IVaaS

White Paper

Table of Contents

IVaaS in Security Control Industry

IVaaS (Intruder Verification as a Service) is a key technology of a fully integrated intruder alarm solutions that fuse video security and alarm systems. This technology has been widely used in the security systems of sectors that have huge impacts on people's everyday life, including the financial sector, the cultural, educational, and healthcare systems, power plants and water conservancy projects; public security monitoring in shopping malls, factories, warehouses, office buildings and other public places as well as personal security protection in apartments and villas.

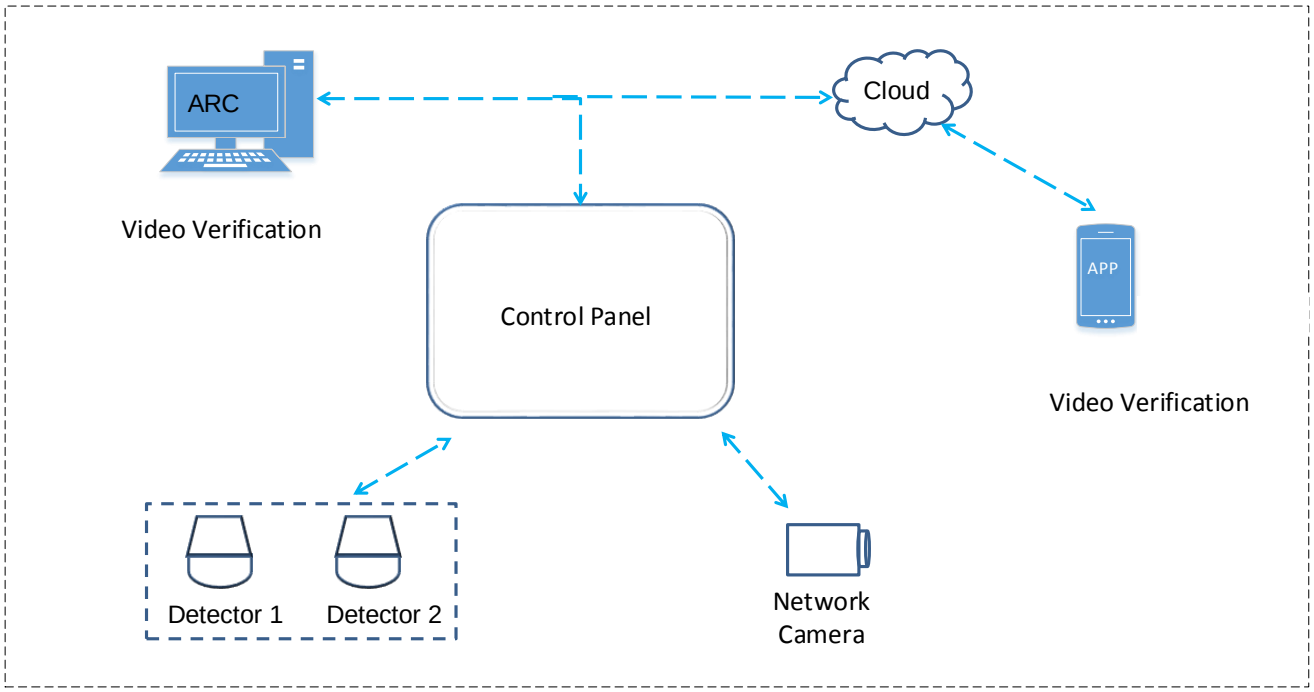
IVaaS enables video verification of events by providing video clips of the scenes as forensic evidence in the event of an activation. Supervisors can receive alarm information via multiple platforms, remotely view the pre-alarm and post-alarm video clips to apprehend a suspected intruder and prioritize timely responses. Compared with the traditional on-site verification, IVaaS not only greatly reduces the probability of missed and false alarm, facilitates timely confirmation in the event of an alarm, recovers losses caused by on-site verification, but also guarantees that users can enjoy undisturbed security control service.

The IVaaS Technology

What is IVaaS system?

