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INTERNATIONAL PRICING



"SEE WHAT THE CAMERA SAW"

IN 95% LESS TIME

KNOW WHAT YOU DON'T KNOW
TURN GARBAGE TO GOLD

THE DEFINITIVE GUIDE TO
VISUAL EVIDENCE GOVERNANCE



BUILD 'BETTER' AI
POWERED BY DAILY AUDITS

100+ SECTORS - AIRPORTS TO ZOOS

GAUTAM D. GORADIA

SYSTEM CONFIGURATION				
Number of cameras and ‘Windows’	1 to 16 cameras in ONE ‘Window’ (in a 4 x 4 grid)	17 to 48 cameras in THREE ‘Windows’ (in a 4x4 grid for each ‘Window’)	49 to 64 cameras in FOUR ‘Windows’ (in a 4x4 grid for each ‘Window’)	65 to 128 cameras in EIGHT ‘Windows’ (in a 4x4 grid for each ‘Window’)
Processor	Intel Core i5 (latest gen.) or equivalent or newer	Intel Core i7 or i9 (latest gen.) or equivalent or newer	Intel Core i9 (latest gen.), <u>OR</u> Xeon Silver 4314 or equivalent or newer	Intel Xeon Silver 4510 or equivalent or newer
Memory	16 GB RAM	32 GB RAM	64 GB RAM	64 GB RAM
Graphic Card	On-board graphic card	Nvidia RTX 1000 Ada Generation (6 GB) or equivalent	Nvidia RTX 2000 Ada Generation (16 GB) or equivalent	Nvidia RTX 4000 Ada Generation (20 GB) or equivalent
Network Interface Card	On-board network interface card	On-board network interface card	Please refer to point no. 3 below for details on the network interface card recommendation	
Recommended Operating system	Win 11 Education/Pro/Enterprise/Windows Server (2016/2019) or higher	Win 11 Education/Pro/Enterprise/Windows Server (2016/2019) or higher	Win 11 Education/Pro/Enterprise/Windows Server (2016/2019) or higher	Win 11 Education/Pro/Enterprise/Windows Server (2016/2019/Datacenter) or higher
Estimated network bandwidth (considering the total bandwidth needed for camera, VMS, and storage)	Note: Please refer to point no. 2 below for more details on the network bandwidth estimation.			
Hard Disk	Rotational speed	Space needed for COM-SUR installation	Space needed for storing the images created by COM-SUR	
	7200 RPM or higher	Minimum 200MB (recommended 500MB)	Minimum of 750GB to store images of ONE ‘Window’ for approximately 30 days. Minimum of 6TB to store images of EIGHT ‘Windows’ for approximately 30 days.	
	Please refer to point no. 5 below for more details on the hard disk recommendation.			

SOFTWARE

Software (for certain features)

Microsoft Office 2021 or above (preferred), Adobe Reader, Media Player (Windows 11) / Windows Media Player (Windows 10 / Windows Server).

Miscellaneous

Supported Browsers - Google Chrome, Mozilla Firefox

Minimum Screen Resolution - 1280 X 768

Important notes:

1) Approximation: The sizing for the processor, memory, and graphic card is approximate in nature and will also depend on the camera/DVR/NVR/VMS being used. Therefore, please confirm these with the relevant camera/DVR/NVR/VMS OEM, your system integrator/IT team before proceeding.

Processor Cores: While COM-SUR itself has modest CPU requirements, overall system performance (including the camera/DVR/NVR/VMS, GPU decoding pipelines, and backend services) benefits from higher core counts. For typical deployments involving multiple active 'Windows', a minimum of 8 CPU cores is recommended.

Graphic card: An onboard graphic card may be sufficient for limited or controlled deployments. For continuous 24/7 operation or multi 'Window' configurations, a discrete GPU is strongly recommended for stable performance and predictable hardware video decoding.

2) Bandwidth: Estimating network bandwidth for CCTV cameras is crucial for ensuring smooth video transmission and storage without network congestion. The approximate bandwidth required per camera depends on factors such as camera resolution, compression type, and frame rate. Please see the below table which outlines the approximate bandwidth per camera for different resolutions at a frame rate of 25 FPS.

