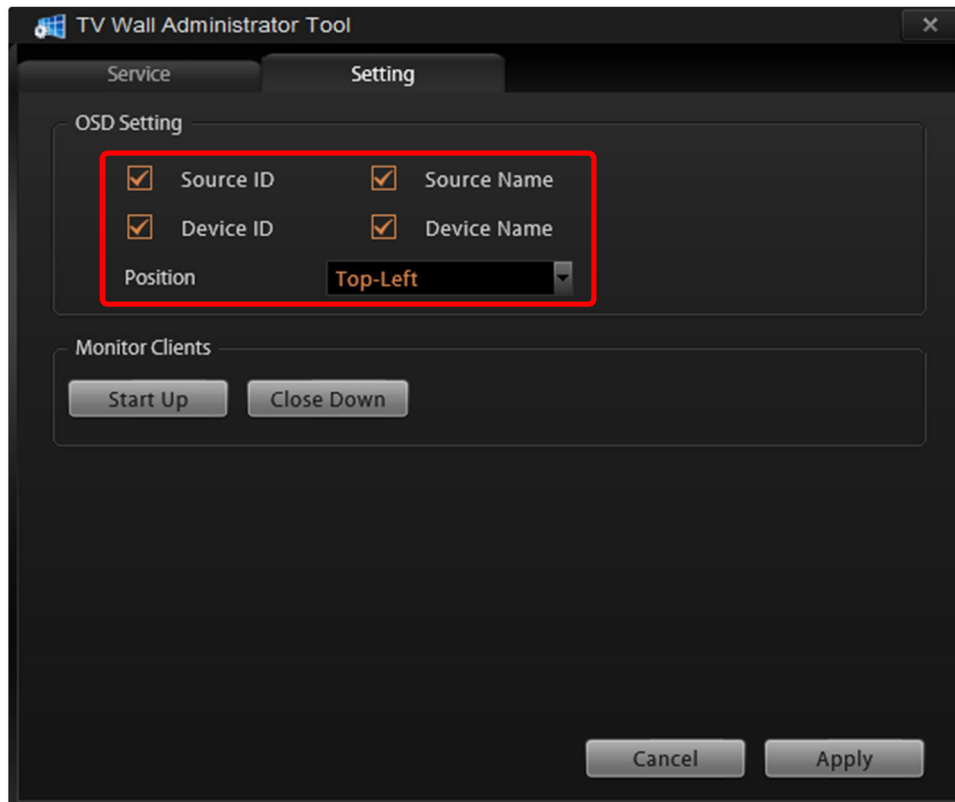
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Configure OSD Settings of Monitors

You can remove the text overlaying on channels or change the position.



On **Windows Taskbar**, double-click the  to bring up **TV Wall Administrative Tool**, and click **Setting**. Check the text you want to show or change its position, and then click **Apply**.



Disable Windows Screen Saver and Monitor Sleep

To have the monitors display Views constantly, you have to make sure the screen saver has been disabled, and that the Display will never turn off when your system goes idle.

Disable Windows Screen Saver

Windows 7

1. Go to **Control Panel** → **Appearance and Personalization** → **Change screen saver**.
2. Select **None** from Screen saver drop down list and click **Apply**.

Windows 8

1. Go to **Control Panel**, type **screen saver** in the search box and select **Turn screen saver on or off**.
2. Select **None** from Screen saver drop down list and click **Apply**.

Make the Monitors Always Stay Awake

Windows 7

1. Go to **Control Panel** → **Power Options**.
2. Select a **Plan** and click **Change plan settings**, change all the dropdown list to **Never** and click **Save changes**.

Windows 8

1. Go to **Control Panel**, type **Power Options** in the search box.
2. Double click **Power Options**, select a **Plan** and click **Change plan settings**, change all the dropdown list to **Never** and click **Save changes**.

