SUNAPI

Application Programmer's Guide

v1.4

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Contact Information

Hanwha Techwin Co., Ltd.

Hanwha Techwin R&D Center, 701, Sampyeong-dong, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea, 463-400

www.hanwha-security.com

Hanwha Techwin America

100 Challenger Rd. Suite 700 Ridgefield Park, NJ 07660

www.hanwhasecurity.com

Hanwha Techwin Europe

2nd Floor, No. 5 The Heights, Brooklands, Weybridge, Surrey, KT13 0NY, U.K

www.hanwha-security.eu

Hanwha Techwin Shanghai

32F, Blk B, New Caohejing International Business Center, No. 391 Guiping Rd., Shanghai, China, 200233

www.hanwha-security.cn

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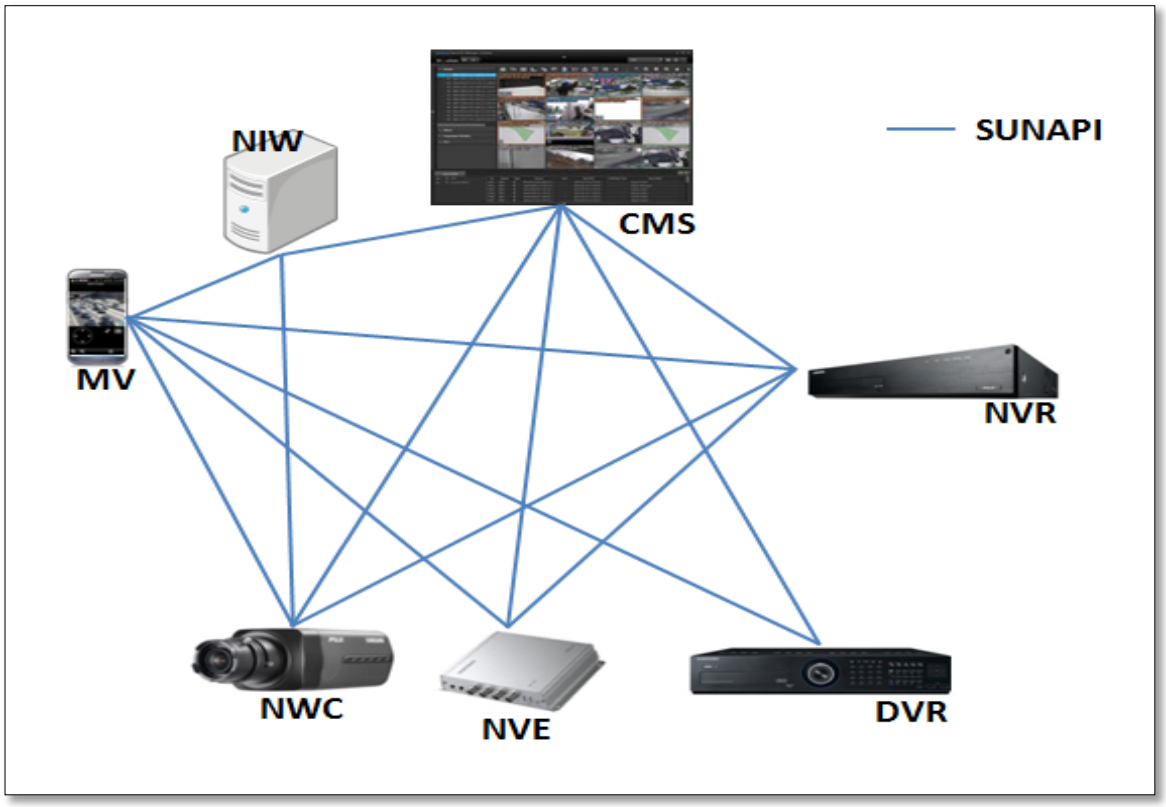
1 Introduction

SUNAPI (Smart Unified API) is a common protocol used by CMS, VMS and mobile clients to communicate with Hanwha security devices, such as network cameras, DVRs and NVRs.

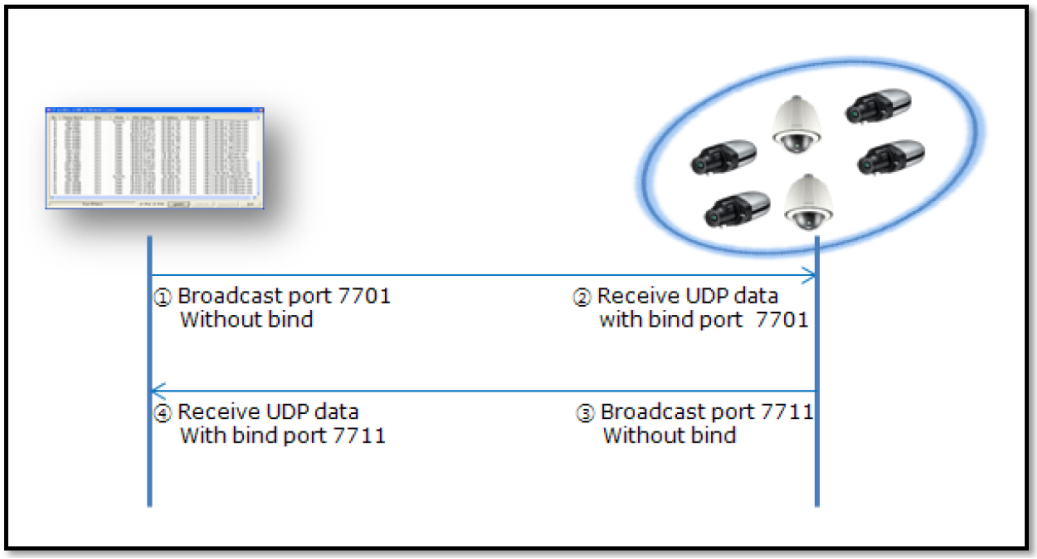


SUNAPI allows you to access product features simply by entering standard HTTP URLs. The URLs pass variables to SUNAPI's CGI, which interfaces with the specific product. This simplified interface system makes it possible for central monitoring software to access the features of a diverse set of products in a standardized way. This makes SUNAPI a valuable tool for developers of central monitoring software and other network video applications.

This document describes how the SUNAPI protocol can be used from a programmer's perspective. It is intended as a complementary document to the SUNAPI specification document; as such, this document does not cover all of the features described in the specification.

2 Discovery

The Discovery protocol used by SUNAPI is a binary protocol, in which the client sends a broadcast message to a particular port and waits for a response message on a specific port number.



DISCOVERY REQUEST

```
SunapiDiscoveryRequest()
{
       IPScanRequest.nMode = DEF_REQ_SCAN;
       IPScanRequest.chPacketID = getUniqueID();// An unique 18 byte value derived
from MAC.
      Res = Send_BroadcastMessage(IPScanRequest, 255.255.255.255,7701);
}
```

DISCOVERY RESPONSE

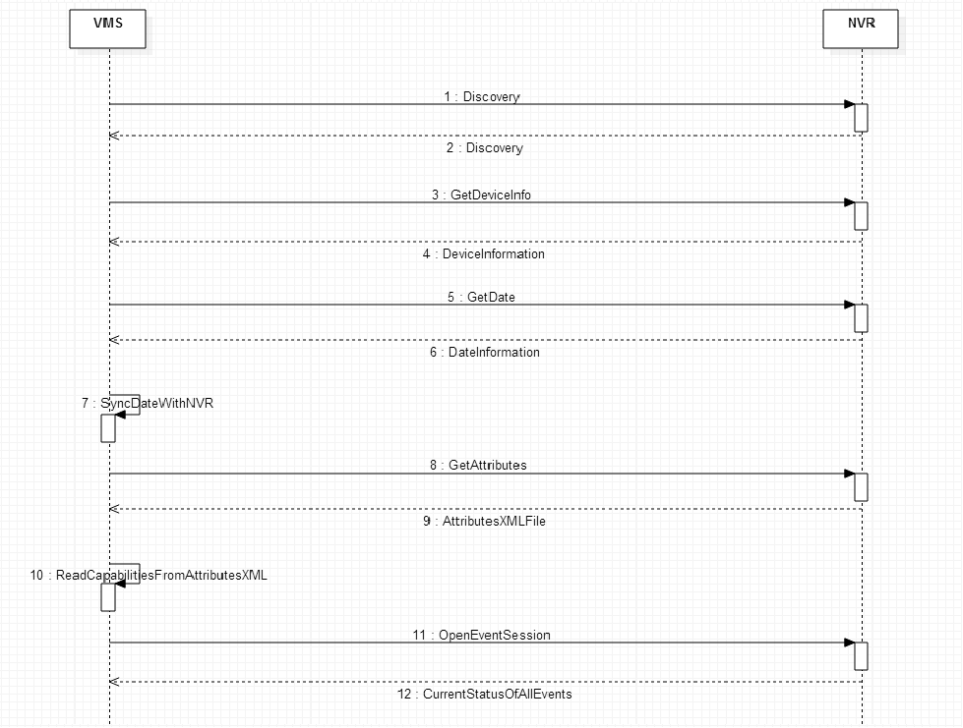
```
SunapiDiscoveryResponse()
{
         Response = ReadBroadcastResponse(7711);
         If(Response.chPacketID != getUniqueID())
{
                    return -1;
}

Result.MacAddress = Response.chMac;
Result.IPAddress = Response.IpAddress;
Result.HttpPort = Response.nPort;
Result.DeviceName = Response.chDeviceName;
Result.HTTPSMode =  Response.nHttpMode;
If(Result.HTTPSMode)
  Result.HTTPsPort = Response.HttpsPort;
Result.SunapiVersion = Response.nsupportedProtocol; //1-SVNP,2-sunapi 1.0, 4 –sunapi
2.0

return Result;
```

```
}
```

3 Basic Setup



3.1 Attributes

Attributes XML contains two sections.

- **attributes**: Gives Information about the capabilities of the device.
  Ex: Max Channels, Max Alarm Inputs, Max Alarm Outputs etc.
- **cgis**: Gives Information about each submenu, action and parameters in SUNAPI commands.

```
<capabilities>
    <attributes>
        <group name="System" />
        <group name="Network" />
        <group name="Transfer" />
    …
    …
    …
    </attributes>
    <cgi name="system" />
    <cgi name="network" />
    <cgi name="security" />
    <cgi name="video" />
    <cgi name="media" />
        …
        …
        …
    <cgi name="recording" />
<capabilities>
```

Attributes

CGIs

Attributes will be changed dynamically based on the camera connection.

For more information on the attributes, please refer to [8] of the References section (page 87).

3.2 Device Information

This command will return information about the device, such as model name, firmware version, language etc.

REQUEST

```
http://<Device IP>/stw-cgi/system.cgi?msubmenu=deviceinfo&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Model=PRN-4011
FirmwareVersion=v2.10_180329015157
BuildDate=2018.03.29
WebURL=http://www.hanwhasecurity.com
DeviceType=NVR
ConnectedMACAddress=00:09:18:30:97:01
RequestedClientIPAddress=192.168.71.43
CGIVersion=2.5.6
MicomVersion=36
DeviceName=PRN-4011
Language=English
```

3.3 Date Information

This command will return information about the Date settings of the Device, such as Time zone, DST settings, etc. Please refer to [3] of the References section (page 87).

> **Note**
> VMS Application has to sync the date and time with the Device.

REQUEST

```
http://<Device IP>/stw-cgi/system.cgi?msubmenu=date&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
NTPLastUpdatedTime=2018-04-19 09:01:44
LocalTime=2018-04-19 09:01:44
UTCTime=2018-04-18 23:01:44
SyncType=Manual
NTPURLList=aaa.com,bbb.com,ccc.com,ddd.com,eee.com
NTPStatus=Fail
DSTEnable=True
POSIXTimeZone=STWT-9STWST,M3.5.0/1:00:00,M10.5.0/1:00:00
```

3.4 Event Session

VMS application has to open an event session to receive the events from the Device.

NVR will send all events by channel, system events, alarm events, configuration change events etc. to all connected VMS applications. Please refer to [7] of the References section (page 87).

> **Note**

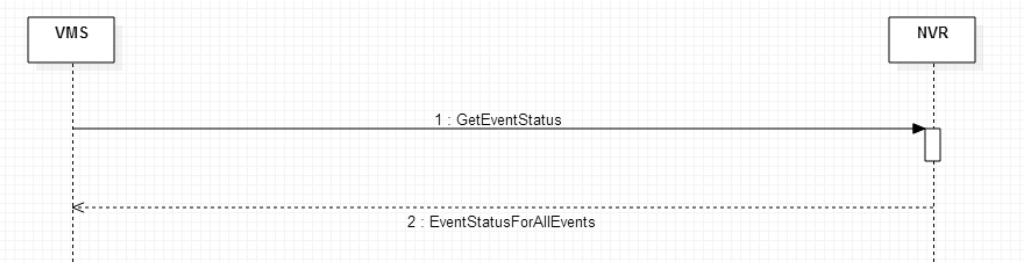
If the event is "ChangedConfigURI", VMS application has to update the corresponding configuration.

