



➤ **Product Overview**

SVPROXY3

**Video Distributor and Proxy Server for
SerVision Video Gateways**



Copyright

Copyright © 2011 SerVision Inc. All Rights Reserved.

About SerVision Security Systems

SerVision security systems are compact video gateways that provide state-of-the-art security functionality, including live video transmission, video recording and playback, motion detection, sensor management, real-time event notification, and device activation. The systems can be accessed remotely via PC, tablets and smart phones using SerVision client applications.

What is SVProxy3?

SVProxy3 is an application that was developed by SerVision to work in conjunction with its video gateways and client applications. When the application is installed on a server that is connected to the internet, it can facilitate and extend the video transmission capabilities of SerVision systems by providing the following services:

- **Proxy service:** Enables video transmission over networks that do not allow client devices to connect to video gateways directly
- **Video distribution service:** Enables greater numbers of client applications to view live video from a video gateway simultaneously
- **Dynamic DNS (DDNS) service:** Facilitates client connections to video gateways that have dynamic public IP addresses

SVProxy3 performs all services by acting as an intermediary between SerVision video gateways and SerVision client applications. When these services are used, all communication between video gateways and client applications, including the transmission of video, go through SVProxy3.

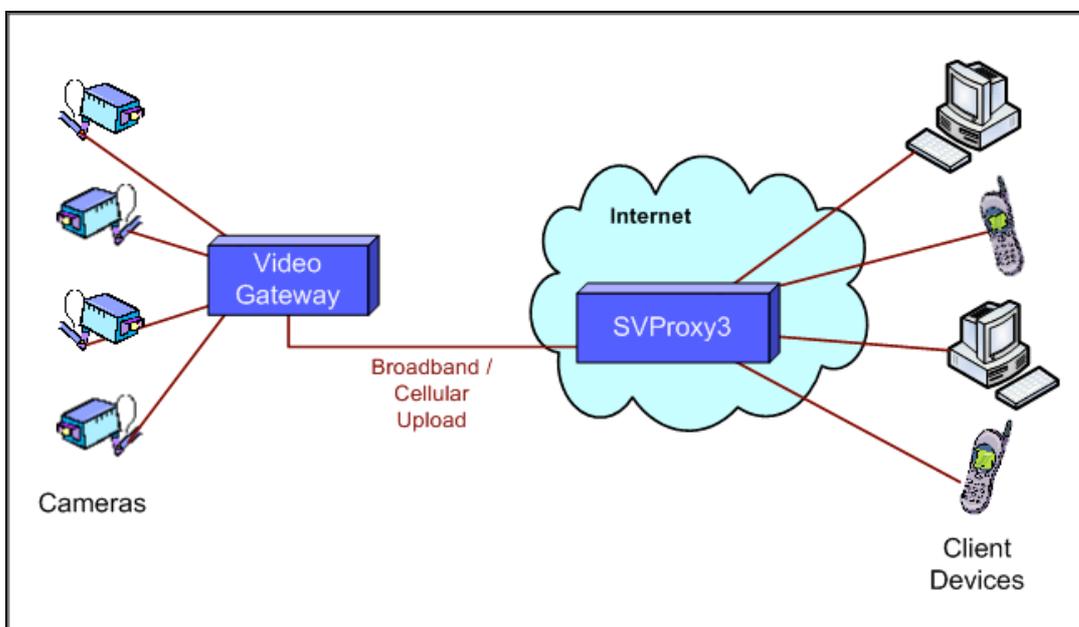


Figure 1: SVProxy3 mediating between a video gateway and clients

Proxy Service

The proxy service that is provided by SVProxy3 enables video transmission in situations in which direct connections between video gateways and clients cannot be established. This service is particularly useful in the following situations:

- **Cellular networks:** When a video gateway connects to the internet via a cellular network, and the cellular carrier does not permit other external devices to initiate direct connections to the network. This situation could occur, for example, if the provider assigns a private IP address to the video gateway's SIM
- **Firewalls:** When a router or other firewall prevents clients from connecting to a video gateway

When the proxy service is used, video gateways are configured to automatically connect to SVProxy3's proxy server when they start running. Similarly, client applications are configured to connect to these video gateways indirectly by connecting to the proxy server. Once these connections are established, SVProxy3 accepts requests from client applications and relays them to video gateways. The video gateways send their responses to SVProxy3, and it, in turn, passes the responses back to the client applications. If clients request video streams, SVProxy3 receives them from the video gateways frame-by-frame, and relays the frames to the client devices as it receives them.

The SVProxy3's proxy server can handle simultaneous connections with up to 300 four-channel video gateways (each having four video channels in use, as well as audio and GPS).

