



# Cisco Video Surveillance Monitoring Workstation Performance Baseline Specification, Release 7.2

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## Overview

This document provides the performance baseline for a video surveillance monitoring workstation. The performance of a workstation on which you display multiple windows of surveillance video depends on many variables, including, CPU, memory, bus speeds, graphics card capabilities, and other applications that are installed on the workstation. Overall quality of experience also can vary depending on the type of system used, the number of video streams being rendered, and the characteristics of those streams.

This document describes the performance baseline for a dedicated surveillance monitoring workstation to ensure the overall quality of the monitoring experience. This document also describes the maximum number of video streams that can run with acceptable quality on a monitoring workstation when using different codecs (MPEG-4 and H.264) The values listed in the standard-definition acceptable load table were verified using NTSC video settings.



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**Note**

Make sure that you are using the version of this specification that matches your version of Cisco Video Surveillance Manager (VSM). This specification is used to validate acceptable loads.

**Tip**

Use the Cisco Video Surveillance Workstation Profiler Tool to determine the expected performance of a workstation. See the [Using the Cisco Video Surveillance Monitoring Workstation Profiler Tool](#) for more information.

## Workstation Specifications

Refer to the following for workstation requirements and acceptable loads:

- [Table 1](#)—Workstation Specifications
- [Table 2](#)—Windows OS and web browser requirements
- [Table 3](#)—Windows OS and Cisco SASD requirements
- [Table 4](#)—Acceptable Load per Client by Codec for Standard Definition (SD)
- [Table 5](#)—Acceptable Load per Client for High Definition (HD) H.264

**Tip**

See the [“Enabling 64-Bit Video Monitoring using Internet Explorer \(IE\) 10”](#) section on [page 6](#) for more information.

[Table 1](#) describes configurations for a monitoring workstation that displays video from Cisco Video Surveillance Manager (VSM) 7.0. Workstations with these configurations were used to determine the recommended maximum video loads. This assumes that the workstation is *dedicated* to video. Running other software, such as firewalls, antivirus applications, CD/DVD burning utilities, and general-purpose applications will reduce the quality of the user experience.

**Table 1**      **Video Surveillance Monitoring Workstation Recommended Specifications**

Workstation Attribute	Physical Security Client Workstation
Windows OS and web browser	See <a href="#">Table 2</a> .
Windows OS and Cisco SASD	Windows 7 or 8, 64-bit. See <a href="#">Table 3</a> .
CPU	Intel Core i7, 3.07 Ghz or faster.
Memory	6 GB DDR3 or greater.
Graphics Card	Nvidia GeForce GT430 PCIe Nvidia GeForce GTX460 PCIe Update the graphic card drivers to the latest version.
Network connection	Gigabit Ethernet (GigE) network connection required. Update the network card drivers to the latest version.

**Table 1**      **Video Surveillance Monitoring Workstation Recommended Specifications (continued)**

Cisco Multi-Pane client software	<p>The Cisco Multi-Pane client software installed on the PC.</p> <ul style="list-style-type: none"> <li>• The Multi-Pane client is an Active X client that enables video playback and other features.</li> <li>• You will be prompted to install Multi-Pane client the first time you log in to the Operations Manager, or if you are using a the 64-bit Internet Explorer (IE) web browser for the first time. Follow the on-screen instructions if prompted.</li> <li>• You must have administrative privileges on the PC workstation to install the software.</li> </ul> <p><b>Note</b> By default, all video monitoring using Internet Explorer 10 is performed using the 32-bit Cisco Multi-Pane client software. To enable 64-bit browser monitoring in Windows 7 or 8 using IE 10, see the “<a href="#">Enabling 64-Bit Video Monitoring using Internet Explorer (IE) 10</a>” section on page 6</p>
.Net 4.0 Framework	<p>You will also be prompted to install the required Microsoft .Net 4.0 component, if necessary. If your workstation does not have Internet access, the .Net 4.0 installer can be downloaded from <a href="http://www.microsoft.com/en-us/download/details.aspx?id=17718">http://www.microsoft.com/en-us/download/details.aspx?id=17718</a>.</p>
User Account Type	A standard Windows 7 user account is required (guest accounts are not supported).
DirectX Version	DirectX 11.0 or later (included with Windows 7).