Camera Resolution	Resolution (Pixels)	Approximate Bandwidth per Camera (in H.264 compression)	Approximate Bandwidth per Camera (in H.265 compression)
2 MP (Full HD)	1920 x 1080	4 Mbps	2 Mbps
4 MP (2K)	2560 x 1440	6 Mbps	3 Mbps
5 MP	2592 x 1944	8 Mbps	4 Mbps
8 MP (4K UHD)	3840 x 2160	12 Mbps	6 Mbps
12 MP	4000 x 3000	16 Mbps	8 Mbps
16 MP	4608 x 3456	20 Mbps	10 Mbps
20 MP	5120 x 3840	25 Mbps	12.5 Mbps
24 MP	6000 x 4000	32 Mbps	16 Mbps

The above values can vary depending on the scene complexity, lighting, and additional compression settings like Variable Bitrate (VBR) adjustments. Therefore, please confirm the bandwidth requirements with the DVR/NVR/VMS OEM, your system integrator/IT team. H.265 compression typically reduces bandwidth

requirements by 30-50% compared to H.264, making it beneficial for reducing network load while maintaining video quality.

Note: The above camera bandwidth estimates primarily apply to the DVR/NVR/VMS server or camera aggregation layer. In deployments where COM-SUR is installed on a workstation running only the VMS client (and not recording video), COM-SUR does not ingest raw camera streams. Once video is rendered by the VMS, COM-SUR operates only on the resulting display frames. Therefore, camera bandwidth sizing should be planned for the VMS infrastructure separately from workstations on which COM-SUR is installed.

3) Network Interface Card: The necessity of a network interface card depends on multiple factors, such as camera resolution, compression type, network setup, and other applications running on the system. For deployments with 1-100 cameras, a standard 1Gbps onboard network interface card is generally sufficient especially when using H.265 compression at 1080p resolution. However, in specific scenarios explained as follows, a higher-speed NIC is recommended to ensure optimal performance and prevent network congestion.

Scenario	Approx. Bandwidth Usage (in H.264 compression)	Approx. Bandwidth Usage (in H.265 compression)	Recommended NIC	Reason
1-100 cameras at 1080p	Up to 400 Mbps	Up to 200 Mbps	1Gbps onboard NIC (built-in Ethernet). However, if the deployment includes 4K cameras , use of H.264 compression , or simultaneous transfers to multiple backup locations, it is recommended to provide a 2.5/5/10 Gbps NIC for smooth performance.	Sufficient for low-bandwidth, compressed streams.
100+ cameras at 1080p	400 Mbps or more	200 Mbps or more	2.5Gbps NIC (Intel I225-V) or Dual 1Gbps NICs (bonded)	Helps manage increased bandwidth if network congestion is expected.
100+ cameras at 4K	1.2 Gbps or more	600 Mbps or more	10Gbps NIC (Intel X550-T2,	Higher resolution requires more bandwidth, even

			Mellanox ConnectX-4)	with H.265 compression.
System running multiple network-intensive applications (VMS, remote access, storage transfers, cloud backups, etc.)	Varies based on workload	Varies based on workload	Dedicated NIC (2.5Gbps or higher) for camera traffic	Prevents network congestion by isolating camera streams from other network activities.

4) Operating System: The choice of the Operating System may depend on multiple factors. It is therefore recommended to confirm OS compatibility with the DVR/NVR/VMS OEM before deployment.

5) Storage:

The above hard disk recommendation is based on the following assumptions:

- **Image cadence:** COM-SUR has been programmed to generate 1 image per 'Window' per second (regardless of the number of cameras displayed in that 'Window').
- **Average image size:** Approximately 300 KB when displayed on a Full HD (1920x1080) monitor. The size may vary depending on the number of cameras, image complexity, screen resolution, and day/night conditions.
- **Calculation example:**
 - 1 Window → 1 image/sec → 25 GB/day → 750 GB for 30 days.
 - 8 Windows → 8 images/sec → 200 GB/day → 6 TB for 30 days.

