

Cisco Video Surveillance Monitoring Workstation Performance Baseline Specification, Release 7.2

Contents

- Overview, page 1
- Workstation Specifications, page 2
- Mixing Resolutions and Codecs, page 4
- Best Practice: Use the Workstation Profiling Tool, page 4
- Questions & Answers, page 5
- Enabling 64-Bit Video Monitoring using Internet Explorer (IE) 10, page 6
- Saving Clips in Protected Mode Internet Explorer 64 bit, page 9
- Related Documentation, page 9

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.



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 Pofiler 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 Table 2.
Windows OS and Cisco SASD	Windows 7 or 8, 64-bit. See Table 3.
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.

Cisco Multi-Pane client software	The Cisco Multi-Pane client software installed on the PC.	
	• The Multi-Pane client is an Active X client that enables video playback and other features.	
	• 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.	
	• You must have administrative privileges on the PC workstation to install the software.	
	NoteBy 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 "Enabling 64-Bit Video Monitoring using Internet Explorer (IE) 10" section on page 6	
.Net 4.0 Framework	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 http://www.microsoft.com/en-us/download/details.aspx?id=17718	
User Assount Type	A standard Windows 7 year account is required (suggi accounts are not supported)	
User Account Type	A standard windows / user account is required (guest accounts are not supported).	
DirectX Version	DirectX 11.0 or later (included with Windows 7).	

Table 1 Video Surveillance Monitoring Workstation Recommended Specifications (continued)

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,	Microsoft Internet Explorer 10,	
	32-bit or 64-bit	32-bit or 64-bit	
Windows 8: 64-bit	Not Supported	Microsoft Internet Explorer 10, desktop version	
		32-bit or 64-bit	
		Note The Metro version of IE 10 is not supported.	

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	The Cisco SASD application requires a 64-bit Windows OS.
or	
Windows 8 64-bit	

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

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

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 5Acceptable 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 Pofiler 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.
- **O.** 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

System Properties	Performance Options
Computer Name Hardware Advanced System Protection Remote You must be logged on as an Administrator to make most of these changes. Performance Visual effects, processor scheduling, memory usage, and virtual memory Settings.	Visual Effects Advanced Data Execution Prevention Select the settings you want to use for the appearance and performance of Windows on this computer. Let Windows choose what's best for my computer Adjust for best appearance Adjust for best performance Custom:
User Profiles Desktop settings related to your logon Settings	Animate controls and elements inside windows Animate windows when minimizing and maximizing Animations in the taskbar and Start Menu Enable Aero Peek Enable desktop composition
Startup and Recovery System startup, system failure, and debugging information Settings	 Enable transparent glass Fade or slide menus into view Fade or slide ToolTips into view Fade out menu items after clicking Save taskbar thumbnail previews Show shadows under mouse pointer
Environment Variables OK Cancel Apply	Show shadows under windows Show thumbnals instead of icons Show translucent selection rectangle Show window contents while dragging Silde open combo boxes Smooth edges of screen fonts Smooth-scroll list boxes

- **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

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).

Internet Properties	? 💌
Genera Security Privacy Content Connections Programs	Advanced
Select a zone to view or change security settings.	
Intern t Local intranet Trusted sites Restricted sites	
I iternet This zone is for Internet websites, except those listed in trusted and r stricted zones.	es
Security evel for this zone	
Allowed levels for this zone: Medium to High	d
Enable Protected Mode (requires restarting Internet Exp Custom level Default	lorer) level
Reset all zones to default	level
OK Cancel	Apply

Figure 2 Enable Protected Mode

- Step 2 Turn on Enable Enhanced Protected mode.
 - a. Select the Advanced tab (Control Panel > Network and Internet > Internet Options).
 - **b.** Scroll down to **Security**.
 - c. Check the box for Enable Enhanced Protected Mode (Figure 3).

Figure 3 Enable Enhanced Protected Mode

Internet Options
General Security Privacy Content Connections Programs Advanced
Settings
 Check for server certificate revocation* Check for signatures on downloaded programs Do not save encrypted pages to disk Empty Temporary Internet Files folder when browser is dc Enable DOM Storage Enable DOM Storage Enable DOM Storage Enable Enhanced Protected Mode* ✓ Enable Integrated Windows Authentication* ✓ Enable SmartScreen Filter Enable Strict P3P Validation* Use SSL 2.0 ✓ Use TLS 1.0 ✓ Use TLS 1.1
*Takes effect after you restart your computer
Restore advanced settings
Reset Internet Explorer settings Resets Internet Explorer's settings to their default condition. You should only use this if your browser is in an unusable state.
OK Cancel Apply

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

Figure 4 User Account Control (UAC)

😚 User Account Control Settings		_ • •
Choose when to be User Account Control he <u>Tell me more about User</u>	notified about changes to your computer lps prevent potentially harmful programs from making changes to <u>Account Control settings</u>	your computer.
Always notify		
- [-	Default - Notify me only when programs try to make changes to my computer	
	Don't notify me when I make changes to Windows settings	
_ _	Recommended if you use familiar programs and visit familiar websites.	
Never notify 🔓		
	В ОК	Cancel

- **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.
	a. Go to Control Panel > Internet Options > Security .
	b. Check the box for Enable Protected Mode (under Internet Zone).
Step 2	Turn on Enable Enhanced Protected mode.
	a. Go to Control Panel > Internet Options > Advanced .
	b. 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.

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

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</path>
Step 3	Save the clips to the new folder.

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.



Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2012- 2013 Cisco Systems, Inc. All rights reserved.