Ex: SNMP Configuration change

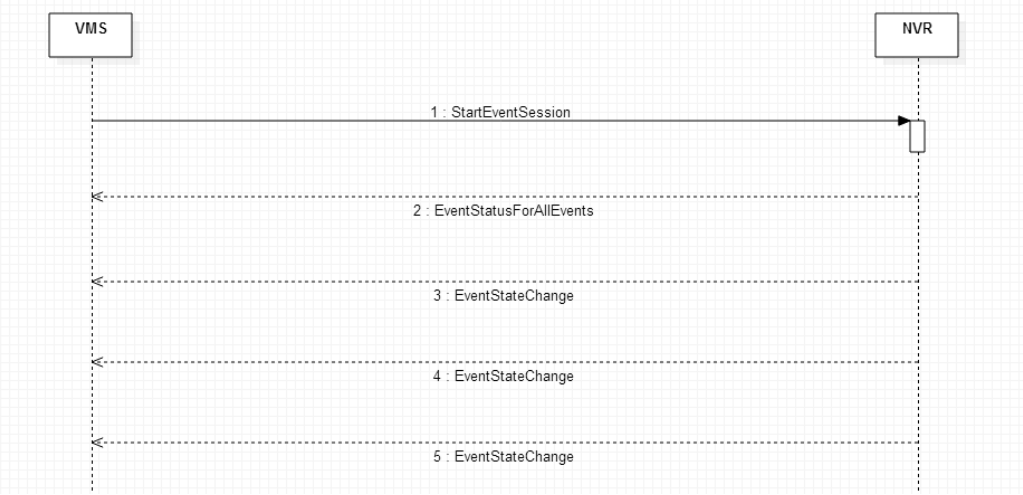
```
Timestamp=2015-05-08T02:18:59Z
SystemEvent.ConfigChange=True
ChangedConfigURI=network.cgi?msubmenu=snmp
```

Event Status has three actions –

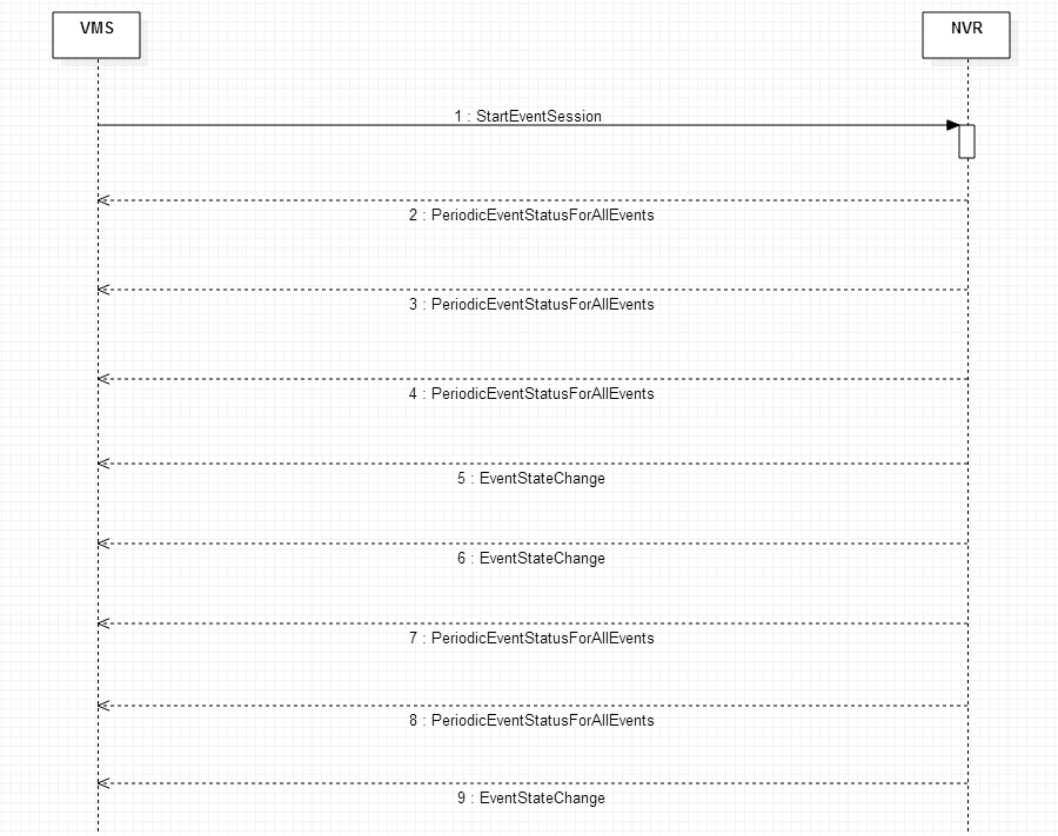
- Check : Gets the current status of all events



- MonitorDiff : Gets the event status whenever the state of the event changes



- Monitor: Gets the event status of all events periodically and when the state of the event changes



Note

In Monitor and MonitorDiff modes, the connection is maintained, and there is a notification whenever an event occurs.

REQUEST

```
http://<DeviceIP>/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=check
```

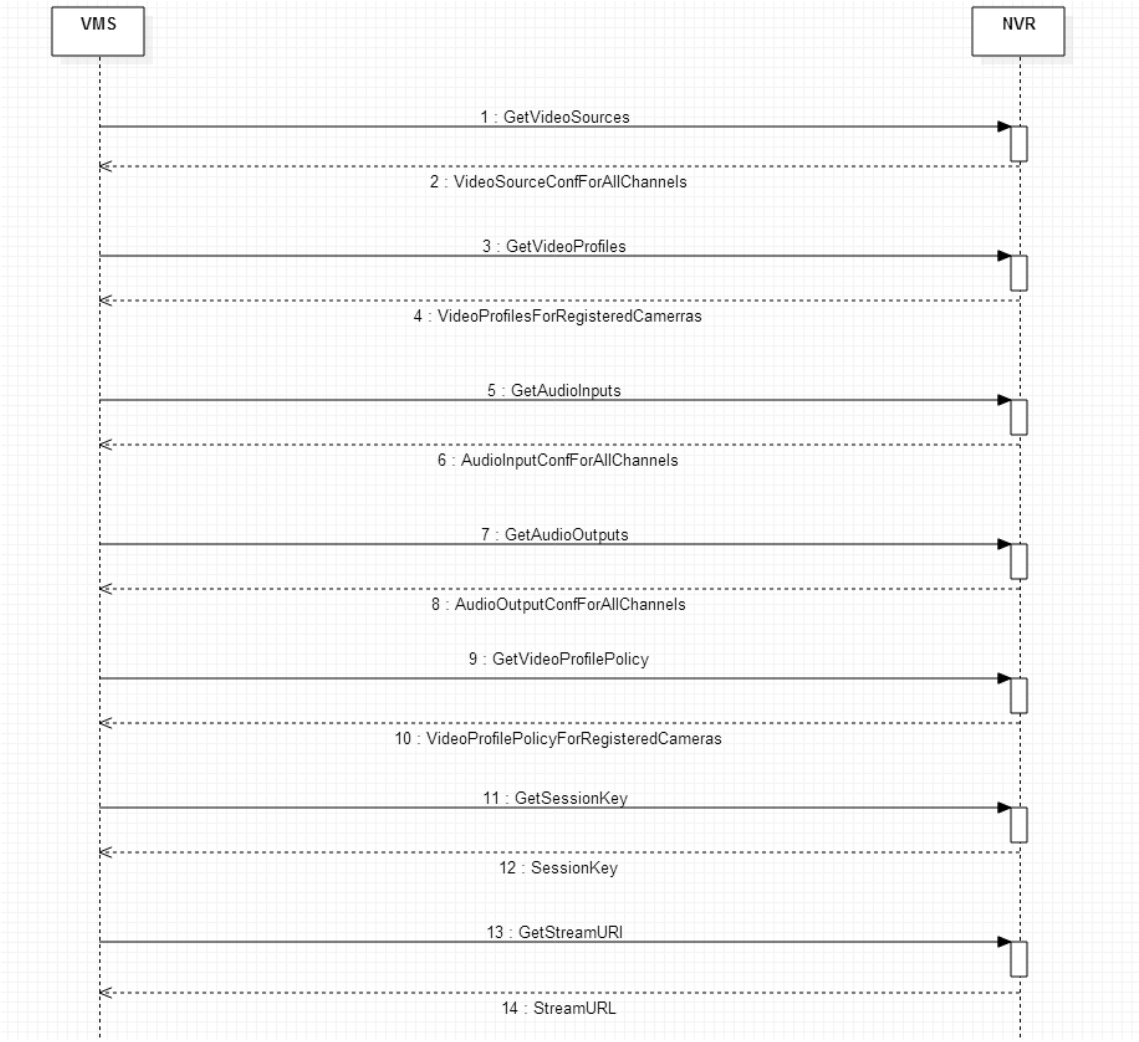
RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.NetworkCameraConnect=True
Channel.0.AMDStart=False
Channel.0.LowFps=False
Channel.0.Tampering=False
Channel.0.Videoloss=False
Channel.0.AudioDetection=False
Channel.0.NetworkAlarmInput=False
Channel.0.MotionDetection=False
Channel.0.FaceDetection=False
Channel.0.VideoAnalytics.Passing=False
Channel.0.VideoAnalytics.Entering=False
Channel.0.VideoAnalytics.Exiting=False
Channel.0.VideoAnalytics.Appearing=False
Channel.0.VideoAnalytics.Disappearing=False
Channel.0.AudioAnalytics.Scream=False
```

```
Channel.0.AudioAnalytics.Gunshot=False
Channel.0.AudioAnalytics.Explosion=False
Channel.0.AudioAnalytics.GlassBreak=False
Channel.0.DefocusDetection=False
Channel.0.FogDetection=False
Channel.0.SDFail=False
Channel.0.SDFull=False
Channel.0.Tracking=False
```

4 Live Stream Setup



4.1 Get Video Sources

This command will return information about all video sources, whether a camera is registered or not, whether video is enabled or not, etc. Refer to [4] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/media.cgi?msubmenu=videosource&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.Type=NTSC
Channel.0.SensorCaptureSize=Unknown
Channel.0.Name=CAM 01
Channel.0.State=On
Channel.1.Type=NTSC
Channel.1.SensorCaptureSize=Unknown
Channel.1.Name=CAM 02
Channel.1.State=On
```

```
Channel.2.Type=NTSC
Channel.2.SensorCaptureSize=Unknown
Channel.2.Name=CAM 03
Channel.2.State=On
```

4.2 Get Video Profiles

This command will return information about the video profiles for all registered cameras. Please refer to [4] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/media.cgi?msubmenu=videoprofile&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.Profile.1.IsFixedProfile=True
Channel.0.Profile.1.IsDigitalPTZProfile=False
Channel.0.Profile.1.Name=MJPEG
Channel.0.Profile.1.ProfileToken=Profile1
Channel.0.Profile.1.ViewModeIndex=0
Channel.0.Profile.1.ViewModeType=Overview
Channel.0.Profile.1.EncodingType=MJPEG
Channel.0.Profile.1.Bitrate=6144
Channel.0.Profile.1.Resolution=640x480
Channel.0.Profile.1.FrameRate=1
Channel.0.Profile.1.CompressionLevel=10
Channel.0.Profile.1.AudioInputEnable=True
Channel.0.Profile.2.IsFixedProfile=True
Channel.0.Profile.2.IsDigitalPTZProfile=False
Channel.0.Profile.2.Name=FisheyeView
Channel.0.Profile.2.ProfileToken=Profile2
Channel.0.Profile.2.ViewModeIndex=0
Channel.0.Profile.2.ViewModeType=Overview
Channel.0.Profile.2.EncodingType=H264
Channel.0.Profile.2.Bitrate=7280
Channel.0.Profile.2.H264.Profile=High
Channel.0.Profile.2.H264.BitrateControlType=VBR
Channel.0.Profile.2.Resolution=4000x3000
Channel.0.Profile.2.FrameRate=20
Channel.0.Profile.2.CompressionLevel=10
Channel.0.Profile.2.AudioInputEnable=True
Channel.0.Profile.3.IsFixedProfile=False
Channel.0.Profile.3.IsDigitalPTZProfile=True
Channel.0.Profile.3.Name=Dewarp1
Channel.0.Profile.3.ProfileToken=Profile3
Channel.0.Profile.3.ViewModeIndex=1
Channel.0.Profile.3.ViewModeType=QuadView
Channel.0.Profile.3.EncodingType=H264
Channel.0.Profile.3.Bitrate=5120
```