While the system requirements specify a 7200 RPM HDD or higher, enterprise-grade SSDs may be considered for scenarios requiring faster data access, indexing, or AI-related processing. However, due to the high storage requirements of COM-SUR (up to 6TB for 8 'Windows' over 30 days), enterprise-grade HDDs remain the preferred choice for cost-effective, long-term storage. For multi 'Window' deployments, enterprise-grade HDDs with sustained sequential throughput of at least 180 MB/s are recommended to ensure smooth image generation, browsing, and retrieval. SSDs may be used in combination with HDDs for caching, faster retrieval, or specific high-speed processing needs.

For optimal performance and reliability, it is strongly recommended to maintain separate storage volumes for the following:

- **Operating System (OS) and COM-SUR installation** – install on a fast SSD/NVMe drive.
- **Image storage** – use a dedicated enterprise-grade HDD, NAS, or SAN volume sized as per retention requirements.

6) Location: Images are stored on the same computer where COM-SUR is installed (Primary Location). Please ensure that you have sufficient rights/privileges over this location. To create a very cost-effective backup, you can also store the Images in multiple Secondary Locations (up to five Secondary Locations at the same time) like external hard disks, SAN (Storage Area Network) devices, NAS (Network Attached Storage) devices or cloud services like Dropbox, Google Drive, or Microsoft OneDrive.

Do note that you will need to adhere to the terms and conditions of any cloud service that you choose. COM-SUR is an 'enabler' and does not claim that it has been endorsed by any of them, or that these services will be free or paid, or that these services may perform without any glitch, whether temporarily or permanently. The entire functionality and performance are dependent on the respective service and its terms and conditions.

Further, data residency, regulatory compliance, and retention policies remain your responsibility when using local or cloud storage.

7) Infrastructure: Depending on the number and type of cameras, and the existing IT infrastructure, the system integrator/IT team/computer installer should be consulted to suggest other requirements like the network infrastructure and so on.

8) VMS: Where relevant, the VMS should support multiple concurrent client instances ('Windows') and continuously render the camera feeds displayed within those 'Windows'. COM-SUR operates on the visual output rendered by the VMS and therefore depends on the VMS maintaining active rendering of the required viewports. Some VMS products may suspend or reduce rendering for hidden, minimized, obscured, or non-visible auxiliary 'Windows' in order to optimize system resources. In such cases, COM-SUR may generate black, frozen, or stale images for those 'Windows'. Where the VMS requires each viewport to remain visibly rendered, sufficient physical displays should be provided so that each required 'Window' remains continuously rendered.

For optimal COM-SUR operation, the selected VMS should support the above rendering behaviour. For deployments involving more than 32 cameras, it is strongly recommended to use a native VMS client application rather than browser-based viewing, as this generally provides better rendering stability and performance.

Additionally, the VMS must support and be configured for GPU-based hardware video decoding on the workstation where COM-SUR is installed. For lower camera counts, GPU-based hardware video decoding may be provided by integrated graphics (e.g., Intel QuickSync or equivalent). For higher camera densities, a dedicated discrete GPU with hardware video decoding support should be used to ensure stable performance and avoid CPU-based decoding. Hardware video decoding support and configuration must be validated by the VMS OEM or system integrator during commissioning of the VMS deployment on the

COM-SUR workstation to ensure optimal performance. This validation should confirm that the VMS is using GPU-based hardware video decoding rather than CPU-based decoding.

Further, if you need to remotely access the workstation where COM-SUR is installed and running, in order to audit the images generated by COM-SUR and/or to perform one or more tasks in the same, it is recommended to use console-mirroring tools such as UltraViewer, AnyDesk, or TeamViewer. Tool selection and security suitability remain the responsibility of your IT/security team. Please avoid Windows Remote

Desktop (RDP) for this purpose, as it may disable GPU-based hardware video decoding in the VMS and force CPU-based decoding, resulting in significantly higher system load and reduced performance.

9) No. of cameras: While COM-SUR does not prevent you from displaying more than 16 cameras in a 'Window', to carry out the audit process efficiently, it is recommended to display 16 or lesser cameras in a 'Window'.

Note: COM-SUR resource usage scales primarily with the number of active 'Windows' and image cadence, not directly with the number of cameras displayed. Once video is rendered by the VMS, COM-SUR operates on the display output and generates composite images per 'Window'.