[Table 2](#) describes the supported OS and web browser versions that can be used to monitor video.

**Table 2**      **Web Browser Video Monitoring Requirements**

Windows OS	Internet Explorer 9	Internet Explorer 10
Windows 7: 32 bit or 64-bit	Microsoft Internet Explorer 9, 32-bit or 64-bit	Microsoft Internet Explorer 10, 32-bit or 64-bit
Windows 8: 64-bit	Not Supported	<p>Microsoft Internet Explorer 10, desktop version 32-bit or 64-bit</p> <p><b>Note</b> The Metro version of IE 10 is not supported.</p>

[Table 3](#) describes the supported OS to monitor video using Cisco SASD.

**Table 3**      **Cisco SASD Video Monitoring Requirements**

Windows OS	Cisco Video Surveillance Safety and Security Desktop (Cisco SASD) Application
Windows 7 64-bit or Windows 8 64-bit	The Cisco SASD application requires a 64-bit Windows OS.

Table 4 shows the maximum number of standard-definition video streams that can run with acceptable quality on the recommended monitoring workstation.

**Table 4** *Acceptable Load per Client by Codec for Standard Definition (SD)*

	MPEG-4	H.264 SD	Mixed
Video streams	16	16	16
Resolution	4CIF	4CIF	4CIF
Frame rate	30 fps	30 fps	30 fps
Bit Rate per stream (CBR)	3 Mbps	3 Mbps	2-3 Mbps

Table 5 shows the maximum number of high-definition video streams that can run with acceptable quality on the recommended monitoring workstation when using the H.264 codec.

**Table 5** *Acceptable Load per Client for High Definition (HD) H.264*

	H.264 HD	H.264 HD	H.264 HD
Video streams	9	6	4
Resolution	720p	1080p	1080p
Frame rate	30 fps	30 fps	30 fps
Bit Rate per stream (CBR)	4 Mbps	4 Mbps	12 Mbps

## Mixing Resolutions and Codecs

You can use several codecs on a monitoring workstation simultaneously. However, the number of streams does not necessarily combine linearly. In addition, a 1080p 12 Mbps streams should be mixed only with a single smaller resolution stream.

## Best Practice: Use the Workstation Profiling Tool

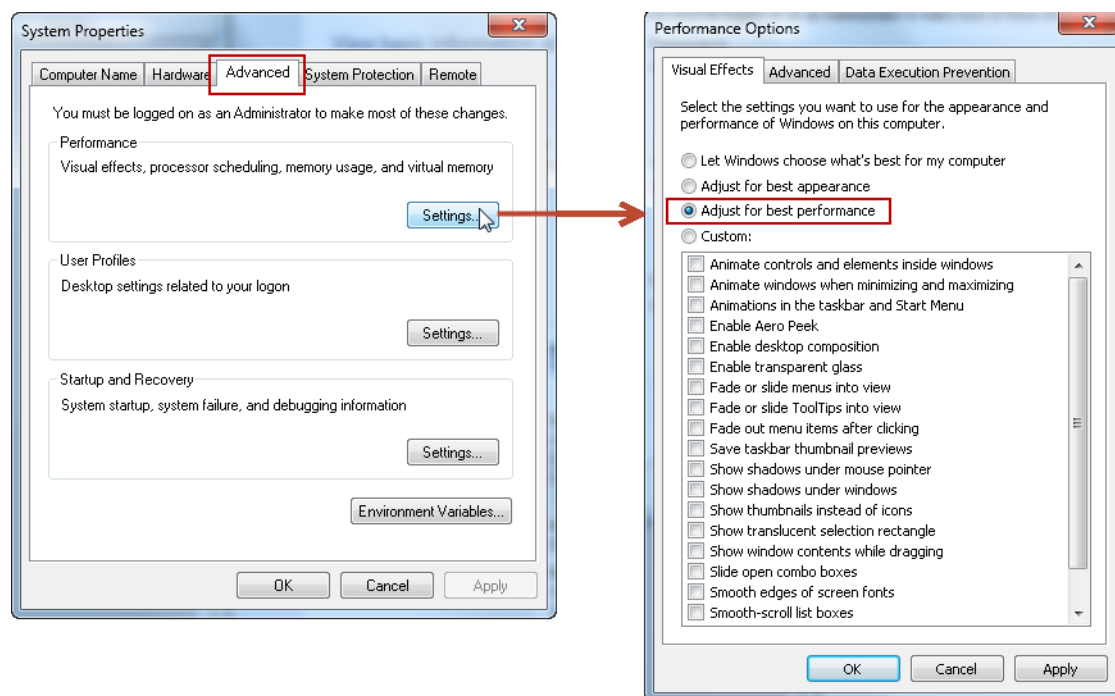
It is best practice to validate the performance of any existing system by using the Cisco Video Surveillance Workstation Profiler Tool. This tool enables the user of a workstation to determine the expected performance of the workstation.