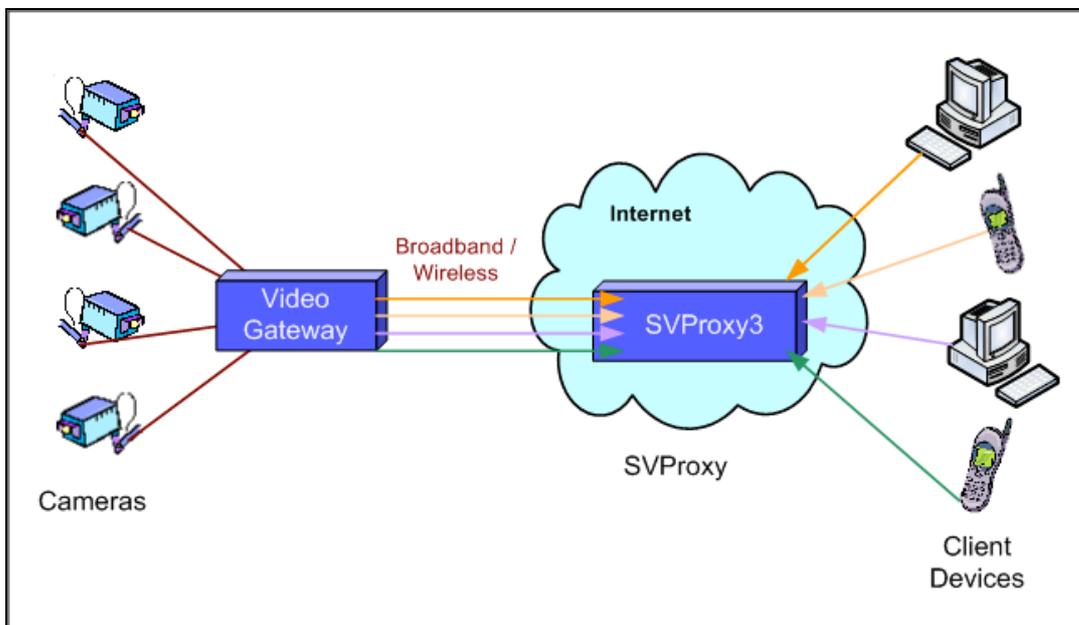


Figure 2: SVProxy linking a video gateway to clients

Video Distribution

SerVision video gateways are capable of uploading video to multiple users simultaneously. However, in many cases the networks through which they upload the

video place significant limitations on how much video can be uploaded at one time, because the upload bandwidth is quite narrow. As a result, a video gateway may only be able to upload one or two good-quality video streams at a time.

Video gateways automatically divide the available upload bandwidth among the various video streams they are uploading to clients. If not enough bandwidth is available for all the requested video streams, the video gateway may reduce the quality of some or all of the streams. At times, if the bandwidth available is far from sufficient to supply all of the requested video streams, a data-transmission bottleneck develops when the video gateway attempts to transmit the video. As a result, the quality may be so degraded that the video is garbled and cannot be played properly by the clients.

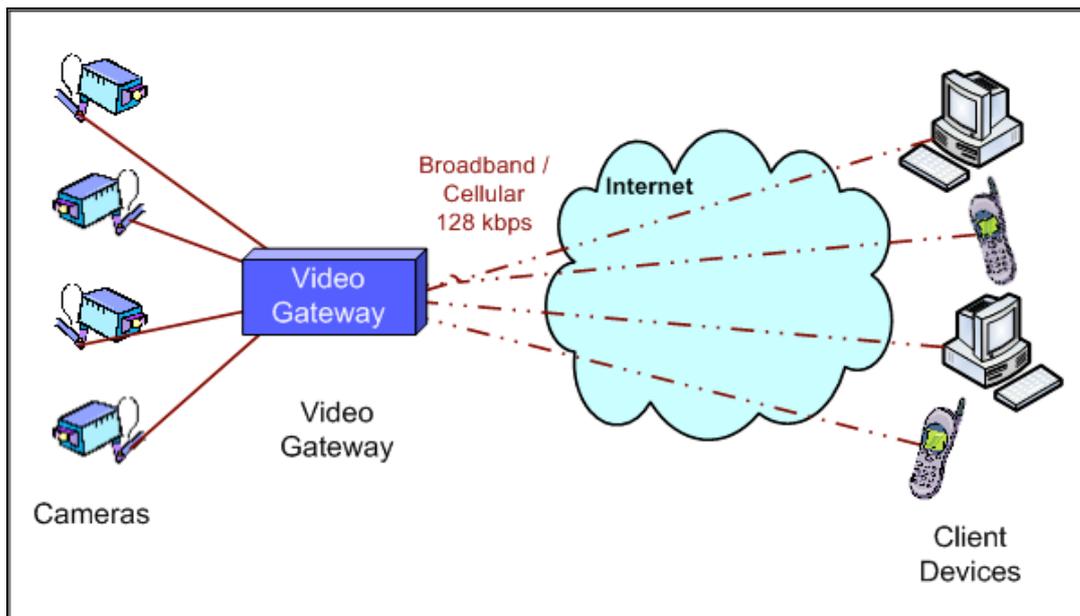


Figure 3 Degraded video received by multiple clients due to bandwidth constraints