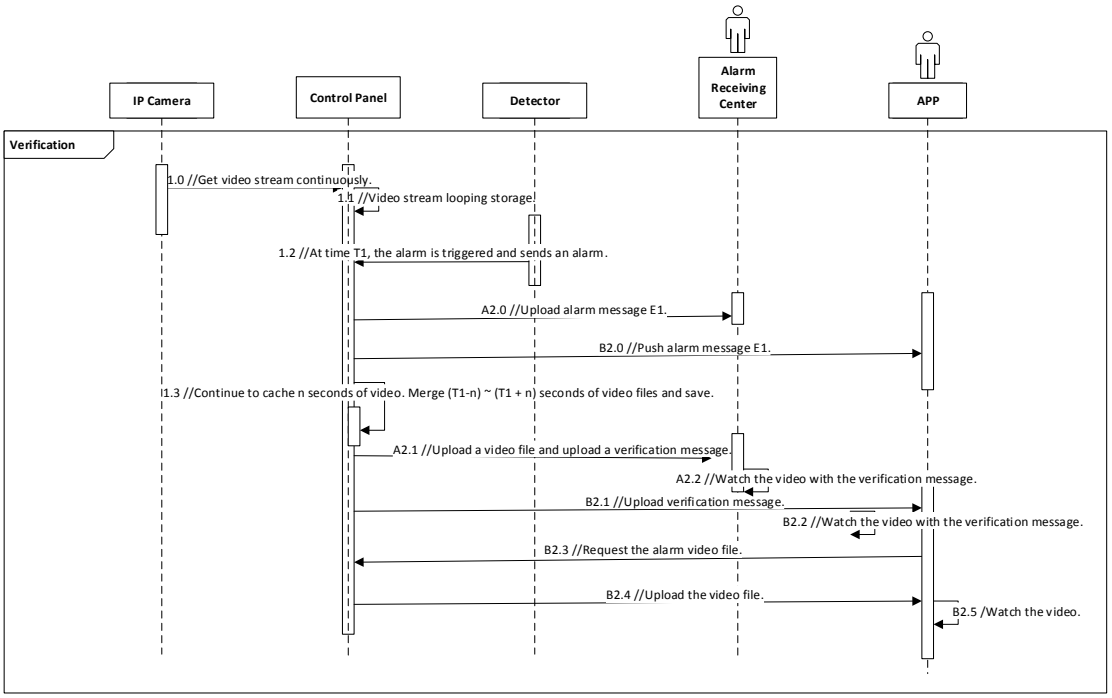
System Composition

The IVaaS system consists of detectors, control panels, network cameras, alarm receivers, and cloud service.



Basic Principle

While the alarm is triggered at a certain time (T), a signal will be sent to the control panel. The control panel records the alarm that will be then uploaded to the alarm receiver center and mobile client through the network. At the same time, the control panel intercepts the video of n seconds before and n seconds after T, and pushes the video to the alarm receiver center and mobile client where the supervisors can watch the uploaded alarm videos.



Key Design Points

- The system supports linking the zone with network cameras. The accessibility of the network camera is based on the device performance.
- The control panel continuously acquires data stream from the network cameras and adopts looping storage for each camera. The system preserves cache space according to the video size.
- The system will generate a video clip recording the event course and correlate the video with alarm information including zone No., time, etc.

Core Technology of IVaaS

Alarm & Video Correlation

The principle of correlating alarm messages and video files is as follows:

1. When an alarm is triggered, the control panel uploads an alarm message (with a unique identifier UUID) to the message server for instant notification.
2. When the video file is generated, the control panel uploads the video file to the video server.
3. The video server saves the file and returns the file address to the control panel.
4. The control panel uploads the UUID and video file address to the message server.

5. The message server correlates the UUID and file address, and generates a link for the video clip.

Data Stream Transmission

The digital video stream from the network camera is high compressing encoded by the H.264/H.265 standard, packed and sent through the RTP (Real-time Transport Protocol), and re-encapsulted to the PS (Program Stream) stream which can only be identified and decoded by Hik-Connect.

To satisfy the needs of watching video clips on multiple platforms, the packets will be re-encapsulted to MPEG-4 streams and be encoded to generate a video files.

The video can be played directly on multiple platforms with players, such as media player, through the mailbox, FTP, EHome or the third-party platform protocol.