See the [Using the Cisco Video Surveillance Monitoring Workstation Profiler Tool](#) for information about installing and operating this tool.

## Questions & Answers

- Q.** Can two video monitors be used, either with two graphics cards or one card with dual connectors?
- A.** Up to 2 identical graphics cards may be used in a single system with up to a maximum of 4 monitors, two per graphics card. While additional graphics cards and/or additional monitors do not generate additional performance within a system, this configuration may be used to provide greater display flexibility. It must be ensured that the total aggregate video displayed within a single system, regardless of number of displays or graphics card, stays within parameters outlined above.
- Q.** What is the recommended Windows 7 Configuration when using dual graphics cards?
- A.** To configure a Windows 7 workstation with dual cards, we recommend the following.
1. Connect the monitors to the of the graphics cards using DVI connections.
  2. On the Window 7 workstation select **Control Panel > System and Security**.
  3. Select **System** and click **Advanced System Settings**.
  4. In the **Advanced** tab, click the *Performance Settings* and select **Adjust for best Performance** (Figure 1).

**Figure 1** *Adjusting a Workstation for Best Performance*



- Q.** Is the Video Surveillance Multipane Client supported on Windows 7 and Windows 8?
- A.** Yes, the Video Surveillance Multipane Client is supported on Windows 7 and Windows 8 using Internet Explorer or the Cisco Safety and Security Desktop. See the [“Workstation Specifications” section on page 2](#). If you have a question about whether your workstation supports the VSM AXClient, use the workstation Profiler Tool (as described in the [“Best Practice: Use the Workstation Profiling Tool” section on page 4](#)).

- Q.** How do PAL video settings affect expected behavior?
- A.** While the standard-definition acceptable load tables were verified using NTSC video settings, using PAL settings (such as 25 fps) should not degrade the quality of the monitoring experience.
- Q.** Can I use a workstation that does not meet the recommended baseline specifications?
- A.** When considering the number of codecs, resolutions, and frame rates supported by VSM, and the number of workstations, graphics cards and processors that are available, it is difficult to determine the optimal workstation for a given user experience, so this document provides recommended maximum loads. Workstations that do not meet the baseline specifications may be able to render some video, but they cannot provide the same quality of monitoring experience. If you have a question about whether your workstation can perform the tasks that you need, follow the best practice of using the workstation Profiler Tool (as described in the [“Best Practice: Use the Workstation Profiling Tool”](#) section on page 4).
- Q.** What is the difference between “minimum requirements” and this “baseline specification”?
- A.** Minimum requirements define what is required to install and run the VSM AXClient to display a single video stream. They do not define acceptable loads for multi-paned use cases or the necessary configuration to ensure a quality monitoring experience.