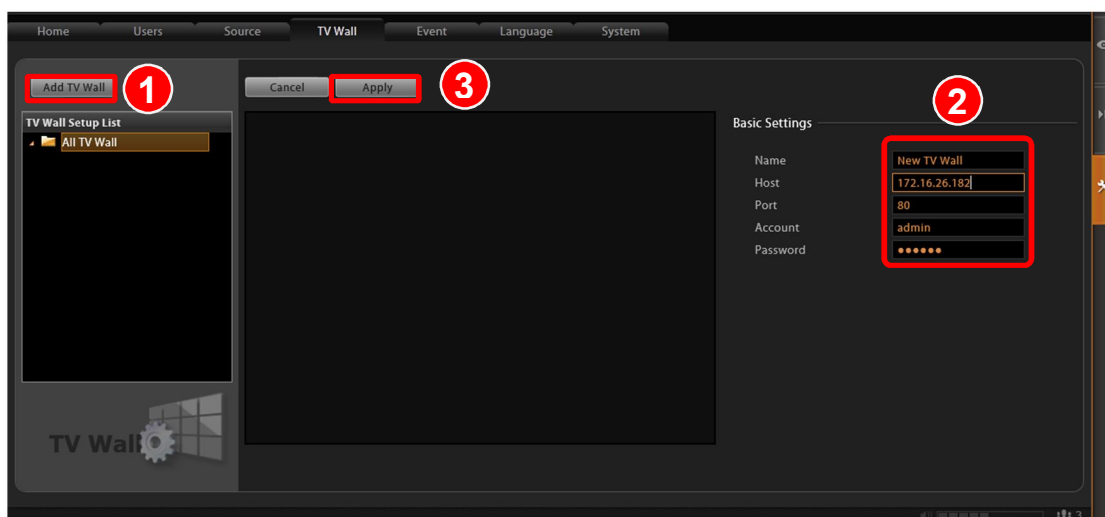


Configure TV Wall Monitor Views

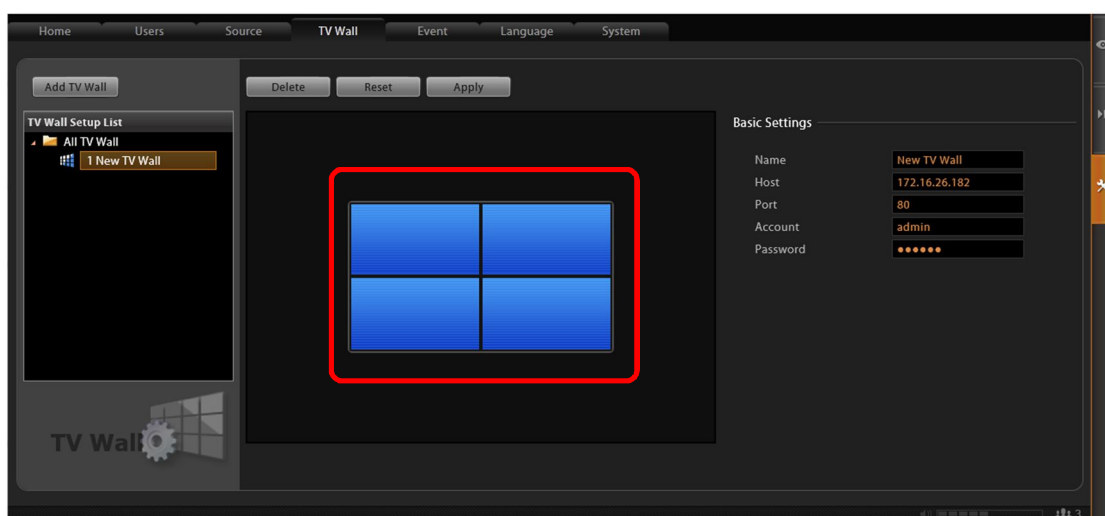
Before adding a TV Wall Server to CMS system, make sure this TV Wall Server has started its services.

Add TV Wall Servers

1. Access CMS Server, go to **Setup** page → **TV Wall**, Click “**Add TV Wall**”
2. Input a **Name** of TV Wall server and its connection properties – **Host**, **Port**, **Account** and **Password**. (Default account: **Admin** password: **123456**), click “**Apply**”.



After applying the settings, CMS will detect the display arrangement of this station.



If you apply new display settings on TV Wall Server later, CMS will be synchronized simultaneously. Repeat **Step 1~2** to add another TV Wall Server, all the added servers will be listed in **All TV Wall** category.



Create TV Wall Views

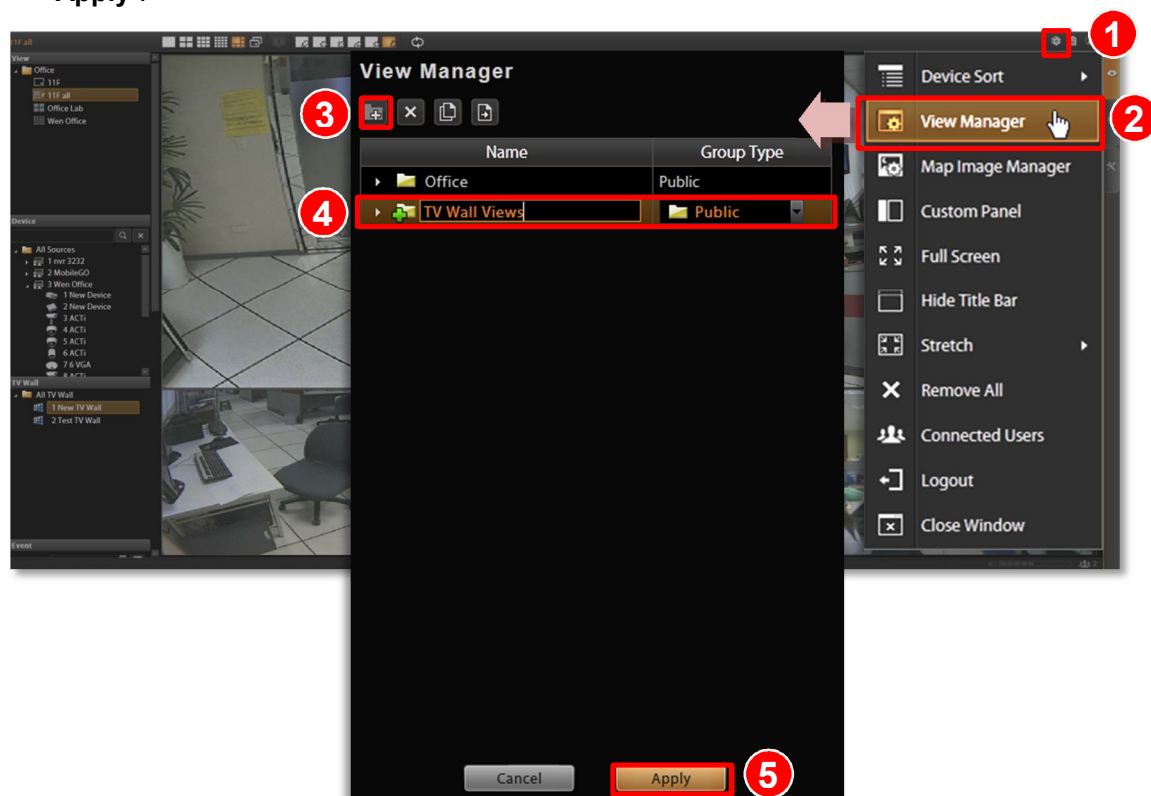
A single TV Wall monitor is nothing more than a pure CMS live view client, it displays a View you assign via CMS interface. After the TV Wall Servers are added to CMS system, you may now start preparing the Views to be displayed on the monitors.

For convenience, you may assign existing CMS preset views to TV Wall monitors. It is suggested that, however, you should separately manage the TV Wall Views.

This chapter will provide instructions on how to (1) create a specific group for TV Wall monitor views, (2) copy existing CMS Views to the new TV Wall Views group, (3) edit the Views, (4) create a TV Wall controller View.


Create a TV Wall Views Group (Optional)