```
Channel.0.Profile.3.H264.Profile=High
Channel.0.Profile.3.H264.BitrateControlType=VBR
Channel.0.Profile.3.Resolution=2944x2208
Channel.0.Profile.3.FrameRate=20
Channel.0.Profile.3.CompressionLevel=10
Channel.0.Profile.3.AudioInputEnable=True
```

4.3 Get Audio Inputs

This command will return information about audio input configuration, such as enabled status, encoding type etc. for all the channels. Please refer to [4] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/media.cgi?msubmenu=audioinput&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.Enable=True
Channel.0.SampleRate=8000
Channel.0.Mode=Mono
Channel.0.EncodingType=G711
Channel.0.Bitrate=0
Channel.0.Gain=1
Channel.1.Enable=True
Channel.1.SampleRate=8000
Channel.1.Mode=Mono
Channel.1.EncodingType=G711
Channel.1.Bitrate=0
Channel.1.Gain=1
```

4.4 Get Audio Outputs

This command will return information about the audio talk configuration, such as enabled/disabled status, decoding type etc. for all the channels. Please refer to [4] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/media.cgi?msubmenu=audiooutput&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.Enable=False
Channel.1.Enable=False
Channel.2.Enable=True
Channel.2.UnitSize=8000
Channel.2.SampleRate=8000
Channel.2.Mode=Mono
Channel.2.DecodingType=G711
Channel.2.Bitrate=0
Channel.2.Gain=1
```

```
Channel.3.Enable=True
Channel.3.UnitSize=8000
Channel.3.SampleRate=8000
Channel.3.Mode=Mono
Channel.3.DecodingType=G711
Channel.3.Bitrate=0
Channel.3.Gain=1
```

4.5 Get Video Profile Policy

This command will return information about the configured profile index numbers for Live, Network and Recording for all registered channels.

Please refer to [4] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/media.cgi?msubmenu=videoprofilepolicy&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.NetworkProfile=1
Channel.0.LiveProfile=5
Channel.0.RecordProfile=2
Channel.0.LiveMode=Auto
Channel.1.NetworkProfile=0
Channel.1.LiveProfile=8
Channel.1.RecordProfile=2
Channel.1.LiveMode=Auto
Channel.2.NetworkProfile=4
Channel.2.LiveProfile=3
Channel.2.RecordProfile=2
Channel.2.LiveMode=Auto
Channel.3.NetworkProfile=3
Channel.3.LiveProfile=4
Channel.3.RecordProfile=2
Channel.3.LiveMode=Auto
```

4.6 Get Session Key

This command will return the unique session key for Live, Playback and Backup.

Please refer to [4] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/media.cgi?msubmenu=sessionkey&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
SessionKey=1519123
```

4.7 Get Stream URI For Live

This command will return the URL for getting live streams from NVR.

Please refer to [4] of the References section (page 87) for more information.

REQUEST

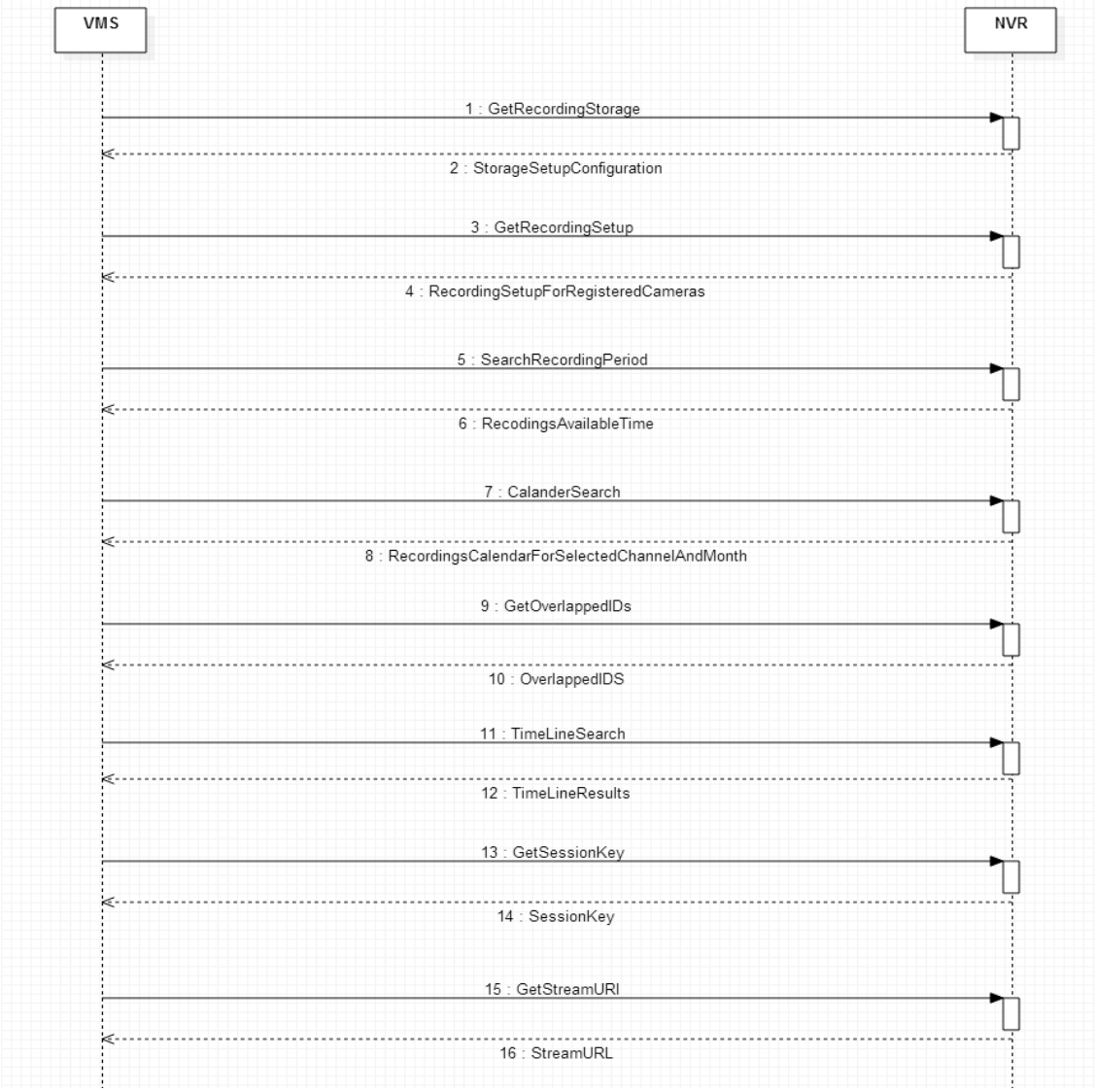
```
http://<Device IP>/stw-
cgi/media.cgi?msubmenu=streamuri&action=view&Channel=0&MediaType=Live&Mode=Full&Client
Type=PC
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
URI=rtsp://<Device IP>:<RTSP Port>/LiveChannel/0/media.smp
```

5 Playback Setup



5.1 Get Storage Information

This command is used to get the current storage settings of the device.

Please refer to [6] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/recording.cgi?msubmenu=storage&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Enable=True
OverWrite=True
DiskEndBeep=False
AutoDeleteEnable=False
AutoDeleteDays=400
```

5.2 Get Recording Setup

This method will return the current recording configuration of the device, for all the registered channels, Please refer to [6] of the References section (page 87) for more information.

Ex: current recording frame rate and recording bandwidth and codec information

REQUEST

```
http://<Device IP>/stw-cgi/recording.cgi?msubmenu=general&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.FullFrameBandWidth=1.217640
Channel.0.FullFrameRate=19.980000
Channel.0.KeyFrameBandWidth=0.406219
Channel.0.KeyFrameRate=1.000000
Channel.0.Codec=H264
Channel.0.RecordOverlap=Normal,AlarmInput
Channel.0.SourceProfile=FisheyeView
Channel.0.NormalMode=Full
Channel.0.EventMode=I-Frame
Channel.0.PreEventDuration=Off
Channel.0.PostEventDuration=1m
Channel.0.Resolution=4000x3000
Channel.0.FrameRate=20
Channel.0.CompressionLevel=10
Channel.0.AudioEnable=False
Channel.0.BitrateLimit=148.000000
```

5.3 Search Recording Period

This command will return the overall recording duration in NVR; it gets the recording start and end time available in the storage. Please refer to [6] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/recording.cgi?msubmenu=searchrecordingperiod&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
StartTime=2018-03-19 11:32:13
EndTime=2018-04-19 13:03:45 DST
```

5.4 Calendar Search

This command is used to get the information on the availability of recordings for the selected month and channels. Please refer to [6] of the References section (page 87) for more information.

The response is a 31-digit string, with a digit to represent each day of the month; if the digit is 0 then there is no recording for that channel on that day, and if it is 1 then recording is available for that day.

REQUEST

```
http://<Device IP>/stw-
cgi/recording.cgi?msubmenu=calendarsearch&action=view&Month=2015-05-
01T00:00:00Z&ChannelIdList=0,5
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.Result=00011110000000000000000000000000
Channel.5.Result=00000111000000000000000000000000
```

5.5 Get Overlapped IDs

This command is used to get the recordings of overlapped information for the given time range.

If the system time settings changes or DST is applied while recording the video, recordings will be overlapped for certain period of time.

Eg: When the current recording time is 14:00:00 and time was changed in the set to 10:00:00, a recording with a 4-hour duration will have two media tracks. To access this media individually we would need this overlapped ID information. It is passed along with playback RTSP url and timeline search. Please refer to [6] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-
cgi/recording.cgi?msubmenu=overlapped&action=view&FromDate=2018-03-
01T00:00:00Z&ToDate=2018-03-31T23:59:59Z
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
OverlappedIDList=36, 37
```

5.5.1 OverlapID - Behaviour of Camera

During the camera's local recording, the local time is taken as a reference. A new Overlap ID is created when the time zone changes. Even when the time has changed multiple times, only one Overlap ID will be created. An Overlap ID is only created on a daily basis and will not be created after the current day. The latest Overlap ID is determined by the highest value.

5.5.2 OverlapID - Behaviour of NVR

In NVR UTC, time is taken as a reference for recording, therefore no overlap ID will be created when the time zone changes or DST is applied. NVR can create an overlap ID when time is changed backwards, either manually or through NTP sync. If a time shift backwards is over 5 secs, NVR creates a new overlap ID. Overlap ID is incremented each time a new overlap recording is created, and is maintained throughout the recording period and not on a daily basis.

5.6 Timeline Search

This command is used to get the recording timeline information for the specific period of time and for the specific channel. Please refer to [6] of the References section (page 87) for more information.

If "SearchByUTCTime" is set as true in the attributes response, then UTC time can be used for timeline search.

If the request is sent with time in YYYY-MM-DDTHH:MM:SSZ format, then UTC time is used for search; if the time is in YYYY-MM-DDTHH:MM:SS format then local time is used.

REQUEST

```
http://<Device IP>/stw-cgi/recording.cgi?msubmenu=timeline&action=view&ChannelIDList=0&FromDate=2018-03-07T00:00:01Z&ToDate=2018-03-08T23:59:59Z
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.Result.1.StartTime=2018-03-07T00:00:01Z
Channel.0.Result.1.EndTime=2018-03-07T01:56:03Z
Channel.0.Result.1.Type=Manual
Channel.0.Result.2.StartTime=2018-03-07T00:00:01Z
Channel.0.Result.2.EndTime=2018-03-07T01:56:03Z
Channel.0.Result.2.Type=Normal
Channel.0.Result.3.StartTime=2018-03-07T01:59:01Z
Channel.0.Result.3.EndTime=2018-03-07T02:07:30Z
Channel.0.Result.3.Type=Manual
Channel.0.Result.4.StartTime=2018-03-07T01:59:01Z
Channel.0.Result.4.EndTime=2018-03-07T02:07:30Z
Channel.0.Result.4.Type=Normal
Channel.0.Result.5.StartTime=2018-03-07T02:13:59Z
Channel.0.Result.5.EndTime=2018-03-07T02:15:13Z
Channel.0.Result.5.Type=Manual
Channel.0.Result.6.StartTime=2018-03-07T02:13:59Z
Channel.0.Result.6.EndTime=2018-03-07T02:15:13Z
Channel.0.Result.6.Type=Normal
Channel.0.Result.7.StartTime=2018-03-07T02:15:17Z
Channel.0.Result.7.EndTime=2018-03-07T04:52:53Z
Channel.0.Result.7.Type=Manual
Channel.0.Result.8.StartTime=2018-03-07T02:15:17Z
Channel.0.Result.8.EndTime=2018-03-07T04:52:53Z
Channel.0.Result.8.Type=Normal
TotalCount=8
```

5.7 Get Stream URI for Playback

This command will give the RTSP streaming URL in playback mode.