## Enabling 64-Bit Video Monitoring using Internet Explorer (IE) 10

By default, all video monitoring using Internet Explorer 10 is performed using the 32-bit Cisco Multi-Pane client software.

- The 32-bit version can display a maximum of 4 video panes (for example, in a 2x2 layout).
- The 64-bit version can display a maximum of 16 video panes (for example, in a 4x4 layout).

The 64-bit version of Internet Explorer 10, however, requires that the workstation run in “Protected Mode”. To enable video monitoring in Windows 7 or 8 using IE 10, therefore, you must first enable “Protected Mode” on the workstation.

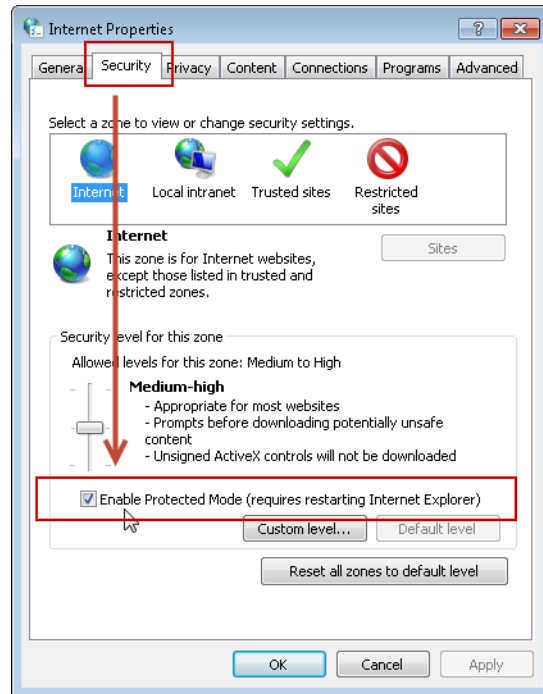
Refer to the following topics for instructions:

- [Windows 7—Enabling 64-bit Internet Explorer 10 Video Monitoring, page 6](#)
- [Windows 8—Enabling 64-bit Internet Explorer 10 Video Monitoring, page 8](#)

## Windows 7—Enabling 64-bit Internet Explorer 10 Video Monitoring

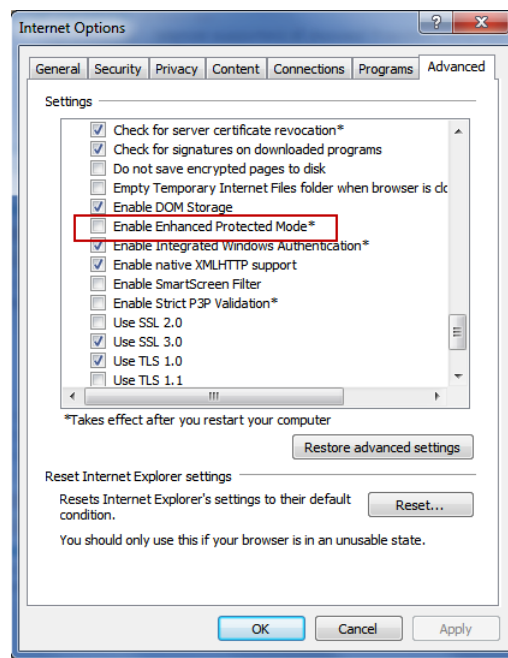
### Procedure

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- Step 1** Turn on Enable Protected Mode.
- a.** Go to **Control Panel > Network and Internet > Internet Options**.
  - b.** Click the **Security** tab.
  - c.** Check the box for **Enable Protected Mode** ([Figure 2](#)).

