Physical Security Interoperability Alliance

IP Video Use Case 001 (PSI-UC-IPV001)

Specification Version 1.0
Revision 0.4

Revision History	Description	Date	By
Version 1.0 Rev 0.1	Initial Draft	June 19, 2008	Frank Yeh
Version 1.0 Rev 0.2	Updates from June F2F	July 11 2008	Frank Yeh
Version 1.0 Rev 0.3	Comments from 1st review and 2nd Review integrated	July 29 2008	Frank Yeh Brett Going
Version 1.0 Rev 0.4	Removed VMS use case information (to be included in second use case)	August 8,2008	Frank Yeh

1. Description

The first IP Video Use case applies to any device that provides streaming digital video over an IP network. The use case describes all events necessary to connect to such devices over the network, request streaming content from these devices, and view the requested content.

In the most basic scenario, the IP Video Device will provide a native user interface, allowing for the configuration of the device as well as for viewing video from the device. All user interaction with the device is accomplished using this native interface. This client interface can be a proprietary "Fat" client running on the client workstation or it can be a standard web browser.

Future IP Video use cases will describe how IP Video is streamed and accessed in a large and complex environment but this first use case is meant to illustrate a single client accessing a single stream from a single device with the intent of setting the baseline from which the more complex use cases will expand.

2. Validation

The IP Video Use Case is validated when a user can request and view streaming video from an IP Device.

3. Assumptions

The following pre-conditions are assumed to exist prior to the sequence of events within this use case.

3.1. Video Application System Client and IP Video Device are installed on the IP Network

3.2. Users and Administrators have proper credentials to access applications and devices

4. Entity Enumeration

The following entities participate in this use case:

4.1. User

A person who uses video applications.

4.2. Video Applications

Video applications are *client* based software that allow users to view, and optionally manage and process, video from IP video devices .

4.3. IP Video Device

An IP video device, typically a camera or encoder, captures video images and may use a variety of codecs to encode and or compress a video stream prior to distributing it on the network.

5. Functional Dependencies

This section describes all of the major functions that must be executed in order for the use case to operate. These functions are described in reverse chronological order as this allows the relative dependencies of each function to be illustrated.

5.1. Streaming Video

Encoded video content is streamed from the IP Video Device to the client.

5.2. *Request Streaming Video*

Client requests Streaming Video from Device

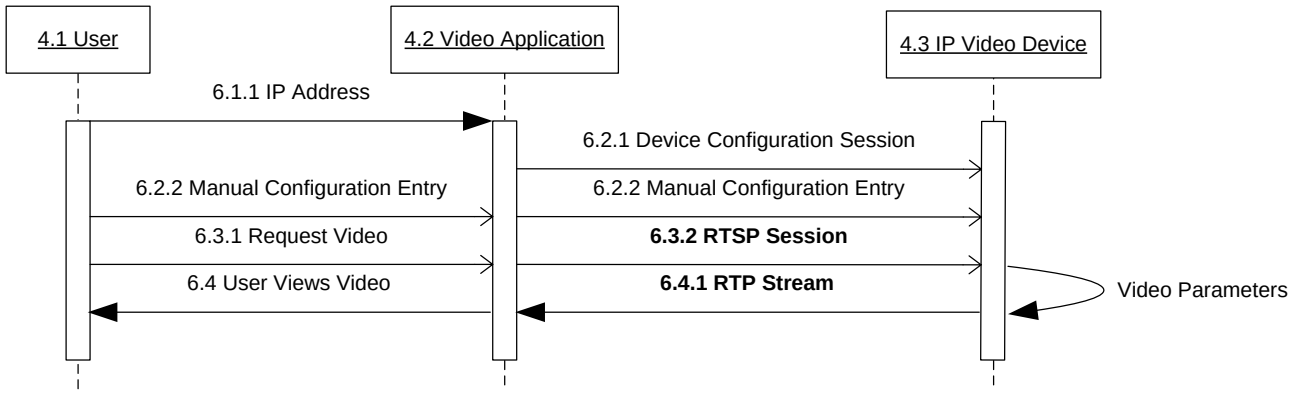
5.3. Device Configuration

Client updates configuration of video device

5.4. Address Resolution

Client learns IP Address of Device

6. Sequence of Events



6.1. *Address Resolution*

Resolution of device IP Addresses to support application access.

Proof Point is to test IP connectivity with the device. PING is a nominal test of connectivity.

In this use case, there is no discovery of Addresses. The User simply has to know the IP Address of the device he wishes to communicate with.

6.1.1. Manual IP Address Entry

Device IP Addresses are entered manually into applications.

The Client (often embedded in a web browser) talks directly to the IP Video Device. In this case, the IP device's IP Address is manually entered each time a new session is established with the device. There is no registration function per se.

6.2. *Device Configuration*

Allow applications to configure IP devices. While this step is not inherently necessary for the viewing of video, it is typically performed to establish the device's supported video formats, security parameters for accessing the device, network bandwidth limitations, etc.

Proof Point is when a user can update configuration of Video Devices

6.2.1 Application Connects to Device

The Native Client talks directly to the Video device. The device's embedded interface server supports entry of any configurable attributes of the device. There is no external protocol in this scenario.

6.2.2 Manual Configuration Entry

Device configuration can be entered manually into embedded application. Application will provide appropriate fields for device.

6.3. Video Request

6.3.1 User Requests Video/Audio Stream

User requests a Video/Audio Stream from the Application.

Proof Point is when user requests a video stream and application acknowledges same. Testing that the client has an RTSP connection to the Source is also a proof point.

6.3.2 Client initiates video request to Device

The Native Client issues an RTSP Request to the Video Device.

Real Time Streaming Protocol (RTSP) http://tools.ietf.org/html/rfc2326	Within the context of establishing the RTSP connection, the Client negotiates certain parameters (EG port number) with the IP Device. Typically, these parameters will be used to determine how the content will be transported back to the client.

6.4. Video is Streamed to Client

The Client displays, records, renders, or processes the media stream (i.e. for analytics purposes).

Proof Point is when user can actually see video/hear audio on the client.

6.4.1. Device Sends Video to Client

The Video Device establishes an RTP stream back to the client

Real-Time Transport Protocol (RTP) http://tools.ietf.org/html/rfc3550	Using RTP, the content is transported back to the client using parameters negotiated in the previous step (using the RTSP protocol)