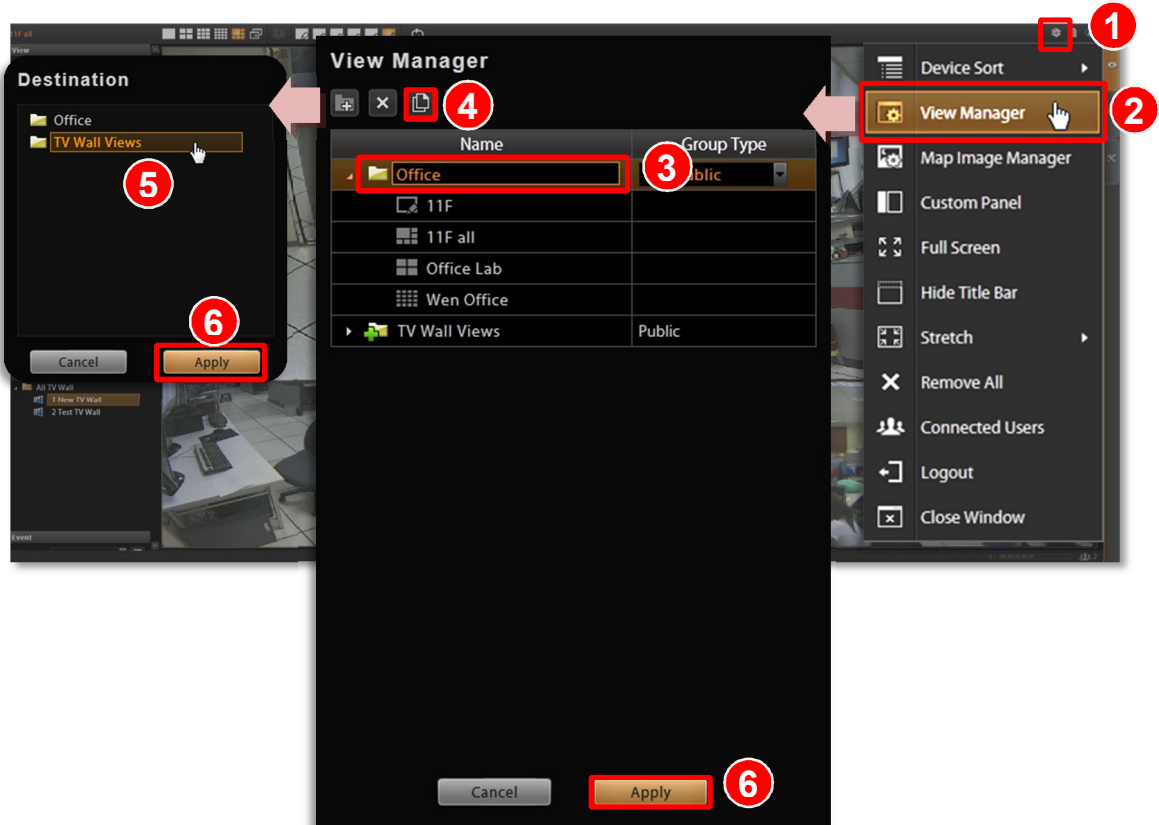
1. On CMS **Live View** screen, click  → **View Manager**.
2. On **View Manager** window, click  to add a new group, input the group **Name** and click **“Apply”**.



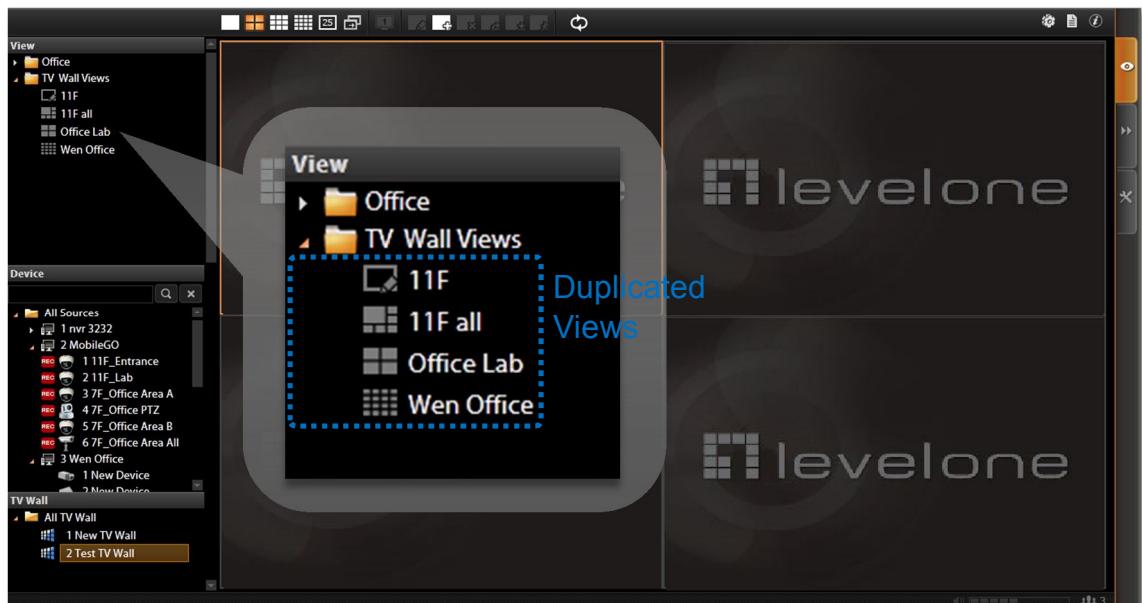
Copy Existing Views (Optional)

To save time and effort, you may copy existing CMS views to the *TV Wall Views* group just created, and modify them later.

1. On CMS **Live View** screen, click  → **View Manager**.
2. On **View Manager** window, select a view group or a view you want to copy, click  and then the destination - *TV Wall Views* group, and click **Apply**.



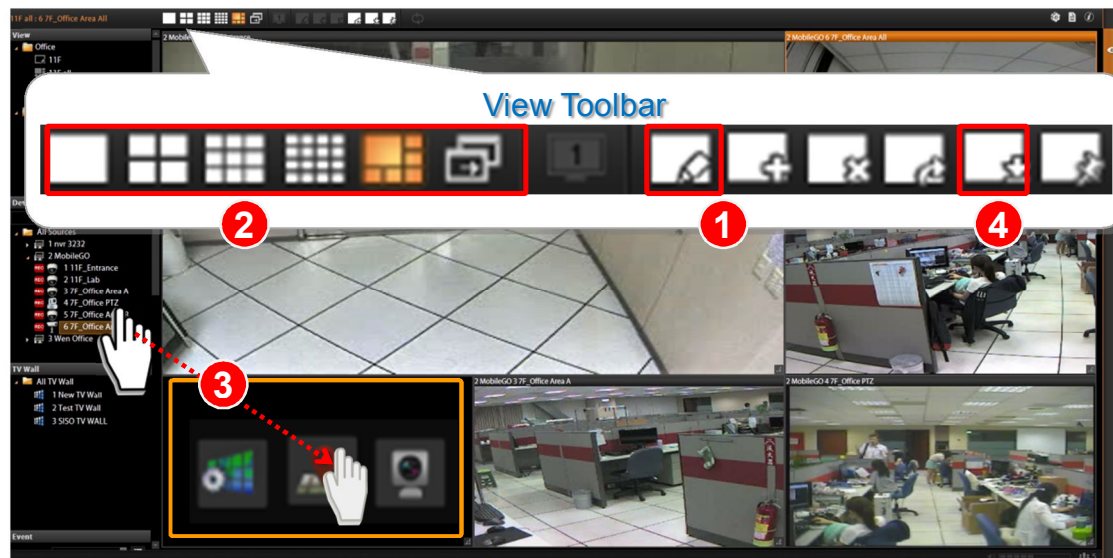
3. On **View** list, you may see the duplicated views in *TV Wall Views* group.



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Edit Views (Optional)

Modify the Views to fulfill the needs of **TV Wall** station by using the buttons on **CMS View Toolbar**.