Please refer to [4] of the References section (page 87) for more information.

REQUEST

```
http://<Device IP>/stw-cgi/media.cgi?msubmenu=streamuri&action=view&Channel=0&MediaType=Search&Mode=Full&ClientType=PC
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
URI=rtsp://<Device IP>:<RTSP Port>/PlaybackChannel/0/media.smp
```

6 PTZ Operation

PTZ operation can be performed using the PTZ cgi service. In this document we will discuss only the basic PTZ functionality. Please refer to [5] of the References section (page 87) for more information.

6.1 Continuous Move

Pan operation can be performed as follows; in continuous move, the particular operation will continue until the stop command is sent.

REQUEST

```
http://<Device IP>/stw-
cgi/ptzcontrol.cgi?msubmenu=continuous&action=control&Pan=5&Channel=5
```

Tilt Operation

REQUEST

```
http://<DeviceIP>/stw-
cgi/ptzcontrol.cgi?msubmenu=continuous&action=control&Tilt=5&Channel=1
```

Zoom operation

REQUEST

```
http://<DeviceIP>/stw-
cgi/ptzcontrol.cgi?msubmenu=continuous&action=control&Zoom=3&Channel=1
```

6.2 Stop

To stop all PTZ operation

REQUEST

```
http://<DeviceIP>/stw-
cgi/ptzcontrol.cgi?msubmenu=stop&action=control&OperationType=All&Channel=1
```

6.3 Preset

To get preset information

REQUEST

```
http://<DeviceIP>/stw-cgi/ptzcontrol.cgi?msubmenu=preset&action=view&Channel=0
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Channel.0.Preset.1.Name=Preset1
Channel.0.Preset.2.Name=Preset2
```

To go to a particular preset

REQUEST

```
http://<DeviceIP>/stw-
cgi/ptzcontrol.cgi?msubmenu=preset&action=control&Channel=0&Preset=1
```

6.4 Identifying Capability

PTZ capability of a device can be identified using the attributes cgi.

6.4.1 Real PTZ

```
PTZSupport/Support/Absolute.Pan == true
PTZSupport/Support/Absolute.Tilt == true
PTZSupport/Support/Absolute.Zoom == true
PTZSupport/Support/DigitalPTZ == false
```

6.4.2 Zoom Only

```
PTZSupport/Support/Absolute.Pan == false
PTZSupport/Support/Absolute.Tilt == false
PTZSupport/Support/Absolute.Zoom == true
```

6.4.3 PTRZ

CGI section:

```
image/ptr/Pan/int == true
image/ptr/Tilt/int == true
image/ptr/Rotate/int == true
```

6.4.4 DPTZ

```
PTZSupport/Support/DigitalPTZ == true
PTZSupport/Limit/MaxGroupCount > 0
```

6.4.5 External PTZ

```
PTZSupport/Support/Absolute.Pan == false
PTZSupport/Support/Absolute.Tilt == false
PTZSupport/Support/Absolute.Zoom == false
IO/Support/RS485 == true
PTZSupport/Limit/MaxGroupCount == 0
```

6.4.6 From SUNAPI 2.5.4

Explicit capability added to attribute section;

```
PTZSupport/Support/ExternalPTZ=True
PTZSupport/Support/RealPTZ=True
PTZSupport/Support/ZoomOnly=True
Image/Support/PTRZ=true
```

7 GPS Information

Mobile NVR supports getting the current GPS location using SUNAPI.

REQUEST

```
http://<DeviceIP>/stw-cgi/system.cgi?msubmenu=gps&action=view
```

RESPONSE

```
HTTP/1.0 200 OK
Content-type: text/plain
<Body>
```

```
Check=Periodically
Periodicity=1
GPSData=$GPRMC,hhmmss.ss,A,llll.ll,a,yyyyy.yy,a,x.x,x.x,ddmmyy,x.x,a*hh
```

8 RTSP

8.1 RTSP Live Session

In general, after creating a session id for live and getting the stream URI, we can establish a LIVE RTSP session.

In the RTSP URL, channel information and session id are important for NVR, while for camera profile name / profile number is important.

Camera URL Format

[Type1]

```
rtsp://<Device IP>/<encoding>/media.smp
```

[Type2]

```
rtsp://<Device IP>/profile<no>/media.smp
```

[Type3]

```
rtsp://<Device IP>/multicast/<encoding>/media.smp
```

[Type4]

```
rtsp://<Device IP>/multicast/profile<no>/media.smp
```

[Type5]

```
rtsp://<Device IP>/<profile name>/media.smp
```

[Type6]

```
rtsp://<Device IP>/multicast/<profile name>/media.smp
```

Camera URL Format (multi source device)

[Type1]

```
rtsp://<Device IP>/<chid>/<encoding>/media.smp
```

[Type2]

```
rtsp://<Device IP>/<chid>/profile<no>/media.smp
```

[Type3]

```
rtsp://<Device IP>/<chid>/multicast/<encoding>/media.smp
```

[Type4]

```
rtsp://<Device IP>/<chid>/multicast/profile<no>/media.smp
```

[Type5]

```
rtsp://<Device IP>/<chid>/<profile name>/media.smp
```

[Type6]

```
rtsp://<Device IP>/<chid>/multicast/<profile name>/media.smp
```

NVR URL Format

[Type1]

```
rtsp://<Device IP>:558/LiveChannel/<chid>/media.smp
```

[Type2]

```
rtsp://<DeviceIP>:558/LiveChannel/<chid>/media.smp/session=<sid>
```

[Type3]

```
rtsp://<Device IP>:558/LiveChannel/<chid>/media.smp/multicast&session=<sid>
```

[Type4]

```
rtsp://<DeviceIP>:558/LiveChannel/<chid>/media.smp/iframe&multicast&session=<sid>
```

[Type5]

```
rtsp://<Device IP>:558/LiveChannel/<chid>/media.smp/profile=<profileNo>&session=<sid>
```

[Type6]

```
rtsp://<Device
IP>:558/LiveChannel/<chid>/media.smp/ProfileUsage=<profileType>&session=<sid>
```

Note

For NVR the default RTSP Port is 558.

In general, the following types of sessions are supported:

- Audio
- Video
- Metadata
- BackChannel

All RTSP connections with the same session id are considered to be a single session. (Eg: In 16 view mode all of the 16 RTSP connections will have the same session ID)

Note

SessionId should be different for Live, Playback and Backup Sessions.

If the Audio talk feature is supported by a channel, client can open a new RTSP connection only with backchannel RTP session and send the audio data. This can be done dynamically, only when audio talk is required, because at one point of time only one client can access Audio talk for a channel.

Backchannel audio RTP session will be mentioned in the SDP only when the DESCRIBE request has

Require: www.onvif.org/ver20/backchannel as defined in the ONVIF streaming specification. Please refer to [12] of the References section (page 87).

When Audio or Video configuration such as codec/resolution changes, the RTSP connection will be disconnected from the NVR and an event will be sent to the client regarding configuration change. At this point, it is the client's responsibility to reconnect the RTSP session.

The device supports media transport through the following protocols

- TCP
- UDP
- HTTP
- HTTPS (When SSL is enabled in NVR)
- Multicast

For RTSP over HTTP and RTSP over HTTPS, port 80 and port 443 are used by default.

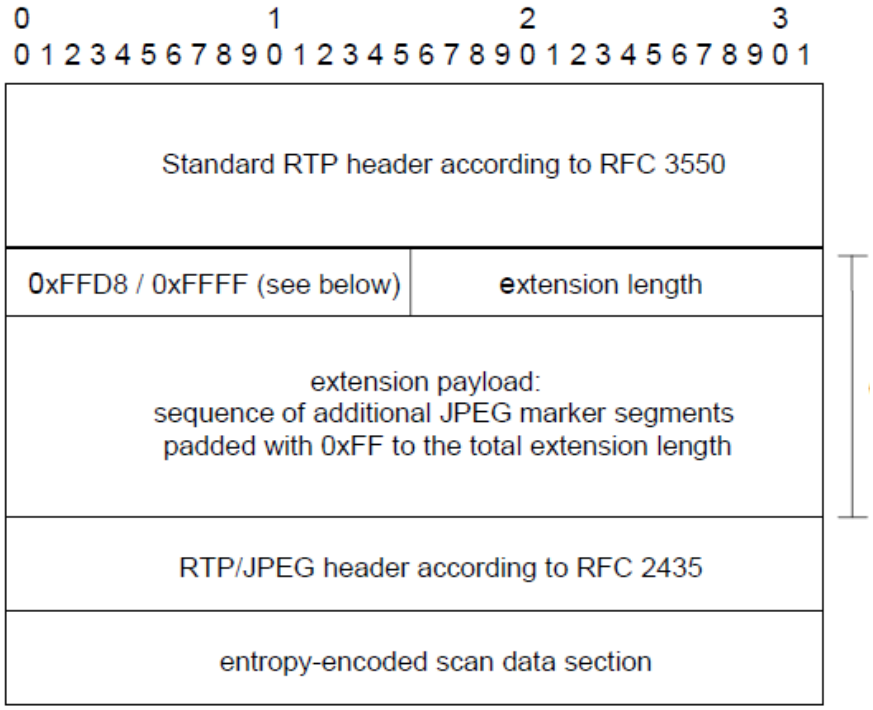
MJPEG Streaming Over 3 MP:

Since RFC 2435 does not support resolutions over 2040, we use a combination of RTP extension and RFC 2435 for streaming MJPEG video as described in the ONVIF streaming spec. Please refer to [12] of the References section (page 87).

<RTP HEADER> → with extension flag set

<RTP Extension> -> FFD8 start code, FFCO (SOF will have the height and width info)

<RFC 2435>



8.2 RTSP Playback Session

To initiate a playback session, the client has to get the session id and playback stream URI.

For NVR, when performing multichannel playback, the same session id can be used. Separate RTSP sessions are used to connect to each channel, and after sending the first play command, one RTSP session can be used to send commands like, PAUSE, PLAY etc.

> **Note**
> Even though playback streaming can work with VLC player, we do not recommend using VLC player for testing playback streaming.

Camera URL format:

[Type1]

```
rtsp://<Device IP>/recording/<Start Time>/play.smp
```

[Type2]

```
rtsp://<Device IP>/recording/<Start Time>-<End Time>/play.smp
```

[Type3]

```
rtsp://<Device IP>/recording/play.smp
```

Camera URL format (multi source device)

[Type1]

```
rtsp://<Device IP>/<chid>/recording/<Start Time>/play.smp
```

[Type2]

```
rtsp://<Device IP>/<chid>/recording/<Start Time>-<End Time>/play.smp
```

[Type3]

```
rtsp://<Device IP>/<chid>/recording/play.smp
```

NVR URL format

[Type1]

```
rtsp://<Device IP>:558/PlaybackChannel/<chid>/media.smp
```

[Type2]

```
rtsp://<Device IP>:558/PlaybackChannel/<chid>/media.smp/session=<sid>
```

[Type3]

```
rtsp://<DeviceIP>:558/PlaybackChannel/<chid>/media.smp/overlap=<id>&session=<sid>
```

[Type4]

```
rtsp://<DeviceIP>:558/PlaybackChannel/<chid>/media.smp/overlap=<id>&session=<sid>&ifra
me
```

[Type5]

```
rtsp://<DeviceIP>:558/PlaybackChannel/<chid>/media.smp/start=<starttime>&end=<endtime>
&overlap=<overlapid>&session=<sid>
```

In general all of the supported video formats (h264, MJPEG, MPEG4) and up to 5 audio formats are supplied in the RTSP DESCRIBE response as RTP sessions. Therefore, when the video/audio format changes in between recording, the playback session can still continue.

Ex: If the recording has h264 and mjpeg, initially h264 video will be sent over h264 rtp session; when the format changes to mjpeg, mjpeg rtp session will be used to send the media.

Date and time to play can be sent in two ways; it can be sent in the URL, or in the PLAY command with Range: clock field as defined in the ONVIF streaming specification. Please refer to [12] of the References section (page 87).