SVProxy3's video distribution service, SVDistributor, circumvents these problems, making it possible for numerous users to receive high-quality live video from a single SerVision video gateway simultaneously, even when the upload bandwidth available to the video gateway is not sufficient for multiple users. To accomplish this, SVDistributor functions as both a client vis-à-vis the video gateway and as a server vis-à-vis client devices. In its role as a client, it connects to the video gateway and retrieves a video stream from it. In its role as a server, it uploads the video it receives to other clients using its greater upload bandwidth. For optimal video distribution performance, the SVProxy3 should be connected to the ISP's backbone.

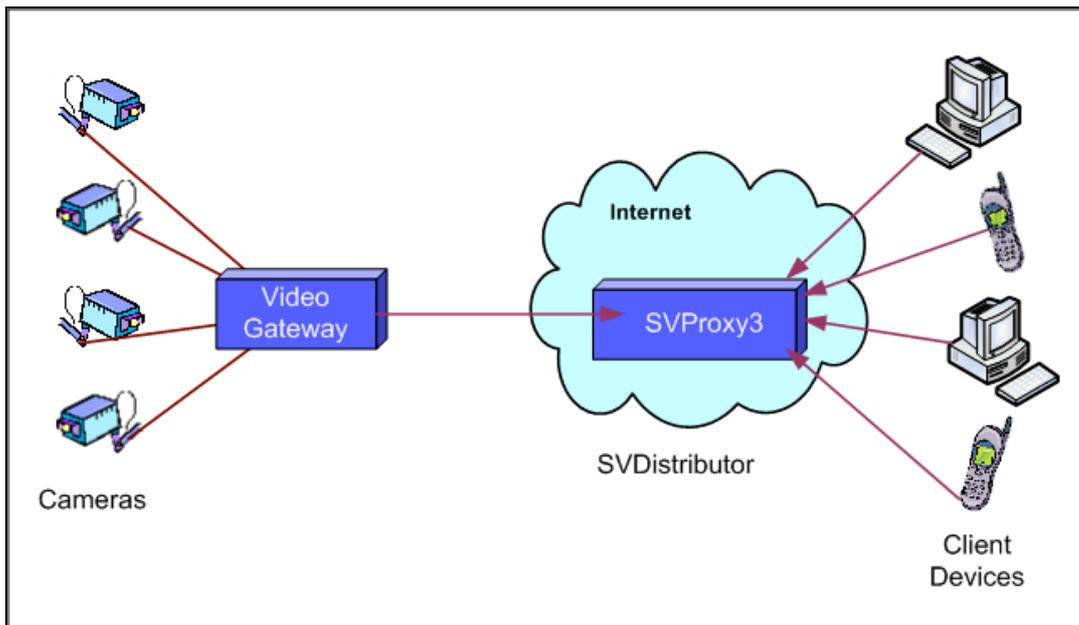


Figure 4: SVDistributor relaying a video stream from a video gateway to multiple clients

Whenever multiple users are likely to retrieve live video from a single video gateway simultaneously, SVProxy3 can be used to ensure that the quality of the video is consistent. SVProxy3 is most useful in the following situations:

- When the video gateway has very limited bandwidth available for streaming video to clients. For example, if the video gateway connects to the internet through a cellular network, it probably can only upload a single video stream at any given time.
- When a large number of video streams are downloaded from a video gateway at one time. For example, if the video gateway is used to monitor traffic conditions on a highway, and hundreds of users want to view the same live video stream of the highway at one time.

DDNS

SVProxy3's Dynamic Domain Name Service, SVDDNS, helps client devices locate video gateways that have dynamic public IP addresses. Each video gateway that uses this service has a name by which it is identified. The video gateway automatically connects to SVProxy3's SVDDNS server at frequent intervals. When it does so, the SVDDNS server retrieves the video gateway's name and current IP address. It stores this information in its database and also relays it to the global DNS service – the interconnected system of DDNS and DNS servers on the internet.

Client applications use the global DNS service to find out the current IP address of a video gateway before they connect to it. The client supplies the name of the video gateway, and the DNS service gives it the IP address. Once it has the current IP address of the video gateway, the client can use it to connect to the video gateway directly, through the internet.