After selecting a **View** from **View** list:



(1) On **View Toolbar**, click  to enter edit mode.

(2) Select a layout style.

(3) •To add a camera view:

Pull a device from **Device** list to a channel.

•To add a map view:

Select a channel and click , upload the map, drag the lower right corner  to adjust map size.


(4) On **View Toolbar**, click  to save the view.

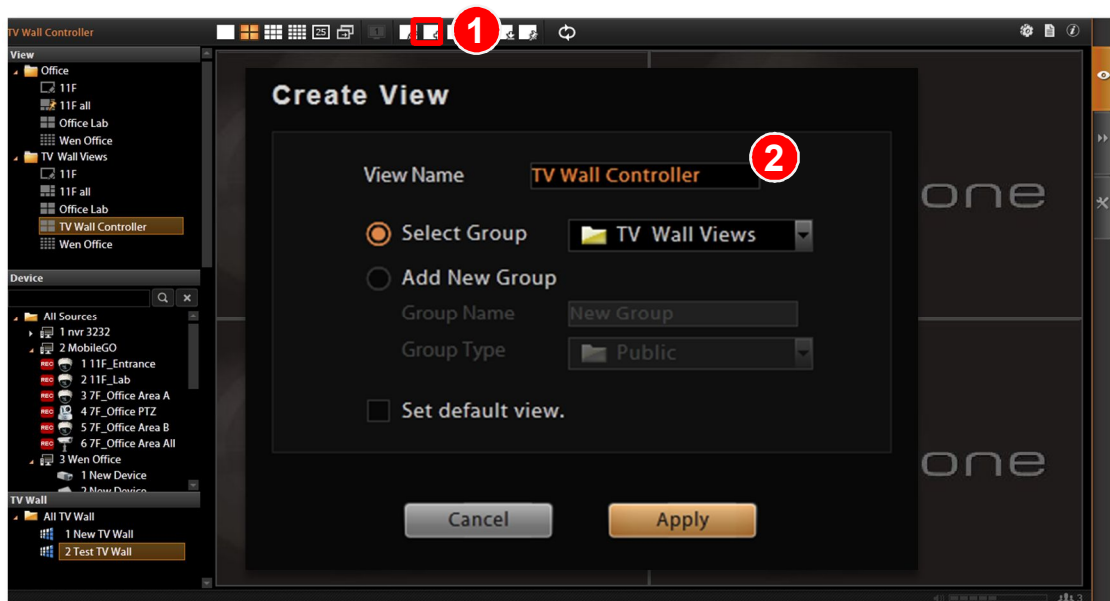
Create a View to Display TV Wall Controller

The views arrangement of each TV Wall station is manipulated by **TV Wall Controller**. CMS Server will perform real-time synchronization between **TV Wall Controller** and the display settings of TV Wall station, so that every change made via the controller will immediately be applied on TV Wall monitors.

On CMS **Live View**, you may choose any channel in a View to place these controllers, so that the surveillance operators can arrange the TV Wall Views at ease while monitoring other Views.

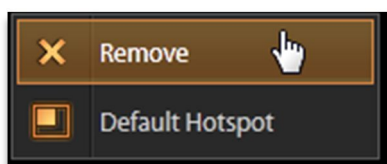
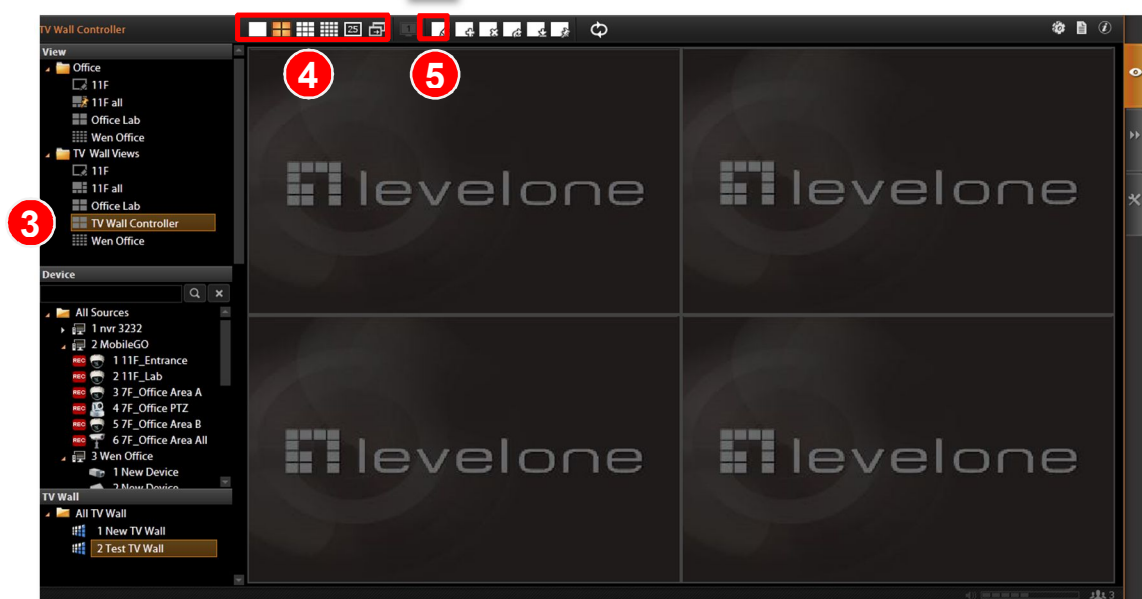
To start real-time handling of the TV Wall monitors via CMS interface, you need to first create a view on CMS **Live View** screen, which will act like a deck dedicated for **TV Wall Controller**.

1. Click  on **View Toolbar** and fill in the **View** properties. It is recommended to name this View **“TV Wall Controller”** and put it into the dedicated View group.