The time should be specified in the following format:

<YYYYMMDDTHHMMSS> (e.g, 20141206T111500) for local time and
<YYYYMMDDTHHMMSSZ> (e.g, 20141206T110000Z) for UTC time.

In playback mode, actual playback time of video can be received in two ways: one is through the RTCP, and another is using RTP Playback Extension header defined in ONVIF specifications. RTP Playback extension header will be sent only when client sends "Require: ONVIF-replay" in the setup and play commands.

Rate control can be sent in the play command, to notify whether video should be time-controlled on the NVR. If it is set to no as below, then receiver/client should control the timing.

The RTP Extension header in the playback will follow the ONVIF streaming spec format. Please refer to [12] of the References section (page 87).

V=2	P	X=1	CC	M	PT	sequence number
timestamp						
synchronization source (SSRC) identifier						
0xABAC						length=3
NTP timestamp…						
...NTP timestamp						
C	E	D	mbz	Cseq		padding
payload…						

When MJPEG over 3MP needs to be streamed, we can use the following format:

<table>
<tr><td>V=
2</td><td>P</td><td>X=
1</td><td>CC</td><td>M</td><td>PT</td><td colspan="2">sequence number</td></tr>
<tr><td colspan="8">timestamp</td></tr>
<tr><td colspan="8">synchronization source (SSRC) identifier</td></tr>
<tr><td colspan="6">0xABAC</td><td colspan="2">length=N+4</td></tr>
<tr><td colspan="8">NTP timestamp…</td></tr>
<tr><td colspan="8">...NTP timestamp</td></tr>
<tr><td>C</td><td>E</td><td>D</td><td colspan="2">mbz</td><td colspan="2">Cseq</td><td>padding</td></tr>
<tr><td colspan="5">0xFFD8</td><td colspan="3">jpeglength=N</td></tr>
<tr><td colspan="8">extension payload: sequence of additional JPEG marker segments padded with 0xFF to the total extension length</td></tr>
<tr><td colspan="8">payload…</td></tr>
</table>

JPEG extension will have the same SOF information as described in the live case. We can use this SOF information in the final image we construct.

Rate-Control:

By default, rate-control is set to yes in playback mode. It is also defined in the ONVIF streaming spec.

Immediate:

Immediate field can be sent, along with play command as defined in the ONVIF streaming spec, to go to a particular time instantaneously.

8.2.1 Rewind/Fast-Forward

Rewind and Fast forward operation can be performed using the scale header defined in the RTSP specification.

PLAY rtsp://<Device IP>/PlaybackChannel/0/media.smp RTSP/1.0

Scale: 8

In the above example, the video will play at 8x speed in forward direction. NVR supports the following range -64 to 64.

When negative scale value is supplied, the video will play in reverse direction.

8.2.2 Slow Play

Slow play can be performed by specifying a scale header value between 0.1 and 0.9.

For example, if we specify the scale value as 0.5, then the video will be played at half the normal playback speed.

8.3 Backup Session

In SUNAPI, the video backup is done using backup RTSP session, the backup url is defined only for NVR and it is as follows:

[Type1]

```
rtsp://<Device IP>:558/BackupChannel/<chid>/media.smp
```

[Type2]

```
rtsp://<Device IP>:558/BackupChannel/<chid>/media.smp/session=<sid>
```

[Type3]

```
rtsp://<DeviceIP>:558/BackupChannel/<chid>/media.smp/overlap=<id>&session=<sid>
```

[Type4]

```
rtsp://<DeviceIP>:558/BackupChannel/<chid>/media.smp/overlap=<id>&session=<sid>&iframe
```

[Type5]

```
rtsp://<DeviceIP>:558/BackupChannel/<chid>/media.smp/start=<starttime>&end=<endtime>&o
verlap=<overlapid>&session=<sid>
```

A backup RTSP session is very similar to a playback session, but in backup mode the rate control is disabled by default, and therefore the media is sent rapidly.

9 POS

9.1 Capabilities

Get Max POS devices supported

REQUEST

```
http://<DeviceIP>/stw-cgi/attributes.cgi/attributes/System/Limit/MaxPOS
```

RESPONSE

```
<attribute accesslevel="user" value="64" type="int" name="MaxPOS"/>
```

Check whether device supports POS streaming or not

REQUEST

```
http://<DeviceIP>/stw-cgi/attributes.cgi/attributes/Media/Limit/StreamingMetadata
```

RESPONSE

```
<attribute name="StreamingMetadata" accesslevel="user" value="POS" type="csv"/>
```

Check whether channel supports Metadata streaming or not

REQUEST

```
http://<DeviceIP>/stw-cgi/attributes.cgi/attributes/Media/Support/0/Stream.Metadata
```

RESPONSE

```
<attribute name="Stream.Metadata" accesslevel="user" value="True" type="bool"/>
```

9.2 Configuration Setup

To get the POS configuration

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=posconf&action=view
```

REQUEST

```
http://<DeviceIP/stw-cgi/recording.cgi?msubmenu=posconf&action=view&DeviceIDList=1,2
```

RESPONSE

```
DeviceID.1.DeviceName=TEXT 01
DeviceID.1.Enable=True
DeviceID.1.Port=7001
DeviceID.1.EventPlaybackStartTime=0
DeviceID.1.EventPlaybackStartTimeUnits=Seconds
DeviceID.1.ReceiptStart=(1)
DeviceID.1.ReceiptEnd=(2)
DeviceID.1.EncodingType=US-ASCII
DeviceID.1.ChannelIDList=0,1,2,3,4,5,6,7,16,17,18,19,20,21,22,23,32,33,34,35,36,37,38,
39,48,49,50,51,52,53,54,55
DeviceID.2.DeviceName=TEXT 02
DeviceID.2.Enable=True
DeviceID.2.Port=7002
DeviceID.2.EventPlaybackStartTime=0
DeviceID.2.EventPlaybackStartTimeUnits=Seconds
DeviceID.2.ReceiptStart=(1)
DeviceID.2.ReceiptEnd=(2)
DeviceID.2.EncodingType=US-ASCII
```

```
DeviceID.2.ChannelIDList=8,9,10,11,12,13,14,15,24,25,26,27,28,29,30,31,40,41,42,43,44,
45,46,47,56,57,58,59,60,61,62,63
```

To set the POS configuration

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=posconf&action=set&DeviceID=1&DeviceName=POS1&Enable=True&P
ort=8001&EventPlaybackStartTime=10&ReceiptStart=Start&ReceiptEnd=End&EncodingType=UTF-
8&ChannelIDList=7,8,9,10
```

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=posconf&action=set&DeviceID=1&ChannelIDList=None
```

9.3 Event Setup

To get the POS events configuration

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=poseventconf&action=view
```

RESPONSE

```
AmountEventEnable=True
TotalAmount=100.000000
TotalType=Above
KeywordIndex.1.KeywordCondition=Apple
KeywordIndex.2.KeywordCondition=banana
```

To set POS event configuration

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=poseventconf&action=set&AmountEventEnable=False&TotalAmount
=9999999999.9988&TotalType=Below
```

To add event keywords

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=poseventconf&action=add&KeywordCondition=melon
```

To update the event keyword

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=poseventconf&action=update&KeywordIndex=2&KeywordCondition=
apple
```

To remove all event keywords

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=poseventconf&action=remove
```

To remove all particular event keywords

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=poseventconf&action=remove&KeywordIndex=2
```

9.4 Live POS Data

Similar to events, live POS data will be sent in a multi-part session.

Client has to open a keep live session to receive the POS receipts.

If any of the configured keywords are found in the receipt, it will be highlighted in the following format:

Ex: <keyword>APPLE</keyword>

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=posdata&action=monitordiff
```

RESPONSE

```
--SamsungTechwin
Content-type:text/plain

ReceivedDate=2016-07-28T05:06:55Z
DeviceID=1
Receipt=
03-06-16 2:43P
<keyword>APPLE</keyword>                    9.00
BERRY               3.50
MELON               10.50
PLUM                3.00

SUBTOTAL            26.00
TAX                 03.00
TOTAL               29.00
CASH                30.00
CHANGE              01.00


--SamsungTechwin
Content-type:text/plain

ReceivedDate=2016-07-28T05:06:55Z
DeviceID=0
Receipt=
02-06-16 2:43P
OKRA                5.00
OIL                 9.50
LEMON               2.50
GREEN BANANNAS      3.00
YELLOW BANANNAS     3.00
```

10 Metadata Search

10.1 Capabilities

Check whether the Metadata Search feature is supported or not

REQUEST

```
http://<DeviceIP>/stw-cgi/attributes.cgi/attributes/Recording/Support/SearchMetadata
```

RESPONSE

```
<attribute name="SearchMetadata" accesslevel="admin" value="True" type="bool"/>
```

Get the maximum allowed time gap between from date and to date

REQUEST

```
http://<DeviceIP>/stw-cgi/
attributes.cgi/attributes/Recording/Limit/MaxMetadataSearchDays
```

RESPONSE

```
<attribute accesslevel="admin" value="7" type="int" name="MaxMetadataSearchDays"/>
```

Get the maximum supported value for MaxResults

REQUEST

http://<DeviceIP>/stw-cgi/ attributes.cgi/recording/metadata/view/MaxResults

RESPONSE

```
<parameter name="MaxResults" response="true" request="true"><dataType><int max="1000"
min="1"/></dataType></parameter>
```

10.2 Start Search

Request without any filters

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-13T00:00:00Z&ToDate=2016-07-16T23:59:59Z
```

Request with Overlapped ID

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-15T00:00:00Z&ToDate=2016-07-16T23:59:59Z&OverlappedID=11
```

Request with Overlapped ID and Single Keyword

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-15T00:00:00Z&ToDate=2016-07-16T23:59:59Z&OverlappedID=11&Keyword=Apple
```

Request with Overlapped ID and Keyword Green or Apple

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-15T00:00:00Z&ToDate=2016-07-
16T23:59:59Z&OverlappedID=11&IsWholeWord=false&Keyword=Green%20Apple
```

Request with Overlapped ID and Keyword "Green Apple"

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-15T00:00:00Z&ToDate=2016-07-
16T23:59:59Z&OverlappedID=11&IsWholeWord=true&Keyword=Green%20Apple
```

Request with Overlapped ID and Keyword Green,Apple

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-15T00:00:00Z&ToDate=2016-07-16T23:59:59Z&OverlappedID=11&Keyword=Green,Apple
```

Request with Overlapped ID, Keyword and IsCaseSensitive

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-15T00:00:00Z&ToDate=2016-07-
16T23:59:59Z&OverlappedID=11&Keyword=APPLE&IsCaseSensitive=true
```

Request with Overlapped ID, Keyword, IsCaseSensitive and Single DeviceID

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-15T00:00:00Z&ToDate=2016-07-
16T23:59:59Z&OverlappedID=11&Keyword=OKRA&IsCaseSensitive=true&DeviceIDList=0
```

Request with Overlapped ID, Keyword, IsCaseSensitive and Multiple DeviceIDs

REQUEST

```
http://<DeviceIP>/stw-cgi/
recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=POS&FromDate=20
16-07-15T00:00:00Z&ToDate=2016-07-
16T23:59:59Z&OverlappedID=11&Keyword=OKRA&IsCaseSensitive=true&DeviceIDList=1,2
```

If search request is successful, Device will return a search token.