10) Rights: You must have administrator rights/privileges to install as well as to run COM-SUR.

11) Performance: In case there are multiple programs/applications running concurrently, COM-SUR may not perform optimally. Also, the performance of COM-SUR will vary depending on the system configuration.

12) Display Resolution: The size and clarity of the images generated by COM-SUR depend on how the camera/DVR/NVR/VMS displays the selected visual area on the workstation. A higher display resolution, such as 4K, can provide more visual detail, but it will also generate larger image files and require more storage and processing capacity. The original camera resolution is one of several factors that determine the quality of the image generated by COM-SUR. The result also depends on:

- how much of the display is occupied by the selected visual area;
- the number of cameras shown within that area; and
- the resolution at which the camera/DVR/NVR/VMS displays those cameras.

For example, when 16 cameras are shown together in a grid, each camera uses only a portion of the available display area and will therefore contain less visible detail than when a single camera is displayed full screen. Storage and system sizing should therefore take into account the display resolution, the number of cameras displayed in each 'Window', the display layout, and the required image retention period.

13) Anti-virus/Firewall: COM-SUR must be added to the list of 'allowed programs/exceptions' in the

respective anti-virus/application firewall programs. To elaborate, configure your anti-virus or application firewall solution to exclude the following from real-time scanning:

- COM-SUR installation directory (e.g., C:\Program Files (x86)\Hayagriva\Com-Sur*)
- COM-SUR executable files (e.g., COMSUR.exe).
- Image storage folders (Primary and all defined Secondary locations).

Note: The exclusions stated above, should be configured in line with your organization's IT security policy and validated by your IT/security team.

14) Windows Search Indexing: It is recommended to disable Windows Search indexing on the COM-SUR image storage folders to prevent unnecessary disk activity when large numbers of images are generated.

Also, the following selections in the Settings of the Windows Operating System will need to be set on the computer on which COM-SUR is installed:

Advanced power settings for all the power plans (High performance, Balanced, Power saver)	
Turn off hard disk	Never
Sleep mode	Never
Hibernate mode	Never
USB Selective Suspend	Disabled
PCI Express Power Management	Off
Processor power management	100%
Turn off display	Never
Lock screen settings	
Screen Saver	None

Cybersecurity Considerations for COM-SUR Users

We understand the importance of cybersecurity in today's environment and appreciate your diligence in ensuring all applications meet your organization's standards. COM-SUR is designed with simplicity and transparency in mind, allowing users to retain complete control over its operation and data. Here are a few best practices and important details for secure usage:

1) Authorized Access: COM-SUR, along with the computer on which it is installed, should only be accessed by authorized personnel as designated by your organization's policies. This ensures that only qualified individuals interact with COM-SUR's features, review generated data, and define storage locations.

2) One-Time Administrator Authorization: COM-SUR itself does not require ongoing user login credentials. However, administrative rights are needed during the initial set-up or under certain circumstances requiring configuration adjustments. This allows your IT team to verify COM-SUR's installation and make any necessary security configurations before general use.

3) Data Accessibility and Transparency: COM-SUR provides easy access to its features and data folder to authorized users, supporting quick and efficient auditing workflows. This ensures that data review and reporting are streamlined for users, without unnecessary restrictions or complications.

4) Unencrypted Data for Immediate Accessibility: Data generated by COM-SUR is unencrypted by design to ensure immediate access and high-performance playback. If encryption, antivirus, endpoint protection, or other security controls are mandated by organizational or regulatory policy, they should be implemented and validated by the user or System Integrator at the operating system, storage, or enterprise security layer, subject to validation in the deployment environment. Such controls may impact performance and functionality and must be configured to ensure that COM-SUR's image generation, playback, and retrieval functions are not adversely affected. Responsibility for implementing and validating these controls rests with the user or System Integrator.

5) Secure, Localized Data Storage: By default, COM-SUR stores generated data in the Primary location on the computer where it is installed. Users can also define up to five Secondary locations for data backup or redundancy, such as external drives, NAS devices, or cloud storage. Importantly, no data is collected by COM-SUR or transmitted externally—data remains entirely within your control and specified storage locations.