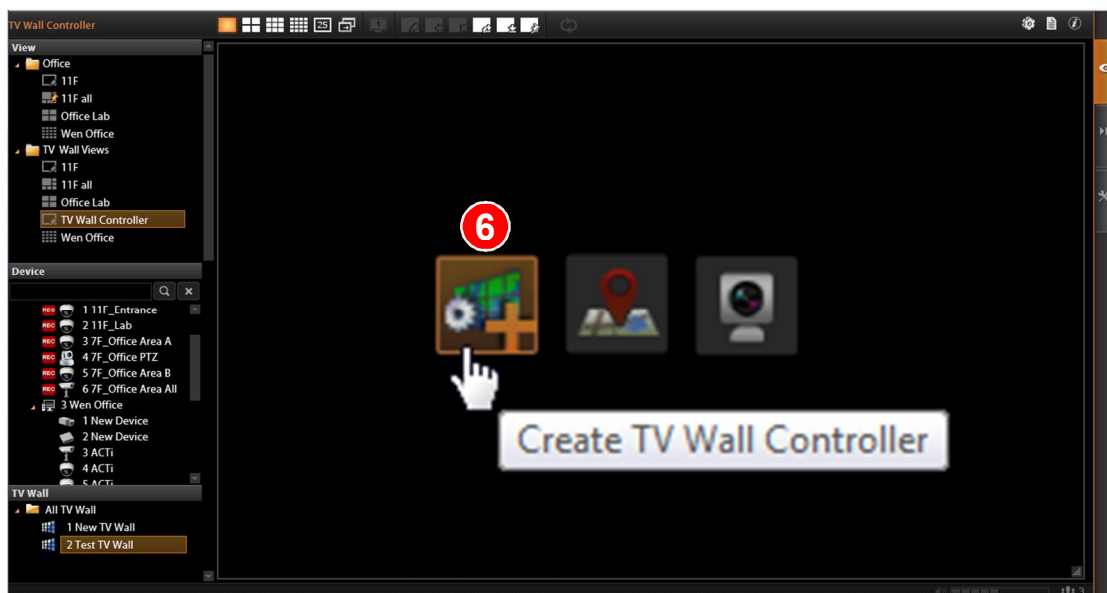
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2. Highlight this **View**, click  to enter View edit mode and select a proper layout.



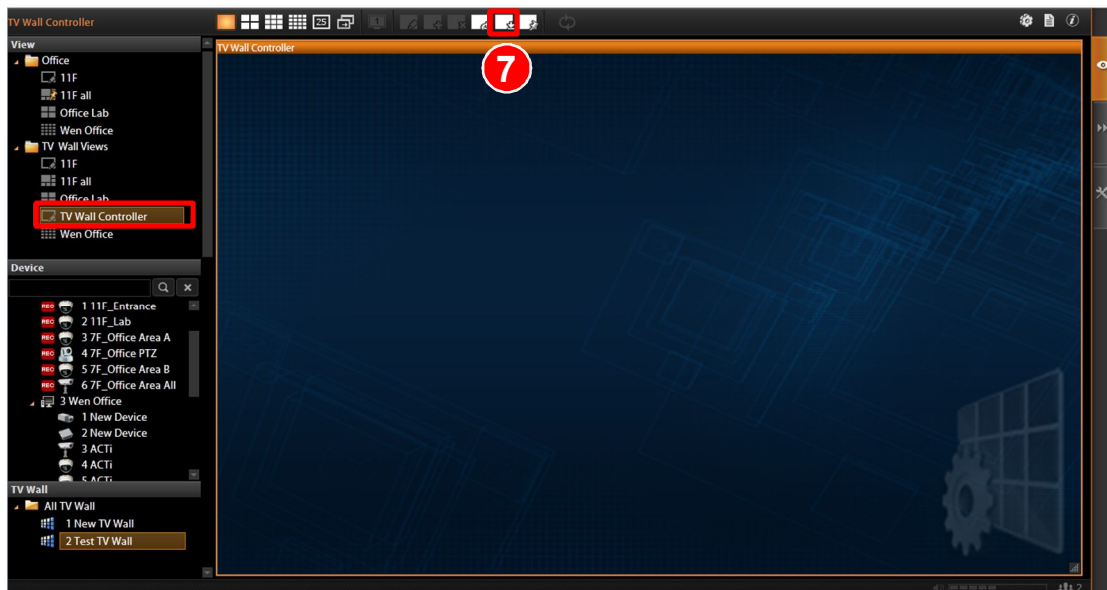
In View edit mode, make sure the target channel window is empty. You may right-click and select “**Remove**” on the quick menu.

3. On this blank channel window, click “**Create TV Wall Controller**”.

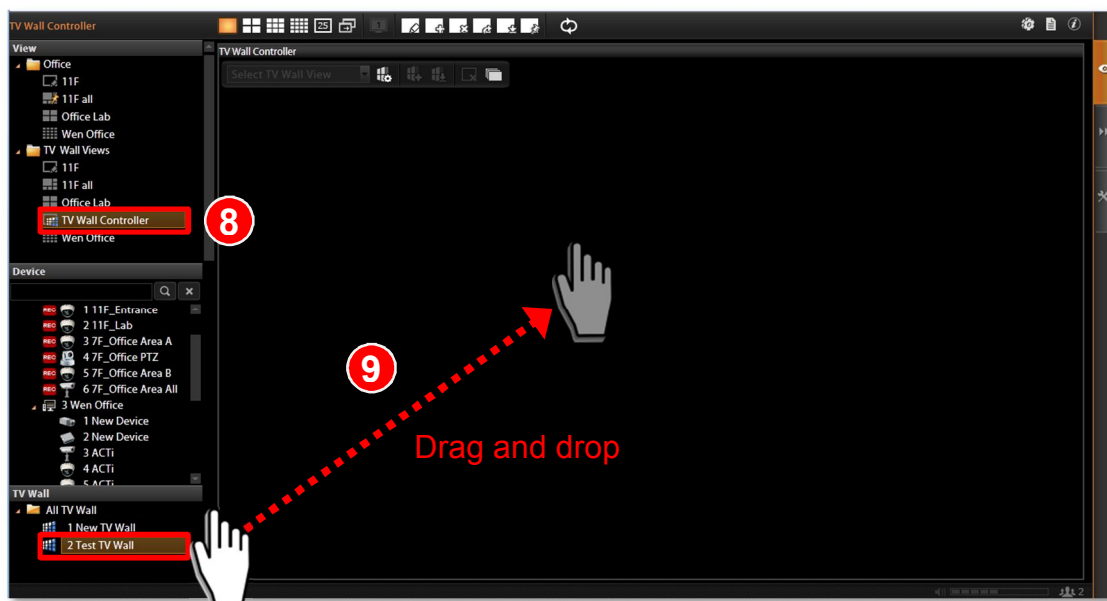


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- As this channel shows blue “TV Wall Controller” background, click  to save this View.