**Figure 2**      **Enable Protected Mode**

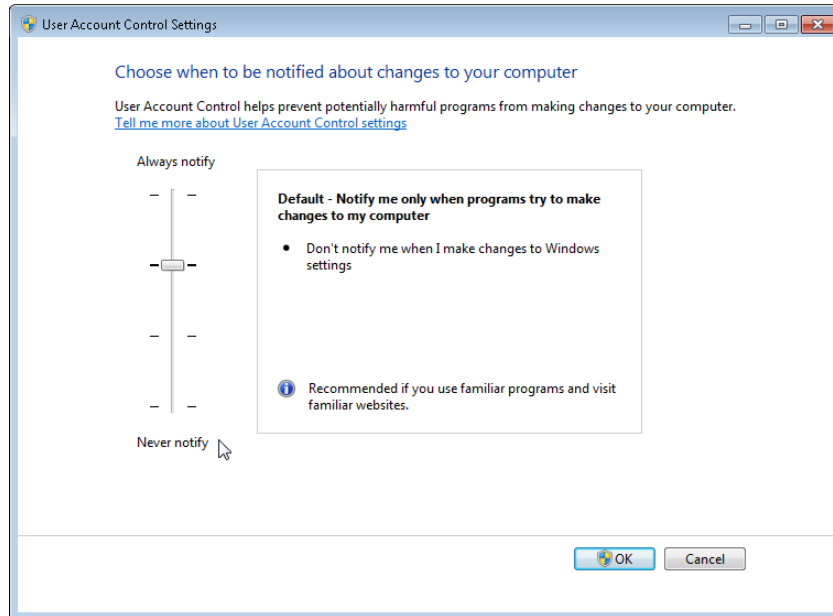
**Step 2** Turn on **Enable Enhanced Protected** mode.

- Select the **Advanced** tab (**Control Panel > Network and Internet > Internet Options**).
- Scroll down to **Security**.
- Check the box for **Enable Enhanced Protected Mode** (Figure 3).

**Figure 3**      **Enable Enhanced Protected Mode**

- Step 3** Ensure that User Account Control (UAC) is enabled.
- Go to **Control Panel > User Accounts > User Accounts**.
  - Click **Change User Account Control settings**.
  - Verify that the slider is NOT set to **Never notify** (Figure 4).

**Figure 4** *User Account Control (UAC)*



- Step 4** Restart your computer.
- Step 5** Launch the 64-bit Internet Explorer in normal user (non-admin mode).
- Step 6** Log on to the Operations Manager.
- Step 7** Install the 64-bit multi-pane client, when prompted.

## Windows 8—Enabling 64-bit Internet Explorer 10 Video Monitoring

### Procedure

- Step 1** Turn on Enable Protected Mode.
- Go to **Control Panel > Internet Options > Security**.
  - Check the box for **Enable Protected Mode** (under **Internet Zone**).
- Step 2** Turn on **Enable Enhanced Protected** mode.
- Go to **Control Panel > Internet Options > Advanced**.
  - Scroll down to **Security** and check the box for **Enable Enhanced Protected Mode**.
- Step 3** Create a registry entry under the key:
- HKEY\_CURRENT\_USER\Software\Microsoft\Internet Explorer\Main\‘TabProcGrowth’ = 0



- Step 4** Launch the 64-bit desktop version of Internet Explorer in normal user (non-admin mode).
  - Step 5** Log on to the Operations Manager.
  - Step 6** Install the 64-bit multi-pane client, when prompted.
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## Saving Clips in Protected Mode Internet Explorer 64 bit

Internet Explorer running in “Protected Mode” is a low integrity process that can only write files to low integrity folders.

The default low integrity folder in the system is `$USER$\AppData\LocalLow`. To perform file system functions, such as saving snapshot, you can save the file to the default low-integrity folder or create a low integrity folder using the following steps:

### Procedure

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- Step 1** Create a new folder using file explorer.
  - Step 2** Lower the integrity of that folder using the **icacls** command:  
`icacls <path> /setintegritylevel (OI)(CI)low`
  - Step 3** Save the clips to the new folder.
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## Related Documentation

See the [Cisco Video Surveillance 7 Documentation Roadmap](#) for descriptions and links to Cisco Video Surveillance documentation, server and storage platform documentation, and other related documentation.

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