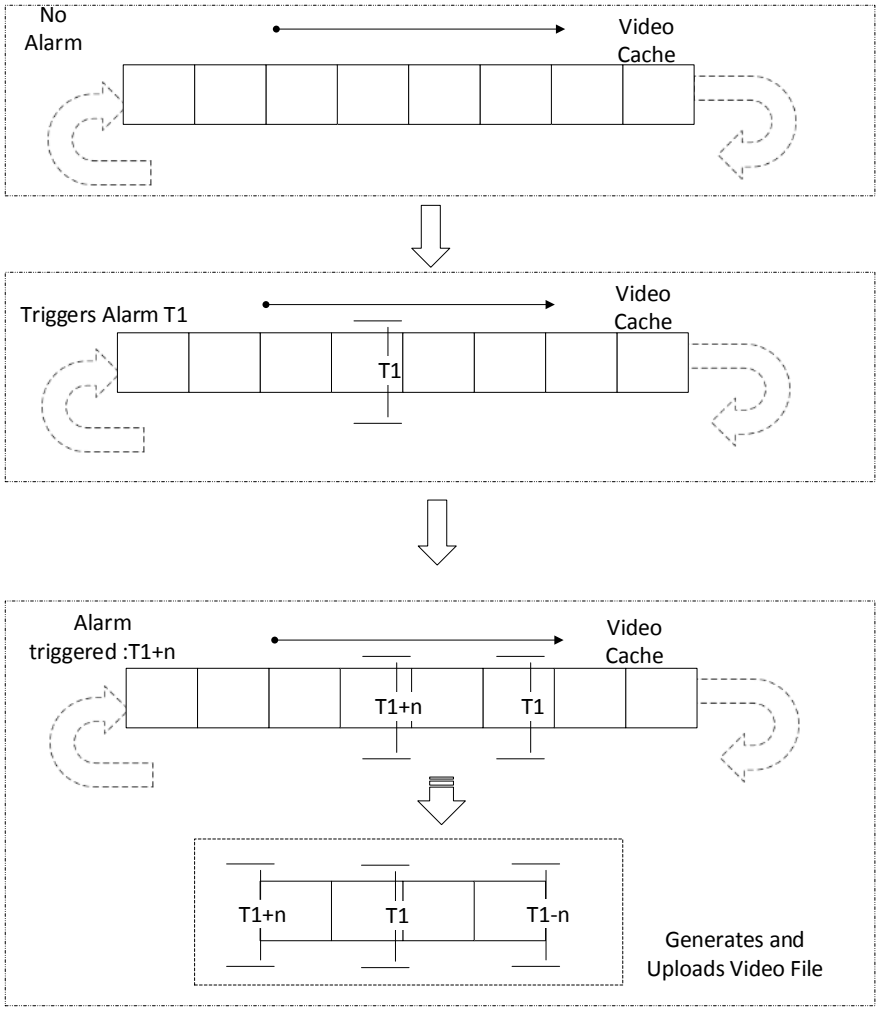
Small Bandwidth Transmission

For small size alarm message, the current 2G network is also the mainstream choice. However, data transmission through low-speed networks has a high probability of transmission exception or timeout. Especially for big chunk of information, the retransmission takes a long time. To ensure smooth transmission, big data is clipped into small segments to perform partial retransmission, which helps reduce the transmission time.

Considering the user experience, the size of the video clip has been restricted. The essence of the verification is whether an event is actually occurred at the time of the alarm or not. So the duration of the video clip is designed to be 7s (the video durations before and after the alarm are configurable) to ensure that the records of the event course is integrated. The use of sub-stream video reduces the file size and data flow costs, improves the video transmission efficiency, and ensures the video quality.

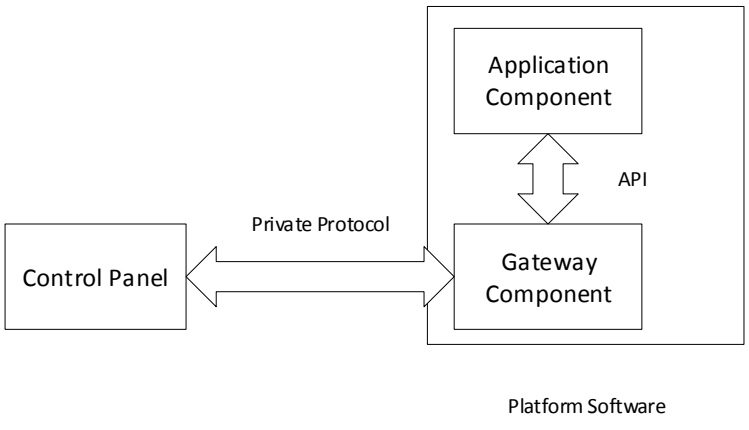
Video Stream Cache

The control panel continuously acquires the stream from network cameras and adopts looping storage for each camera. The system preserves cache space according to the video size. While an alarm is triggered, the stream of video recording the event course (7s, the video durations before and after the alarm are configurable) is clipped and transferred to multiple platforms, which allows users to watch the alarm video via mobile client, email, FTP, etc.



Platform Compatibility

With the continuous iteration of products and functions, the compatibility between platform and product becomes particularly critical. The gateway component scheme, which makes the upgrade of gateway component synchronously with the device, adopts private protocol to improve the safety of data transmission. Components and platform services develop a standard API (Application Program Interface) that is compatible with multiple platforms.



Breaks the on-site verification limitation.

Hikvision IVaaS technology breaks the limitation of on-site alarm verification and realizes alarm video notification on multiple platforms (such as mobile App, email, FTP), which satisfies the needs of security supervision in different conditions. The technology effectively improves the efficiency of alarm verification and reduces the probability of missed and false alarm. Combining the security control system with IVaaS is an integrity of non-visual and visual technologies that drives the industry of intrusion alarm control entering a new development stage.


See Far, Go Further