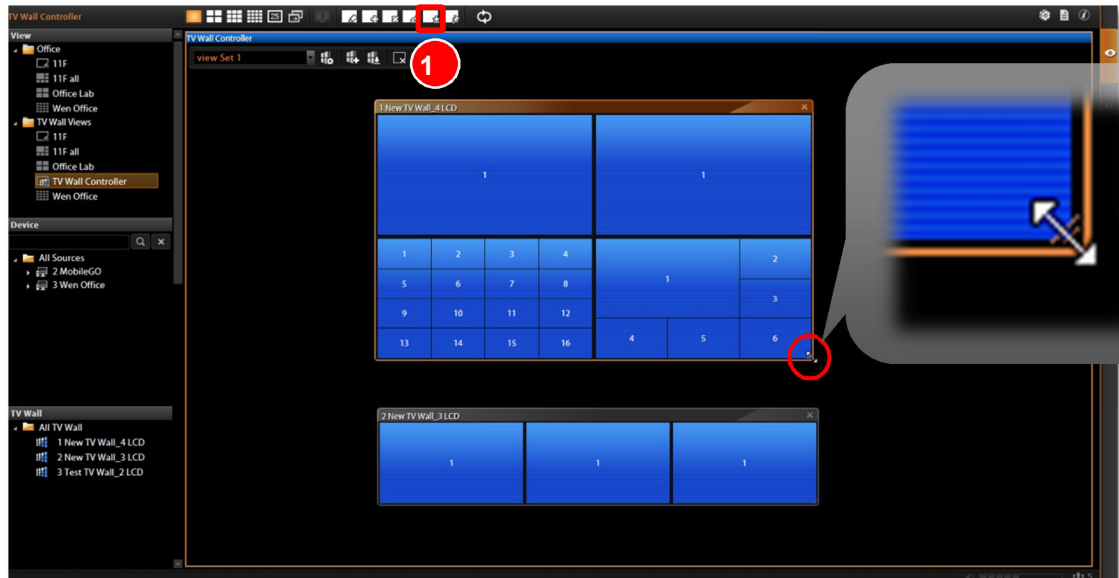
- Double-click the **TV Wall Controller** View and drag TV Wall Station sources onto the controller from **TV Wall** panel. You may place multiple TV Wall Stations here as many as you want.



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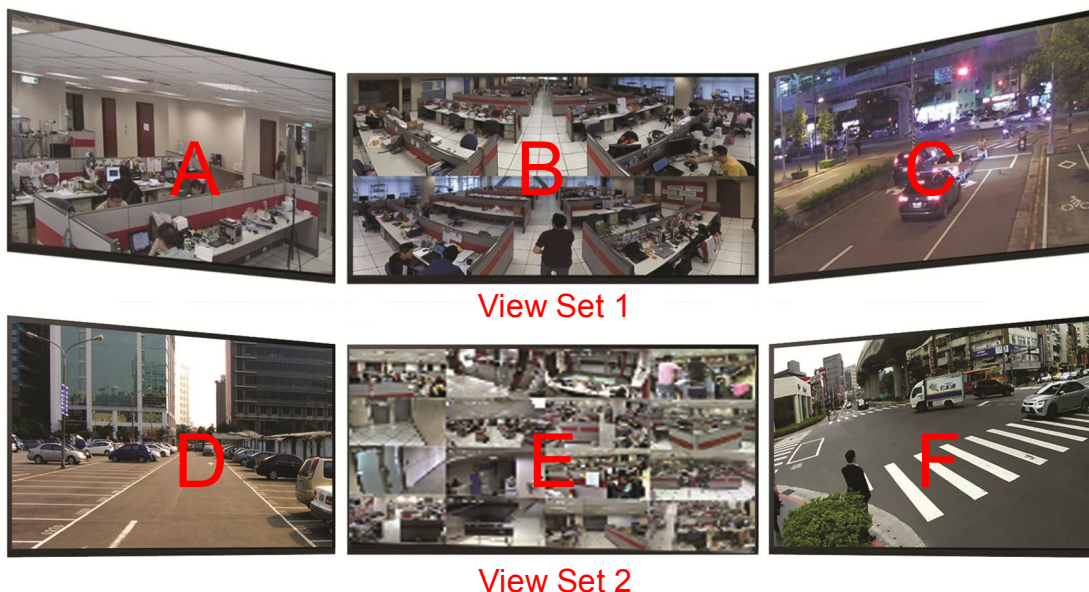
6. After a Controller is placed, you may adjust its dimension by dragging the bottom right corner.

When the settings are done, click  on **Toolbar** to save this View.



Assign Views to Monitors

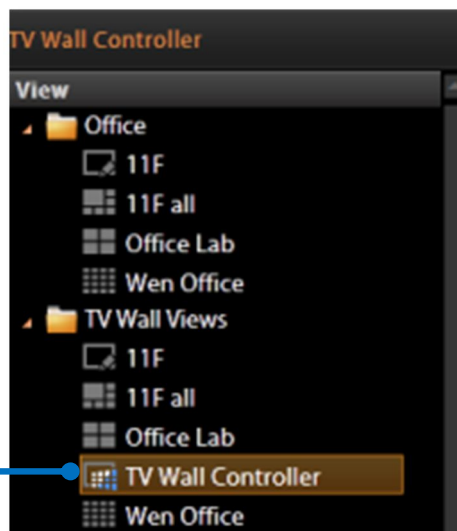
Each TV Wall Station can possess numerous View Sets. For example, you can assign Views **A**, **B**, and **C** for this station of three monitors, and save this combination as **View Set 1**; if necessary, you may also create **View Set 2** that has Views **D**, **E**, and **F**. The **TV Wall Controller** makes it easy for you manage these layout combinations.



On CMS Live View, you can select the TV Wall Controller view on **Views** list to start managing TV Wall Views.

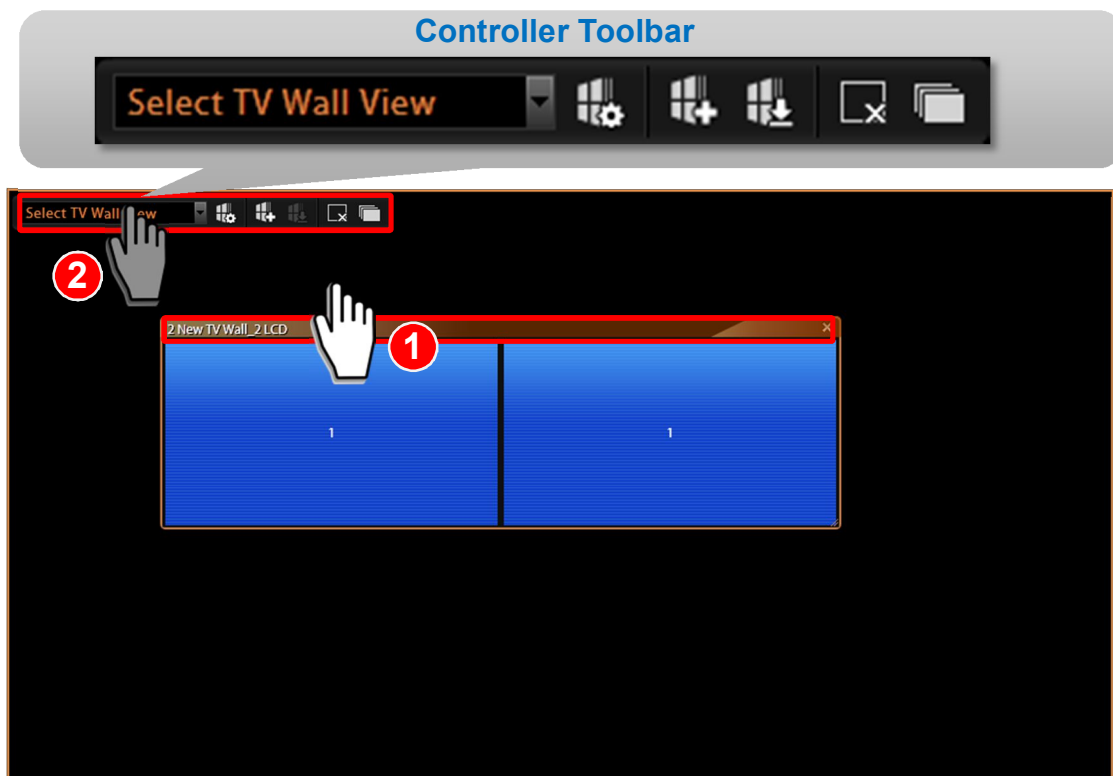
The icon of a view that contains TV Wall Controller channel windows looks different from that of a normal View.