RESPONSE

```
SearchToken=7475
```

> **Note**
> It is not possible to search for multiple keywords.
> Ex: Search for Keyword1 and Keyword2 is not supported
> Ex: Search for Keyword1 or Keyword2 is supported (By using space as delimiter)

10.3 Cancel Search

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=metadata&action=control&Mode=Cancel&SearchToken=7475
```

10.4 Get Search Status

To get search status:

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=metadata&action=view&Type=Status&SearchToken=7475
```

10.5 Renew Search Token

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=metadata&action=control&Mode=Renew&SearchToken=7475
```

TEXT RESPONSE

```
OK
```

10.6 Get Search Results

To get the results of a search (Max 1000 results by default):

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=metadata&action=view&Type=Results&SearchToken=7475
```

To get the results of a search (First 100 results):

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=metadata&action=view&Type=Results&ResultFromIndex=1&MaxResults=100&SearchToken=6619
```

TEXT RESPONSE

```
SearchTokenExpiryTime=2016-07-19T07:22:47Z
TotalResultsFound=399
TotalCount=100

Result.1.DeviceID=1
Result.1.Date=2016-07-18T07:28:01Z
Result.1.ChannelIDList=0,1,2,3,4,5,6,7
Result.1.KeywordsMatched=
Result.1.TextData=
02-06-16 2:43P
OKRA                5.00
OIL                 9.50
LEMON               2.50
GREEN BANANNAS      3.00
YELLOW BANANNAS     3.00


SUBTOTAL            23.00
TAX                 02.70
TOTAL               25.70
CASH                30.00
CHANGE              04.30

Result.2.DeviceID=2
Result.2.Date=2016-07-18T07:28:00Z
Result.2.ChannelIDList=8,9,10,11,12,13,14,15
Result.2.KeywordsMatched=
Result.2.TextData=
03-06-16 2:43P
APPLE               9.00
BERRY               3.50
MELON               10.50
PLUM                3.00
```

```
SUBTOTAL            26.00
TAX                 03.00
TOTAL               29.00
CASH                30.00
CHANGE              01.00

Result.3.DeviceID=1
Result.3.Date=2016-07-18T07:27:56Z
Result.3.ChannelIDList=0,1,2,3,4,5,6,7
Result.3.KeywordsMatched=
Result.3.TextData=
02-06-16 2:43P
OKRA                5.00
OIL                 9.50
LEMON               2.50
GREEN BANANNAS      3.00
YELLOW BANANNAS     3.00
```

To get the results of a search (Next 100 results):

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=metadata&action=view&Type=Results&ResultFromIndex=101&MaxRe
sults=100&SearchToken=6619
```

Note

Search Token will expire in 60 seconds.

Client has to send Renew command periodically to increase the expiry time to 60 seconds more.

11 Bypass

Check whether channel is registered with SUNAPI

```
http://<NVR-IP>/stw-cgi/attributes.cgi/attributes/Media/Support/0/Protocol.SUNAPI
```

```
<attribute accesslevel="user" value="True" type="bool" name="Protocol.SUNAPI"/>
```

Normal get-set commands

REQUEST

```
http://<NVR-IP>/stw-
cgi/bypass.cgi?msubmenu=bypass&action=control&Channel=<ID>&BypassURI=<URI>
```

Configuration backup

REQUEST

```
curl --digest -u admin:7i8o9p0[ "http://<NVR-IP>/stw-
cgi/bypass.cgi?msubmenu=bypass&action=control&Channel=2&BypassURI=/stw-
cgi/system.cgi?msubmenu=configbackup&action=control" > config.bin
```

RESPONSE

```
Downloaded File from Camera
```

Snapshot

```
http://<NVR-IP>/stw-
cgi/bypass.cgi?msubmenu=bypass&action=control&Channel=2&BypassURI=/stw-
cgi/video.cgi?msubmenu=snapshot&action=view&Channel=0
```

POST

Configuration restore

openssl base64 -in config.bin -out encoded.bin

REQUEST

```
curl --digest -u admin:7i8o9p0[ "http://<NVR-IP>/stw-
cgi/bypass.cgi?msubmenu=bypass&action=control&Channel=2&BypassURI=/stw-
cgi/system.cgi?msubmenu=configrestore&action=control&ExcludeSettings=Network,Camera" -
H "Expect:" --data-urlencode @encoded.bin
```

Firmware update

REQUEST

```
curl --digest -u admin:7i8o9p0[ "http://<NVR-IP>/stw-
cgi/bypass.cgi?msubmenu=bypass&action=control&Channel=2&BypassURI=/stw-
cgi/system.cgi?msubmenu=firmwareupdate&action=control&Type=Normal" -H "Expect:" -F
uploadFile=@pkg_v2.00_150114103354.img
```

Sample requests and responses

REQUEST

```
http://<NVR-IP>/stw-
cgi/bypass.cgi?msubmenu=bypass&action=control&Channel=2&BypassURI=/stw-
cgi/eventstatus.cgi?msubmenu=eventstatus&action=check
```

RESPONSE

```
Channel.0.Videoloss=False
Channel.0.AudioDetection=False
Channel.0.NetworkCameraConnect=True
Channel.0.NetworkAlarmInput=False
Channel.0.MotionDetection=False
Channel.0.FaceDetection=False
Channel.0.VideoAnalytics.Passing=False
Channel.0.VideoAnalytics.Entering=False
Channel.0.VideoAnalytics.Exiting=False
Channel.0.VideoAnalytics.Appearing=False
Channel.0.VideoAnalytics.Disappearing=False
Channel.0.AMDStart=False
Channel.0.LowFps=False
Channel.0.Tampering=False
```

REQUEST

```
http://<NVR-IP>/stw-
cgi/bypass.cgi?msubmenu=bypass&action=control&Channel=2&BypassURI=/stw-
cgi/system.cgi?msubmenu=deviceinfo&action=view
```

RESPONSE

```
Model=XXXXXXXX
FirmwareVersion=XXXXXXXXXX
BuildDate=XXXXXXXXXX
WebURL=XXXXXXXXXX
DeviceType=XXXXXXXX
ConnectedMACAddress=XXXXXXXX
CGIVersion=XXXXX
MicomVersion=XXXXXXXXX
DeviceName=XXXXXXXXXX
Language=XXXXXXXX
```

12 Password Encryption

This feature was added to protect passwords sent in a URL as plain text. The client can use the following procedure to send an encrypted password to the device.

> **Note**
> This is applicable for all submenus where password is a parameter.

Step1

Download the public key from the submenu below:
http://<ip>/stw-cgi/security.cgi?msubmenu=rsa&action=view

TEXT RESPONSE

```
PublicKey=-----BEGIN RSA PUBLIC KEY-----
MIIBCgKCAQEA6UfAclvda/DANJqOoWN3u292M+xLpVWgCNUEhhXeuPdgOIlYIWTh
cABwVhimgngXbn1isEwuIKZ5Q4g366/JgpSkRRCwdXZ4Xz6jObr544Dp9nCKU/UJ
3D3bQ9FJbAkBcFN7UCe6UISCcfUMrmn4PFOPSupqiCjDJ/oZgENIG8Ugtt392/QT
KX9l108IDHSj+ziL2FlJ3VW8xX7KNismZg5h8xPnwb90qQJawxyW7p5Z+ngOnJ0X
pA6X35Z0qOBsEw0L3x6QDrvKcGXA1pR6odfQlExj2uNT+Xg8NNeGiCGvFwBHooqh
yMDY1EATgAtROSeTjgnO4aCz3uB2GjAw/QIDAQAB
-----END RSA PUBLIC KEY-----
```

JSON RESPONSE

```
{
    "PublicKey": "-----BEGIN RSA PUBLIC KEY-----
\nMIIBCgKCAQEA6UfAclvda/DANJqOoWN3u292M+xLpVWgCNUEhhXeuPdgOIlYIWTh\ncABwVhimgngXbn1isE
wuIKZ5Q4g366/JgpSkRRCwdXZ4Xz6jObr544Dp9nCKU/UJ\n3D3bQ9FJbAkBcFN7UCe6UISCcfUMrmn4PFOPSu
pqiCjDJ/oZgENIG8Ugtt392/QT\nKX9l108IDHSj+ziL2FlJ3VW8xX7KNismZg5h8xPnwb90qQJawxyW7p5Z+n
gOnJ0X\npA6X35Z0qOBsEw0L3x6QDrvKcGXA1pR6odfQlExj2uNT+Xg8NNeGiCGvFwBHooqh\nyMDY1EATgAtR
OSeTjgnO4aCz3uB2GjAw/QIDAQAB\n-----END RSA PUBLIC KEY-----\n"
}
```

Step 2

Client encrypts the password using the RSA Public Key and RSA_PKCS1_PADDING padding scheme.

Step 3

Base64 encodes the binary data and sends the password in the post message. The IsPasswordEncry pted parameter should be set to true in the request.

Example:

```
http://<DeviceIp>/stw-
cgi/security.cgi?msubmenu=users&action=update&Index=1&UserID=user1&Enable=True&IsPassw
ordEncrypted=True
```

13 Queue management

Check whether or not Queue Management feature is supported by device

REQUEST

```
http://<DeviceIP>/stw-cgi/attributes.cgi/attributes/Recording/Support/QueueManagement
```

RESPONSE

```
<attribute accesslevel="admin" value="True" type="bool" name="QueueManagement"/>
```

Get maximum Queues supported by device

REQUEST

```
http://<DeviceIP>/stw-cgi/attributes.cgi/attributes/Eventsource/Limit/MaxQueues
```

RESPONSE

```
<attribute accesslevel="guest" value="3" type="int" name="MaxQueues"/>
```

Get Queue Management setup

REQUEST

```
http://<DeviceIP>/stw-cgi/eventsources.cgi?msubmenu=queuemanagementsetup&action=view
```

JSON RESPONSE

```
{
    "QueueManagementSetup": [
        {
            "Channel": 0,
            "Enable": true,
            "ReportEnable": false,
            "ReportFilename": "",
            "ReportFileType": "XLS",
            "CalibrationMode": "CameraHeight",
            "CameraHeight": 300,
            "ObjectSizeCoordinates": [
                {
                    "x": 1316,
                    "y": 1316
                },
                {
                    "x": 1675,
                    "y": 1675
                }
            ],
            "Queues": [
                {
                    "Queue": 1,
                    "MaxPeople": 8,
                    "Name": "Queue1",
                    "Enable": true,
                    "Coordinates": [
                        {
```

```
                        "x": 1316,
                        "y": 1596
                    },
                    {
                        "x": 2991,
                        "y": 1596
                    }
                ],
                  “QueueLevels”:[
                  {
                              "Level": "High",
                              "Count": 6,
                              "AlarmEnable": true,
                              "Threshold": 180
                  },
                  {
                              "Level": "Medium",
                              "Count": 3,
                              "AlarmEnable": true,
                              "Threshold": 180
                  }
                  ]
            },
            {
                "Queue": 2,
                "MaxPeople": 8,
                "Name": "Queue2",
                "Enable": true,
                "Coordinates": [
                    {
                        "x": 2316,
                        "y": 2596
                    },
                    {
                        "x": 3991,
                        "y": 2596
                    }
                ],
                   “QueueLevels”:[
                   {
                              "Level": "High",
                              "Count": 6,
                              "AlarmEnable": true,
                              "Threshold": 180
                   },
                   {
                              "Level": "Medium",
                              "Count": 3,
                              "AlarmEnable": true,
                              "Threshold": 180
```

```
                    }
                    ]
                },
            ]
        }
    ]
}
```

To change the Queue Management setup

REQUEST

```
http://<DeviceIP>/stw-cgi/eventsources.cgi?msubmenu=queuemanagementsetup
&action=set&Channel=0&Enable=True&CalibrationMode=CameraHeight&CameraHeight=250
```

REQUEST

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=queuemanagementsetup&action=set&Channel=0&Enable=True&Ca
librationMode=ObjectSize&ObjectSizeCoordinates=2992,1390,2,1390
```

REQUEST

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=queuemanagementsetup&action=set&Channel=0&ReportEnable=T
rue&ReportFileName=QueueReport&ReportFileType=XLS
```

To change the Queue configuration

REQUEST

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=queuemanagementsetup&action=set&Channel=0&Queue.1.Name=Q
ueue1&Queue.1.Enable=True&Queue.1.Coordinates=1316,1596,2991,1596&Queue.1.Level.High.C
ount=6&Queue.1.Level.High.AlarmEnable=True&Queue.1.Level.High.Threshold=180&Queue.1.Le
vel.Medium.AlarmEnable=True&Queue.1.Level.Medium.Threshold=180&Queue.2.Name=Queue2&Que
ue.2.Enable=True&Queue.2.Coordinates=2316,2596,3991,2596&Queue.2.Level.High.Count=5&Qu
eue.2.Level.High.AlarmEnable=True&Queue.2.Level.High.Threshold=150&Queue.2.Level.Mediu
m.AlarmEnable=True&Queue.2.Level.Medium.Threshold=150
```

To get the current Queue levels of all Queues

REQUEST

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=queuemanagementsetup&action=check&Channel=0
```

JSON RESPONSE

```
{
    "QueueCount": [
        {
            "Channel": 0,
            "Queues": [
                {
                    "Queue": 1,
                    "Count": 8,
                },
                {
                    "Queue": 2,
                    "Count": 15,
```

```
                },
                     {
                    "Queue": 3,
                    "Count": 25,
                },
            ]
        }
    ]
}
```

To get the current Queue levels of selected Queues

REQUEST

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=queuemanagementsetup&action=check&Channel=0&QueueIndex=1
,2
```

JSON RESPONSE