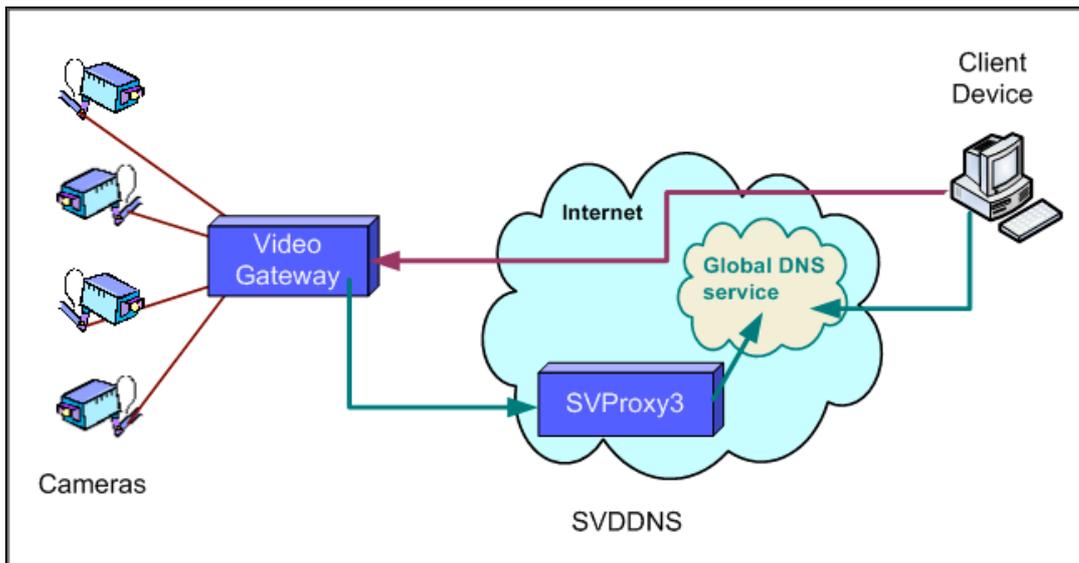


Figure 5: SVDDNS relaying the IP address of a video gateway to the global DNS service for clients to retrieve

Product Versions

SVProxy3 can be supplied in one of two forms:

- **Hardware:** The application is preinstalled on a server unit which is supplied to the customer by SerVision.
- **Software:** The application is provided as software for installation on a server unit that is provided by the customer.



Figure 6: SVProxy3 supplied as a hardware unit

Network Requirements

SVProxy3 must be installed on a server that has a broadband connection to the internet. If only the proxy server is in use, the SVProxy3's bandwidth should be symmetrical such that the upload and download speeds are the same. If video-distribution services are also required, the upload capacity of the line should be sufficient to enable SVProxy3 to upload video at one time to as many clients as required. In addition, the upload bandwidth of all the segments of the line connecting a client to SVProxy3 must be broad

enough to support the transmission of the required video. That is, point-to-point, from SVProxy3 to each client, the upload capacity must be sufficient for the video that will be transmitted.

Appendix: Video Distribution Scenarios

SVProxy3 can add tremendous power to SerVision systems in a wide variety of situations. Here are a few examples:

Transportation Systems

A bus company places MVG units in each of its buses. The units can only be accessed wirelessly, via the cellular network or Wi-Fi. When a problem arises on a bus, the manager of the company, the head of security, and the police all want to view live video from the bus. The MVG on the bus can only supply good-quality video to one user at a time. Without the SVProxy3, none of the users would see video of the event clearly. With the SVProxy3, all of them can connect to the SVProxy3 simultaneously and see the video.

Television Broadcasting Over the Internet

A television channel is broadcast over the internet by means of an HVG 400 unit. Users watch the channel by connecting to the HVG 400 over the internet and downloading the video and audio to client applications on their PCs or smart phones. A number of SVProxy3 units are used to broadcast the channel, so that hundreds of viewers can watch it at one time.

Accident Handling

CVG-M units are placed in a fleet of ambulances. Each unit has two cameras connected to it – one on the outside of the vehicle, the other on the inside. When an ambulance arrives at the scene of a road accident, video from the cameras is automatically uploaded from the CVG-M to an SVProxy3 unit. Police dispatchers connect to the SVProxy3 to view the situation, ascertain the extent of the accident, and decide if additional forces should be sent there. At the same time, doctors at the nearest hospital connect to the SVProxy3 to see how many casualties there are and what kinds of injuries they have sustained. They use this information to prepare to treat them at the hospital and, if necessary, to give ambulance staff instructions about how to care for them at the site of the accident.

Border Security

The army sets up an UVG unit at a border crossing. Live video from the UVG is uploaded to an SVProxy3 set up nearby. Soldiers routinely monitor the crossing by connecting to the SVProxy3 and watching live video from the UVG. If a security problem arises, the officers in charge are notified. The officers then connect to the SVProxy3 to observe the situation for themselves and decide how to handle it. If it is a major event, officers at various levels of command view the video from a range of locations simultaneously by connecting to the SVProxy3.