TV Wall Controller View



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By focusing a TV Wall Station source on the Controller, the Controller Toolbar on top of the window will become enabled.



Step One: Create a View Set

On **Controller Toolbar**, click  and input the name of this View Set.

The image shows a dialog box titled 'Create TV Wall View'. It has two input fields: 'TV Wall Name' with the value 'New TV Wall_2 LCD' and 'View Name' with the value '1. eMap_6CH'. At the bottom, there are two buttons: 'Cancel' and 'Apply'.

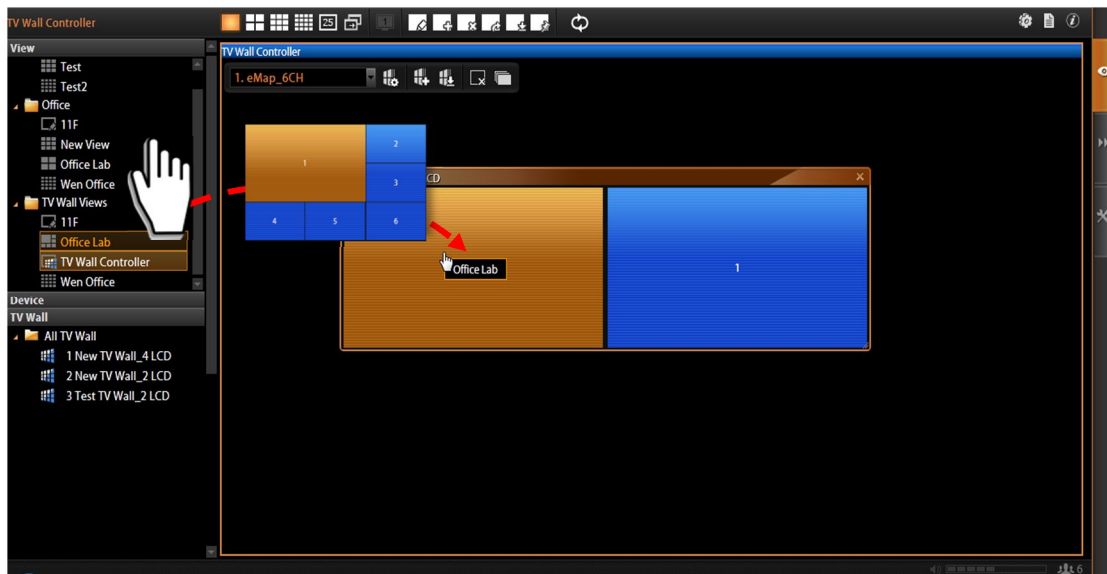
Field	Value
TV Wall Name	New TV Wall_2 LCD
View Name	1. eMap_6CH

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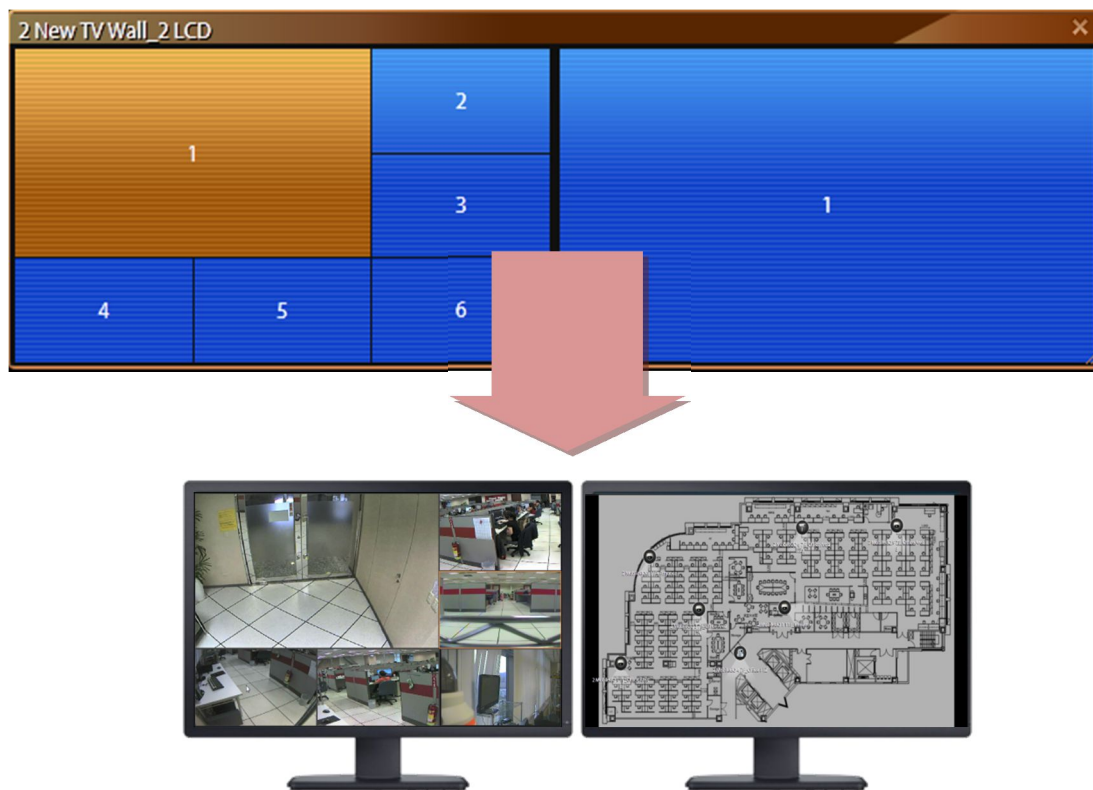
Step Two: Assign Views to this View Set

The **Controller Toolbar** will display this new View Set name.