```
{
    "QueueCount": [
        {
            "Channel": 0,
            "Queues": [
                {
                    "Queue": 1,
                    "Count": 8,
                },
                {
                    "Queue": 2,
                    "Count": 15,
                }
            ]
        }
    ]
}
```

To get the scheduler/event action for Queue Management

REQUEST

```
http://<DeviceIP>/stw-
cgi/eventrules.cgi?msubmenu=scheduler&action=view&Type=QueueManagement
```

TEXT RESPONSE

```
Channel.0.QueueManagement.ScheduleType=Daily
Channel.0.QueueManagement.Hour=00
Channel.0.QueueManagement.Minute=00
Channel.0.QueueManagement.WeekDay=SUN
Channel.0.QueueManagement.EventAction= AlarmOutput.1,SMTP,FTP,
Channel.0.QueueManagement.AlarmOutput.1.Duration=5s
```

JSON RESPONSE

```
{
    "QueueManagement": [
```

```
        {
            "Channel": 0,
            "ScheduleType": "Daily",
            "Hour": 0,
            "Minute": 0,
            "WeekDay": "SUN"
             "EventAction": [
                "AlarmOutput.1",
                "SMTP",
                "FTP",
            ],
            "AlarmOutputs": [
                {
                    "AlarmOutput": 1,
                    "Duration": "5s"
                }
            ]
        }
    ]
}
```

To update the scheduler/event action for Queue Management

REQUEST

```
http://<DeviceIP>/stw-cgi/eventrules.cgi?msubmenu=scheduler&action=set&Type=QueueManagement&ScheduleType=Weekly&WeekDay=MON
```

REQUEST

```
http://<DeviceIP>/stw-cgi/eventrules.cgi?msubmenu=scheduler&action=set&Type=QueueManagement&EventAction=AlarmOutput.1&AlarmOutput.1.Duration=20s
```

REQUEST

```
http://<DeviceIP>/stw-cgi/eventrules.cgi?msubmenu=scheduler&action=set&Type=QueueManagement&EventAction=FTP,SMTP
```

To get the supported event actions for Queue Management

REQUEST

```
http://<DeviceIP>/stw-cgi/eventsources.cgi?msubmenu=sourceoptions&action=view
```

TEST RESPONSE

```
EventSource.QueueManagement.EventAction=FTP,SMTP,AlarmOutput
```

JSON RESPONSE

```
{
    "EventSources": [
        {
            "EventSource": "QueueManagement",
            "EventAction": [
                "FTP",
                "SMTP",
```

```
                    "AlarmOutput"
            ]
        }
    ]
}
```

To check the current Queue event status

REQUEST

```
http://<DeviceIP>/stw-
cgi/eventstatus.cgi?msubmenu=eventstatus&action=check&Channel.0.EventType=QueueEvent
```

TEXT RESPONSE (All events)

```
Channel.0.Queue.1.Level.High=true
Channel.0.Queue.1.Level.Medium=false
Channel.0.Queue.2.Level.High=false
Channel.0.Queue.2.Level.Medium=false
```

JSON RESPONSE (All events)

```
{
    "ChannelEvent": [
        {
            "Channel": 0,
            "QueueEvents": {
                "Queues": [
                {
                    "Queue": 1,
                         “QueueLevels”:[
                                 {
                                             "High": true

                                 },
                                 {
                                             "Medium": false
                                 }]
                },
                {
                    "Queue": 2,
                         “QueueLevels”:[
                                 {
                                             "High": false

                                 },
                                 {
                                             "Medium": false
                                 }]
                }]
            }
        }]
}
```

To monitor the status of Queue events

REQUEST

```
http://<DeviceIP>/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=monitor&Channel.0.EventType=QueueEvent
```

REQUEST

```
http://<DeviceIP>/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=monitordiff&Channel.0.EventType=QueueEvent
```

TEXT RESPONSE (Single event)

```
Channel.0.Queue.1.Level.High=true
```

JSON RESPONSE (Single event)

```
{
    "ChannelEvent": [
        {
            "Channel": 0,
            "QueueEvents": {
                "Queues": [
                {
                    "Queue": 1,
                         “QueueLevels”:[
                                 {
                                             "High": true

                                 }]
                }]
            }
        }]
}
```

To start a Queue search

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=queuesearch&action=control&Channel=0&Mode=Start&FromDate=2017-01-17T00:00:00Z&ToDate=2017-01-17T23:59:59Z&Queue.1.AveragePeople=True&Queue.2.AveragePeople=True&Queue.3.AveragePeople=True
```

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=queuesearch&action=control&Channel=0&Mode=Start&FromDate=2017-01-17T00:00:00Z&ToDate=2017-01-17T23:59:59Z&Queue.1.Type.High.CumulativeTime=True&Queue.1.Type.Medium.CumulativeTime=True&Queue.2.Type.High.CumulativeTime=True&Queue.2.Type.Medium.CumulativeTime=True&Queue.3.Type.High.CumulativeTime=True&Queue.3.Type.Medium.CumulativeTime=True
```

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=queuesearch&action=control&Channel=0&Mode=Start&FromDate=2017-01-17T00:00:00Z&ToDate=2017-01-17T23:59:59Z&Queue.1.AveragePeople=True&Queue.2.AveragePeople=True&Queue.3.AveragePeople=True&Queue.1.Type.High.CumulativeTime=True&Queue.1.Type.Medium.CumulativeTime=True&Queue.2.Type.High.CumulativeTime=True&Queue.2.Type.Medium.CumulativeTime=True&Queue.3.
```

```
Type.High.CumulativeTime=True&Queue.3.Type.Medium.CumulativeTime=True
```

JSON RESPONSE

```
{
"SearchToken": "123456"
}
```

To cancel a Queue search

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=queuesearch&action=control&Channel=0&Mode=Cancel
```

JSON RESPONSE

```
{
"Response": "Success"
}
```

To get status of a Queue search

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=queuesearch&action=view&Type=Status&SearchToken=123456
```

JSON RESPONSE

```
Response:
{
"Status": "Completed"
}
```

To get the results of a Queue search for average People

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=queuesearch&action=view&Type=Results&SearchToken=123456
```

JSON RESPONSE

```
{
        "ResultInterval":       "Hourly",
        "QueueResults":         [
                    {
                                "Queue":    1,
                                "AveragePeopleResult": ["0", "1", "2", "3", "4", "5",
"6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20",
"21", "22", "23"]
                    },
                    {
                                "Queue":    2,
                                "AveragePeopleResult": ["0", "1", "2", "3", "4", "5",
"6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20",
"21", "22", "23"]
                    },
                    {
                                "Queue":    3,
                                "AveragePeopleResult": ["0", "1", "2", "3", "4", "5",
```

```
"6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20",
"21", "22", "23"]
                    }]
}
```

To get the results of a Queue search for Cumulative Time

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=queuesearch&action=view&Type=Results&SearchToken=123456
```

JSON RESPONSE

```
{
        “ResultInterval”:       “Hourly”,
        "QueueResults": [
       {
           "Queue": 1,
           “QueueLevels”:[
           {
                    "Level": High,
                    "CumulativeTimeResult": ["0", "1", "2", "3", "4", "5", "6", "7",
"8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20", "21",
"22", "23"]
           },
           {
                    "Level": Medium
                    "CumulativeTimeResult": ["0", "1", "2", "3", "4", "5", "6", "7",
"8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20", "21",
"22", "23"]
           }]
        },
        {
           "Queue": 2,
           “QueueLevels”:[
           {
                    "Level": High,
                    "CumulativeTimeResult": ["0", "1", "2", "3", "4", "5", "6", "7",
"8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20", "21",
"22", "23"]
           },
           {
                    "Level": Medium
                    "CumulativeTimeResult": ["0", "1", "2", "3", "4", "5", "6", "7",
"8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20", "21",
"22", "23"]
           }]
        },
        {
           "Queue": 3,
           “QueueLevels”:[
           {
                    "Level": High,
                    "CumulativeTimeResult": ["0", "1", "2", "3", "4", "5", "6", "7",
```

```
"8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20", "21",
"22", "23"]
           },
           {
                    "Level": Medium
                    "CumulativeTimeResult": ["0", "1", "2", "3", "4", "5", "6", "7",
"8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20", "21",
"22", "23"]
           }]
        }]
}
```

To get the results of a Queue search for Cumulative Time and Average People

JSON RESPONSE

```
{
        "ResultInterval":       "Hourly",
        "QueueResults":         [
                    {
                                "Queue":    1,
                                "AveragePeopleResult": ["0", "1", "2", "3", "4", "5",
"6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20",
"21", "22", "23"]
                                "QueueLevels":[
                                {
                                            "Level": High,
                                            "CumulativeTimeResult": ["0", "1", "2",
"3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17",
"18", "19", "20", "21", "22", "23"]
                                },
                                {
                                            "Level": Medium
                                            "CumulativeTimeResult": ["0", "1", "2",
"3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17",
"18", "19", "20", "21", "22", "23"]
                                }]
                                },

                    },
                    {
                                "Queue":    2,
                                "AveragePeopleResult": ["0", "1", "2", "3", "4", "5",
"6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20",
"21", "22", "23"]
                                "QueueLevels":[
                                {
                                            "Level": High,
                                            "CumulativeTimeResult": ["0", "1", "2",
"3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17",
"18", "19", "20", "21", "22", "23"]
                                },
                                {
                                            "Level": Medium
                                            "CumulativeTimeResult": ["0", "1", "2",
```

```
"3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17",
"18", "19", "20", "21", "22", "23"]
                                }]
                                },
                    },
                    {
                                "Queue":    3,
                                "AveragePeopleResult": ["0", "1", "2", "3", "4", "5",
"6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17", "18", "19", "20",
"21", "22", "23"]
                                “QueueLevels”:[
                                {
                                            "Level": High,
                                            "CumulativeTimeResult": ["0", "1", "2",
"3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17",
"18", "19", "20", "21", "22", "23"]
                                },
                                {
                                            "Level": Medium
                                            "CumulativeTimeResult": ["0", "1", "2",
"3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16", "17",
"18", "19", "20", "21", "22", "23"]
                                }]
                                },
                    }]
}
```

14 People Count

Capabilities

```
http://<DeviceIP>/stw-
cgi/attributes.cgi/attributes/Recording/Support/PeopleCountSearch
```

```
<attribute name="PeopleCountSearch" accesslevel="user" value="True" type="bool"/>
```

Get People Count configuration

REQUEST

```
http://<DeviceIP>/stw-cgi/eventsources.cgi?msubmenu=peoplecount&action=view
```

TEXT RESPONSE

```
Channel.0.MasterName=MasterCamera
Channel.0.Enable=True
Channel.0.ReportEnable=False
Channel.0.ReportFilename=
Channel.0.ReportFileType=XLSX
Channel.0.ObjectSizeCoordinate=0,0,239,239
Channel.0.Line.1.Name=Gate1
Channel.0.Line.1.Enable=True
Channel.0.Line.1.Mode=LeftToRightIn
Channel.0.Line.1.Coordinate=1,1596,2991,1596
Channel.0.Line.2.Name=Gate2
Channel.0.Line.2.Enable=True
Channel.0.Line.2.Mode=LeftToRightIn
Channel.0.Line.2.Coordinate=2991,1396,1,1396
```

JSON RESPONSE

```
{
    "PeopleCount": [
        {
            "Channel": 0,
            "MasterName": "MasterCamera",
            "Enable": true,
            "ReportEnable": false,
            "ReportFilename": "",
            "ReportFileType": "XLSX",
            "ObjectSizeCoordinate": [
                {
                    "x": 0,
                    "y": 0
                },
                {
                    "x": 239,
                    "y": 239
                }
            ],
            "Lines": [
                {
```

```
                "Line": 1,
                "Mode": "LeftToRightIn",
                "Name": "Gate1",
                "Enable": true,
                "Coordinates": [
                    {
                        "x": 1,
                        "y": 1596
                    },
                    {
                        "x": 2991,
                        "y": 1596
                    }
                ]
            },
            {
                "Line": 2,
                "Mode": "LeftToRightIn",
                "Name": "Gate2",
                "Enable": true,
                "Coordinates": [
                    {
                        "x": 2991,
                        "y": 1396
                    },
                    {
                        "x": 1,
                        "y": 1396
                    }
                ]
            }
        ]
    }
  ]
}
```


