



# COM<sup>TM</sup> SUR

the missing piece of CCTV

COM-SUR<sup>TM</sup> EMPOWERS PEOPLE TO ACHIEVE  
OPTIMAL OUTCOMES FROM SURVEILLANCE VIDEO,  
LEADING TO A SAFER WORLD.

Overview

COM-SUR converts live or recorded video feeds from multiple cameras into screenshots at every ‘one’ second in the background, i.e., COM-SUR captures the ‘moment’ of ‘that’ one second, which is a consolidation of several frames coming together in ‘that’ one second. Doing so, reduces the amount of data to be reviewed, without missing anything substantial. While the time interval between each screenshot is generally recommended to be one second, COM-SUR allows complete flexibility for the user to determine the time interval between two screenshots, depending on the criticality of the location of where the cameras are placed, or the time of the day and/or the activity in the cameras.

In order for COM-SUR to take screenshots of a live/recorded video feed, the same needs to be displayed (live stream or recorded) via a Video Management System (VMS)/Web browser on the computer where COM-SUR is installed. Essentially, COM-SUR captures screenshots of the ‘Window’ (see explanation of a ‘Window’ ahead in this document) of the VMS/Web browser in which the video feed is displayed. Therefore, if 16 cameras are displayed in a ‘Window’, COM-SUR will capture screenshots of those 16 cameras as a single image.

Heavy video v/s Screenshots Bandwidth requirements

The wonderful part about COM-SUR is that just as it converts video into images, on demand, it can reconvert the images into video. This results in huge bandwidth and storage savings because one can now store the video in the form of images rather than video, at least beyond the number of mandated days for storage of video, and for the purpose of disaster recovery. Also, while video is always streamed and stored per channel, screenshots taken by COM-SUR display multiple cameras. This makes disaster recovery very cost-effective.

Bandwidth requirements: The average size of each screenshot of a ‘Window’ captured by COM-SUR is approximately in the range of 100 - 200 KB depending on the number of cameras captured in a screenshot. For this document, the size per screenshot has been considered to be 200 KB. While the table below provides a fair estimate of the size of the screenshots per ‘Window’, conditions such as image complexity, screen resolution, etc. may affect the size of a screenshot, i.e., the size may exceed 200 KB.

No. of ‘Windows’	Total size of screenshots
1	200 KB for 1 screenshot
2	400 KB for 2 screenshots
3	600 KB for 3 screenshots
4	800 KB for 4 screenshots
5	1 MB for 5 screenshots
6	1.2 MB for 6 screenshots
7	1.4 MB for 7 screenshots
8	1.6 MB for 8 screenshots

Number of 'Windows': As can be seen from the above table and from the explanation of a 'Window', COM-SUR can capture a maximum of EIGHT 'Windows' on one computer. Thus, for EIGHT 'Windows', there will be EIGHT screenshots captured per second. Consequently, for the screenshots to be transferred in near real-time (per second) via the internet to a remote location, the upload bandwidth needed will be as follows (approximation only):

No. of 'Windows'	No. of screenshots to be transferred per second	Total size of screenshots	Upload bandwidth required for transferring screenshots in 1 second
1	1	200 KB	1.6 Mbps
2	2	400 KB	3.2 Mbps
3	3	600 KB	4.8 Mbps
4	4	800 KB	6.4 Mbps
5	5	1 MB	8.0 Mbps
6	6	1.2 MB	9.6 Mbps
7	7	1.4 MB	11.2 Mbps
8	8	1.6 MB	12.8 Mbps

How the upload bandwidths have been calculated

The upload bandwidths as listed in the above table have been verified using the following calculator (from the section titled 'Download/Upload Time Calculator'):

<https://www.calculator.net/bandwidth-calculator.html?downloadsize2=200&downloadsize2unit=KB&bandwidth2=1.6&bandwidth2unit=mb&ctype=2&x=89&y=22#download-time>

Considering the size of a screenshot to be 200 KB, which is 0.2 MB (200/1000 = 0.2 MB since 1 MB = 1000 KB) the bandwidth needed to upload 0.2 MB in 1 second will be 0.2 x 8 Mbps = 1.6 Mbps. In this manner, for uploading screenshots captured from multiple 'Windows', the upload bandwidth will be calculated as 1.6 Mbps x the number of 'Windows'. For example, for 2 'Windows' the bandwidth requirement will be 3.2 Mbps, for 3 'Windows' it will be 1.6 Mbps x 3 = 4.8 Mbps, and so on.

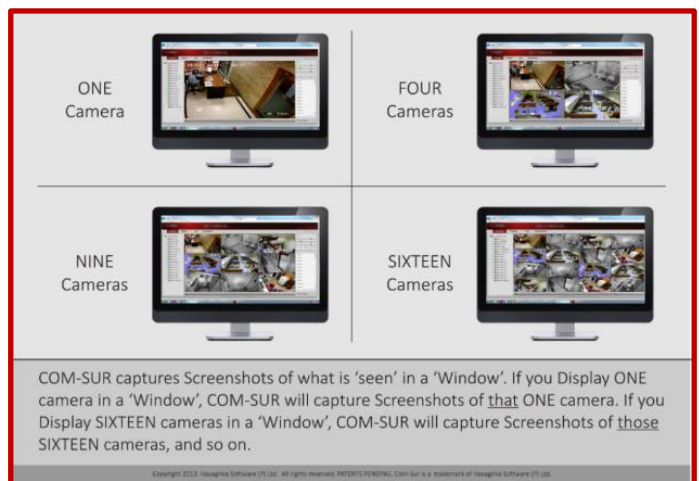
Thumb rule: To upload a file of size of 1 MB in 1 second, a network bandwidth of 8 Mbps is required.

Download bandwidth at the central location

Just as there will be a bandwidth requirement from where screenshots are uploaded, there will be a similar bandwidth requirement where the screenshots are to be downloaded. However, suppose there are five locations which are uploading screenshots from 8 'Windows' per location to a central location, then the download bandwidth needed at the central location would be 12.8 Mbps x 5 = 64 Mbps.

Explanation of a 'Window'

A 'Window' is essentially the display input that brings forth, and shows the user the video feed on a monitor. A 'Window' can be that of a VMS/Browser. The number of cameras per 'Window' are user-defined; for example: 1, 4, 9, 16, 25, 32



Typical setup

Typically, operators view diverse cameras using 3 to 4 monitors.