The above practices (along with any other that you, as a user deem fit) empower users to retain full control over COM-SUR's operation and data, ensuring that security aligns with your organization's policies. COM-SUR's design supports efficient and secure auditing within your established security protocols, placing responsibility and oversight directly in the hands of authorized users.

System Maintenance Recommendations:

To ensure consistent 24/7/365 operation of COM-SUR, proper system maintenance is essential. The following guidelines will help maintain optimal performance and prolong hardware lifespan:

1) Disk Maintenance: For HDDs: Periodically run disk defragmentation (recommended every 1–3 months) to optimize read/write performance and prevent delays in accessing stored images.

For SSDs/NVMe (if applicable): Monitor drive health using built-in utilities (e.g., Windows Disk Management or manufacturer-provided tools) to track wear levels and remaining lifespan.

2) Cooling and Ventilation: Ensure proper airflow around the system and clean internal components, such as fans and vents, every 3–6 months to prevent dust buildup that could lead to overheating. Consider adding additional cooling solutions if the system operates in a high-temperature or dusty environment.

3) Power Protection: Use an Uninterruptible Power Supply (UPS) to protect against sudden power outages and voltage fluctuations, ensuring uninterrupted operation.

- 4) System Monitoring: Regularly monitor system resources (CPU, memory, and disk usage) to identify potential bottlenecks or anomalies. Use tools like Windows Task Manager, Resource Monitor, or third-party software for continuous system health checks.
- 5) Software and Firmware Updates: Keep the operating system, drivers, and COM-SUR software up to date to ensure compatibility, security, and performance improvements.
- 6) Operating System Stability: For continuous 24/7 operation, it is recommended to configure Windows Update policies to prevent automatic restarts during active monitoring hours. Where feasible, Windows Enterprise editions are preferred for improved stability and controlled update behavior.
- 7) Backup and Redundancy: Schedule regular backups of critical image data to secondary storage or a secure cloud service to avoid data loss in case of hardware failure, subject to COM-SUR's available functionality, configuration, and storage setup.
- 8) Uptime Expectation: COM-SUR deployments are typically intended for continuous 24/7 operation. It is therefore recommended to use workstation-class hardware and components rated for enterprise duty cycles, rather than consumer-grade desktops.

Addendum – Enterprise Deployment Notes

This section is included to address topics that may arise during institutional or organizational reviews. COM-SUR remains focused on rapid image generation and auditing. The following notes are provided for reference and apply where required by the deploying organization's IT and security policies.

Data Encryption

COM-SUR outputs are unencrypted by design to ensure immediate access and high-performance playback. Encryption introduces processing overhead and undermines COM-SUR's differentiator of instant, real-time review. If encryption is mandated by organizational or regulatory policy, transparent volume-level encryption (e.g., BitLocker full-disk) may be considered. File-level or folder-level encryption is likely to compromise performance and is not recommended. COM-SUR does not certify or guarantee compatibility with any encryption method. Responsibility for implementing, testing, and validating encryption lies with the deploying organization's IT/security teams. Any performance impact arising from such configurations depends on the underlying system and setup. For compliance purposes, archival or non-active data may be encrypted separately. Such data must be decrypted prior to being accessed for active review within COM-SUR.

Storage Redundancy

COM-SUR supports saving outputs to user-defined folders located on RAID volumes, SAN, or NAS devices. RAID 5/6/10 or SAN/NAS backups may be configured by IT teams for fault tolerance. COM-SUR does not manage RAID logic; it simply writes to accessible folders.

Cloud Backup Disclaimer

COM-SUR enables saving outputs to cloud services (Dropbox, OneDrive, Google Drive, etc.). Bandwidth impact and backup scheduling must be managed by the organization. Subscription, costs, and compliance with provider terms remain the user's responsibility.

Compliance References

COM-SUR generates images only and does not claim alignment with ISO/IEC 27001, GDPR, or local data laws. Compliance obligations rest with the deploying organization's governance framework.

Conclusion

COM-SUR operates within user-defined security environments and aligns with existing IT and cybersecurity policies, enabling controlled and efficient visual evidence governance and visual data auditing.