Drag a desired View from **View** list to a monitor.



Continue to drag another View to the next monitor. The monitors on TV Wall Station will immediately display the Views you just placed.



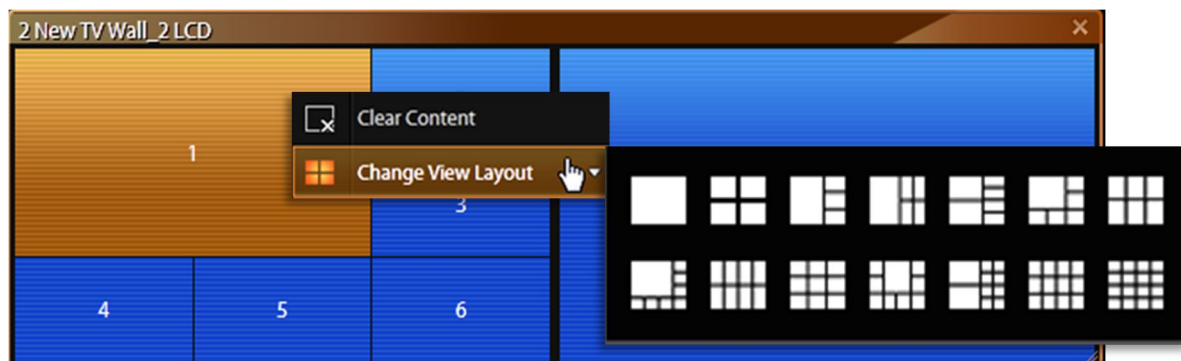
Actual Monitor Display

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Change Layout

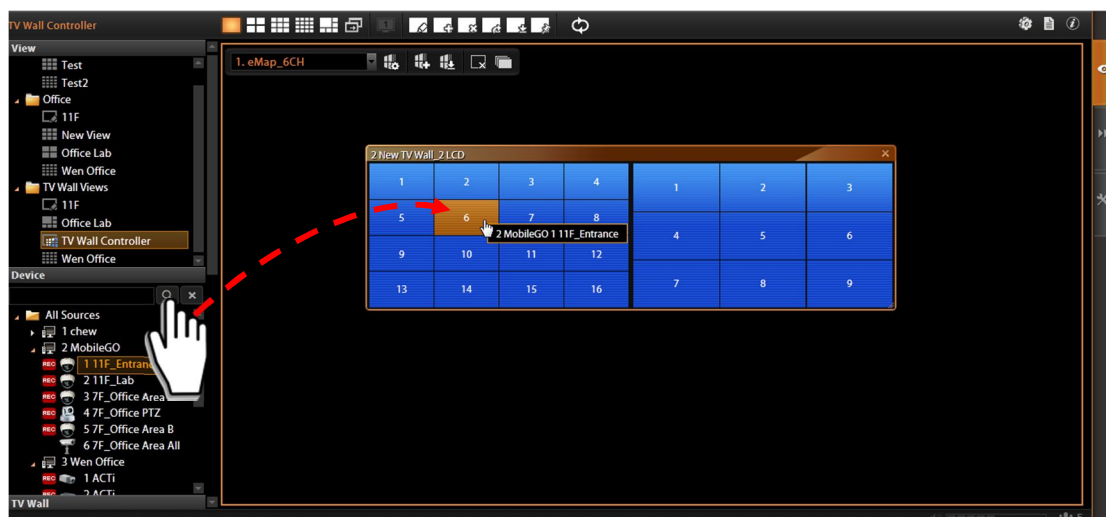
When arranging the Views, you may still change the View Layout on Controller.

On a monitor panel, right-click to bring up the menu and select **“Change View Layout”**. You are provided with the most used 14 layouts to select from.



Assigning a Single Camera Channel


You may also drag a camera from **Device** list to the View.

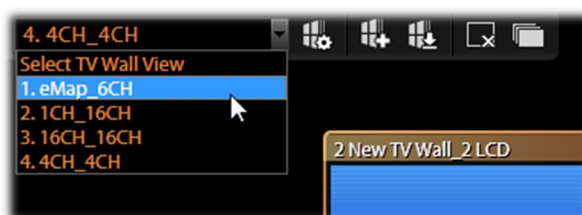


Clear all Channels


To clear all the channels, click  on Controller Tool Bar.

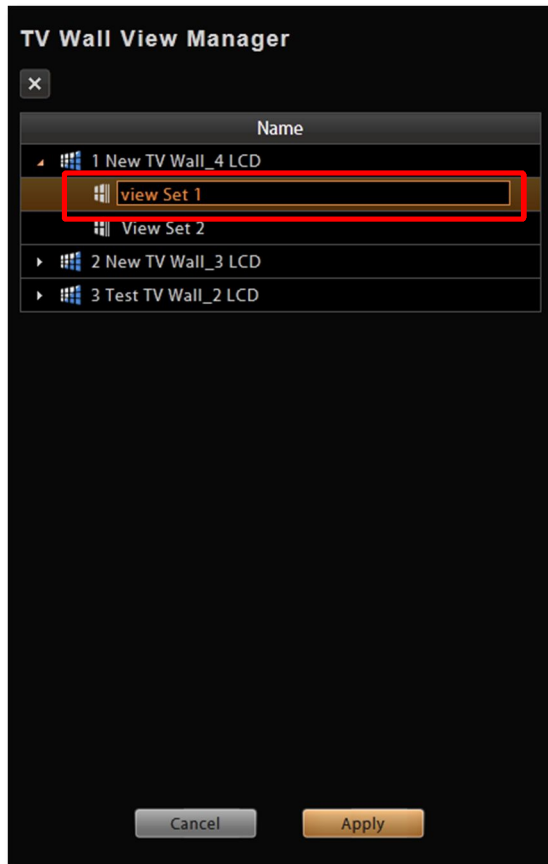
Step Three: Save This View Set

Click  Controller Toolbar to save this View Set. You may select any other View Sets from the drop-down list after you have created many of them.



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The saved View Sets can be renamed or deleted. On Controller Tool Bar, click  to open the **TV Wall View Manager**.



Click on the View Set to **rename** it

Congratulations! Your TV Wall Station now has multiple View Sets. You may easily switch to a desired View Set via CMS interface on any computer, which will be updated to the actual TV Wall monitors in real time!