

**com
sur**™

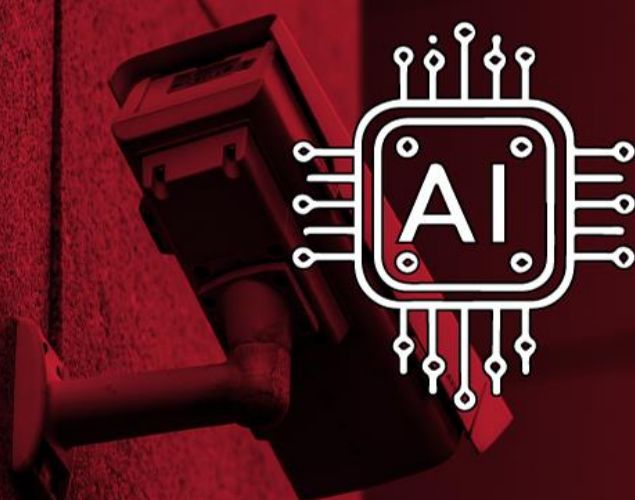
the missing piece of CCTV

GET THE BOOK



"SEE WHAT THE CAMERA SAW"

THE FOOTAGE WHISPERER



'BETTER' AI VIA DAILY AUDITS NO MORE DATA WALL

100+ TOPICS - 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)	16 to 48 cameras in THREE 'Windows' (in a 4x4 grid for each 'Window')	48 to 64 cameras in FOUR 'Windows' (in a 4x4 grid for each 'Window')	64 to 128 cameras in EIGHT 'Windows' (in a 4x4 grid for each 'Window')
Processor	Intel Core i5 (latest gen.) with base frequency ≥ 3.6 Ghz	Intel Core i9 (latest gen.) with base frequency ≥ 3.6 Ghz	Intel Core i9 (latest gen.) with base frequency ≥ 3.6 Ghz, OR Xeon Bronze 3204 (latest gen.) with base frequency 1.9 Ghz	Intel Xeon Silver 4210R (latest gen.) with base frequency 2.4 Ghz
Memory	8GB RAM	16GB RAM	32 GB RAM	32GB RAM (64 GB is recommended)
Graphic Card	On-board graphics card	On-board graphics card	Nvidia Quadro P2200	NVIDIA Quadro P5000 or AMD Radeon Pro WX 9100
Network Interface Card	On-board 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 10 Pro/ Win 11 Pro/ Windows Server (2016/2019) or higher	Win 10 Pro/ Win 11 Pro/ Windows Server (2016/2019) or higher	Win 10 Pro/ Win 11 Pro/ Windows Server (2016/2019) or higher	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 screenshots captured by COM-SUR	
	10000 RPM	Minimum 200MB (recommended 500MB)	Minimum of 750GB to store screenshots of ONE 'Window' for approximately 30 days. Minimum of 6TB to store screenshots of EIGHT 'Windows' for approximately 30 days.	
	Please refer to point no. 4 below for more details on the hard disk recommendation.			

Important notes:

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

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 table on the next page 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 VMS maker, 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.

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)	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, Mellanox ConnectX-4)	Higher resolution requires more bandwidth, even 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 various factors and hence it is recommended to check with the VMS maker whether the VMS is compatible with the OS.

5) Storage: The above hard disk recommendation is based on the consideration that the average size of each screenshot is approximately 300kb on a full HD monitor. The screenshot size may vary depending on several criteria such as the number of cameras, image complexity, screen resolution, etc.

6) Location: Screenshots 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 Screenshots in multiple Secondary Locations (up to five Location 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 is dependent on the respective service and its terms and conditions.

SOFTWARE	
Software (for certain features)	Microsoft Office 2013 or above (preferred), Adobe Reader, Windows Media Player.
Miscellaneous	Supported Browsers - Google Chrome, Mozilla Firefox Minimum Screen Resolution - 1280 X 768

Notes:

1) 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.

2) VMS: Where relevant, the VMS must be able to open multiple instances ('Windows') and display the video feeds on a single monitor preferably. Further, the VMS must support continuous streaming of cameras even if they are not visible in the currently active 'Window'. A 'COM-SUR compliant' VMS will be able to do this. In case of more than 32 cameras, it is recommended to use a COM-SUR compliant VMS instead of browsers for better performance.

3) 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'.

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

5) 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.

6) Size: The system configuration and storage space requirements will increase in case of a 4K monitor.

7) Settings: COM-SUR must be added to the list of 'allowed programs/exceptions' in the respective anti-virus/application firewall programs. 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
Processor power management	100%
Turn off display	Never

Lock screen settings

Screen Saver	None
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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 captured 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 captured by COM-SUR is not encrypted to maintain speed and accessibility during audits. Real-time access to image data supports quick reviews and incident responses, helping your team maintain efficient security operations.

5) Secure, Localized Data Storage: By default, COM-SUR stores captured 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) 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.

Note for IT Team: Leveraging Windows Features for Comprehensive Audit Logging and Monitoring:

To understand how you can effectively configure Windows settings to optimize security and performance for COM-SUR, please write to us at support@comsur.biz for a detailed document on the subject.

Conclusion

By adhering to the recommended system requirements, configurations, and best practices outlined in this document, you can ensure seamless operation of COM-SUR and maximize its potential. COM-SUR empowers you to achieve optimal outcomes from your video surveillance systems through its innovative features, allowing you to transform video feeds into actionable insights with ease and efficiency.