To update the configuration

```
http://<DeviceIP>/stw-cgi/eventsources.cgi?msubmenu=peoplecount&action=set&Channel=0&Enable=True&CalibrationMode=CameraHeight&CameraHeight=250
```

```
http://<DeviceIP>/stw-cgi/eventsources.cgi?msubmenu=peoplecount&action=set&Channel=0&Enable=True&CalibrationMode=ObjectSize&ObjectSizeCoordinates=2992,1390,2,1390
```

```
http://<DeviceIP>/stw-cgi/eventsources.cgi?msubmenu=peoplecount&action=set&Channel=0&Line.1.Name=FrontGate&Line.1.Enable=True&Line.1.Mode=LeftToRightIn&Line.1.Coordinates=1,2,3,4&Line.2.Name=BackGate&Line.2.Enable=True&Line.2.Mode=RightToLeftIn&Line.2.Coordinates=5,6,7,8
```

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=peoplecount&action=set&Channel=0&ReportEnable=True&Repor
tFileName=PeopleCountReport&ReportFileType=TXT
```

To remove all lines

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=peoplecount&action=remove&Channel=0
```

To remove selected lines

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=peoplecount&action=remove&Channel=0&LineIndex=1,2
```

To check the live people count

```
http://<DeviceIP>/stw-cgi/eventsources.cgi?msubmenu=peoplecount&action=check&Channel=0
```

JSON RESPONSE

```
{
    "PeopleCount": [
        {
            "Lines": [
                {
                    "LineIndex": 1,
                    "Name": "ewfrew",
                    "InCount": 20,
                    "OutCount": 15
                },
                {
                    "LineIndex": 2,
                    "Name": "re",
                    "InCount": 56,
                    "OutCount": 52
                }
            ]
        }
    ]
}
```

TEXT RESPONSE

```
Channel.0.LineIndex=1
Channel.0.LineIndex.1.Name=ewfrew
Channel.0.LineIndex=2
Channel.0.LineIndex.2.Name=re
Channel.0.LineIndex.1.InCount=20
Channel.0.LineIndex.1.OutCount=15
Channel.0.LineIndex.2.InCount=56
Channel.0.LineIndex.2.OutCount=52
```

To start a People Count search

REQUEST

```
http://<DeviceIP>/stw-
```

```
cgi/recording.cgi?msubmenu=peoplecount&action=control&Channel=0&Mode=Start&FromData=20
16-07-01T00:00:00Z&ToDate=2016-07-
01T23:59:59Z&Camera.MasterCamera.Line.Gate1.Direction=In,Out&Camera.MasterCamera.Line.
Gate2.Direction=In,Out
```

RESPONSE

```
{
“SearchToken”: “123456”
}
```

To cancel the People Count search

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=peoplecountsearch&action=control&Mode=Cancel&SearchToken=12
3456
```

RESPONSE

```
{
“Response”: “Success”
}
```

To get the status of a People Count search

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=peoplecountsearch&action=view&Type=Status&SearchToken=12345
6
```

RESPONSE

```
{
“Status”: “Completed”

}
```

To get the results of a People Count search

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=peoplecountsearch&action=view&Type=Results&SearchToken=1234
56
```

JSON RESPONSE

```
{
        “ResultInterval”:       “Hourly”,
"PeopleCountSearchResults":     [
        {
                    "Camera":               "Master",
                    “LineResults”:          [
                                {
                                            "Line":     "Gate1",
                                            “DirectionResults”:     [
                                            {
                                                        “Direction” :           “In”,
                                                        “Result”:               “10,
```

```
20, 30”
                                        },
                                        {
                                                “Direction” :           “Out”,
                                                “Result”:               “11,
22, 33”
                                        }]
                                },
                                {
                                        "Line":     "Gate2",
                                        “DirectionResults”:     [
                                        {
                                                “Direction” :           “In”,
                                                “Result”:               “44,
55, 66”
                                        },
                                        {
                                                “Direction” :           “Out”,
                                                “Result”:               “77,
11, 11”
                                        }]
                                }]
}]
}
```

TEXT RESPONSE

```
ResultInterval = Hourly
Camera.Master.Line.Gate1.Direction.In.Result = 10, 20, 30
Camera.Master.Line.Gate1.Direction.Out.Result = 11, 22, 33
Camera.Master.Line.Gate1.Direction.In.Result = 44, 55, 66
Camera.Master.Line.Gate2.Direction.Out.Result = 77, 11, 11
```

15 Setting the password in factory default state

Starting from Sunapi version 2.5.5 camera support initial password setting using pw_init.cgi. Password init cgi is a hidden cgi and to be used only in the factory default state and requires no authentication.

15.1 To check if the camera password is initialized or not initialized

REQUEST

```
http://<ip>/init-cgi/pw_init.cgi?msubmenu=statuscheck&action=view
```

If the camera is already initialized, the response would be:

RESPONSE

```
  {
   "Initialized": true,
   "Language": "English",
   "MaxChannel": 1,
   "SpecialType": "none"
   }
```

If the camera is not initialized, the response would be (The RSA public below can be used to encrypt the password as explained in chapter 12.):

RESPONSE

```
{
    "Initialized": false,
    "Language": "English",
     "MaxChannel": 1,
    "SpecialType": "none",
    "PublicKey": "-----BEGIN RSA PUBLIC KEY-----
\nMIIBCgKCAQEAvI1aKFIGQRuHcFvK+WV/LFpsl6w3yc5GyAIdscJ5CiAQRu1giCGs\nqDbAflX+eiImiTjuSv
eWLe5caDylJK1rj1T1bFe6YXiusCqXzdGemfwsOVWqnnN2\n5PWlKavyPybtrZ5BpJ2dQCQzD+BPPSXpoZ6AQY
WOvgeZLLrpBbCC6Pj8vWSzTJq/\nfXGnFm5SLL8+K1GEMXoy1M88QJwIWNMyUnKLMvHGdF6NpR983Hw4ObMUPI
et6aL9\n0i+z+V5f2CG8dOxjQfP1Q56wwgvfcLv4PQzBd5dOuGiJkDp+3yc7fE9HcFb2V7nt\nbK5pte1p3/e8
s3+mlYS3wzmyugnmCeaMXwIDAQAB\n-----END RSA PUBLIC KEY-----\n"
}
```

15.2 Checking the Install Wizard state in NVR

REQUEST

```
http://<ip>/init-cgi/pw_init.cgi?msubmenu=statuscheck&action=view&ShowStage=True
```

If the NVR is already initialized, the response would be:

Stage field can take any of the following values “factoryreset, “installwizard”, “installwizard_done

RESPONSE

```
  {
   "Initialized": true,
   "Stage":"installwizard_done",
   "Language": "English",
   "MaxChannel": 1,
   "SpecialType": "none"
   }
```

15.3 To set the initial password

Setting the initial password will work only once. If the password is already set, it will fail.

To set the password without password encryption:

REQUEST

```
http://<ip>/init-cgi/pw_init.cgi?msubmenu=setinitpassword&action=set&Password=5tkatjd!
```

To set the password with password encryption use the RSA key and follow chapter 12:

REQUEST (POST)

```
http://<ip>/init-
cgi/pw_init.cgi?msubmenu=setinitpassword&action=set&IsPasswordEncrypted=True
```

```
POST Payload:
```

```
<encypted password as post content>
```

> **Note**
> Until initial password is set, all the cgis will be disabled. They will be enabled immediately after setting the initial password.

16 Thermal Camera Integration

> **Note**
> The purpose of this section is to help quick integration; however, for detailed explanation of parameters, it is recommended to refer to the corresponding cgi documents

16.1 Attributes

In attributes cgi response, under Image and Support sections, you can check the below attributes for the thermal feature support:

```
<attribute accesslevel="guest" value="True" type="bool" name="ThermalFeatures"/>
```

16.2 Color Palette Selection & Temperature Unit Selection

Supported Color Palettes:

WhiteHot, BlackHot, Rainbow, Custom, Sepia, Red, Iron

Supported Temperature Units:

Celsius, Fahrenheit

16.2.1 View

```
http://192.168.75.171/stw-cgi/image.cgi?msubmenu=camera&action=view
```

```
{
    "Camera": [
        {
            "Channel": 0,
            "CompensationMode": "Off",
            "SSNREnable": true,
            "SSNRMode": "Manual",
            "SSNRLevel": 12,
            "SSNR2DLevel": 12,
            "SSNR3DLevel": 12,
            "ThermalColorPalette": "Rainbow",
            "TemperatureUnit": "Celsius",
            "DayNightAlarmIn": "SwitchToBWIfCloses",
            "WDRSeamlessTransition": "Off",
            "WDRLowLight": "Off",
            "WDRIRLEDEnable": "Off"
        }
    ]
}
```

16.2.2 Set Operation

To change the color palette

```
http://192.168.75.171/stw-
cgi/image.cgi?msubmenu=camera&action=set&ThermalColorPalette=Sepia
```

16.3 Temperature Change Detection

16.3.1 Attributes

In the Eventsource Support section, check the following:

```
<attribute accesslevel="guest" value="True" type="bool" name="TemperatureChangeDetecti
on"/>
```

To get MAX ROI support, under the Eventsource Limit section, check the following:

```
<attribute accesslevel="guest" value="3" type="int" name="MaxTemperatureChangeDetectio
nArea"/>
```

16.4 Configuring Temperature Change Detection

16.4.1 Options Command

This gives the supported gap both in Celsius and Fahrenheit.

```
http://192.168.75.171/stw-
cgi/eventsources.cgi?msubmenu=temperaturechangedetectionoptions&action=view
```

```
{
    "TemperatureChangeDetectionOption": [
        {
            "Channel": 0,
            "SupportedGap": {
                "Celsius": "20,40,60,80,100",
                "Fahrenheit": "40,80,120,160,200"
            }
        }
    ]
}
```

16.4.2 Enable

```
http://192.168.75.171/stw-
cgi/eventsources.cgi?msubmenu=temperaturechangedetection&action=set&Channel=0&Enable=T
rue
```

16.4.3 Set

Can set the reference temperature to Average, Maximum, or Minimum temperature in the ROI.

Example:

If Average temperature in the ROI changes more than 60 degrees over 11 secs, it will trigger an event.

```
http://192.168.75.171/stw-
cgi/eventsources.cgi?msubmenu=temperaturechangedetection&action=set&Channel=0&Temperat
ureChange.ROI.1.Mode=Average&TemperatureChange.ROI.1.Gap=60&TemperatureChange.ROI.1.De
tectionPeriod=11&TemperatureChange.ROI.1.Coordinates=142,176,477,386
```

16.4.4 View

```
http://192.168.75.171/stw-cgi/eventsources.cgi?msubmenu=temperaturechangedetection&action=view
```

```
{
    "TemperatureChangeDetection": [
        {
            "Channel": 0,
            "Enable": true,
            "TemperatureChange": [
                {
                    "ROI": 1,
                    "Mode": "Average",
                    "Gap": 60,
                    "DetectionPeriod": 11,
                    "Coordinates": [
                        {
                            "x": 142,
                            "y": 176
                        },
                        {
                            "x": 477,
                            "y": 386
                        }
                    ]
                }
            ]
        }
    ]
}
```

16.5 TemperatureChange Detection Event Format

```
  <wsnt:Topic
Dialect="http://www.onvif.org/ver10/tev/topicExpression/ConcreteSet">tns1:VideoSource/
tnssamsung:TemperatureChangeDetection</wsnt:Topic>
<wsnt:Message>
<tt:Message UtcTime="2018-03-29T11:01:40.857Z">
<tt:Source>
 <tt:SimpleItem Name="VideoSource" Value="VideoSourceToken-01"/>
<tt:SimpleItem Name="RuleName" Value="TemperatureChange-1"/>
  </tt:Source>
<tt:Data>
 <tt:SimpleItem Name="State" Value="true"/>
  </tt:Data>
  </tt:Message>
  </wsnt:Message>
  </wsnt:NotificationMessage>
```

```
  </tt:Event>
  </tt:MetadataStream>
```

In radiometry-supported models like TNO-4030TR, the following additional submenus are supported.

16.6 Spot Temperature Reading

For reading the temperature of the screen coordinates.

```
http://<IP>/stw-cgi/stw-
cgi/image.cgi?msubmenu=spottemperaturereading&action=view&Channel=0&ScreenResolution=6
40x480&ScreenCoordinates=334,216
```

Sample response

```
{
    "SpotTemperatureReading": [
        {
            "Channel": 0,
            "Temperature": 30,
            "Unit": "Celsius"
        }
    ]
}
```

16.7 BoxTemperatureDetection

Can configure a region to monitor avg, min, and max temperature within that region.

The **boxtemperaturedetection** submenu configures box temperature detection settings.

```
http://<Device IP>/stw-
cgi/eventsources.cgi?msubmenu=boxtemperaturedetection&action=view&Channel=0
```

```
{
    "BoxTemperatureDetection": [
        {
            "Channel": 0,
            "Enable": true,
            "ROIs": [
                {
                    "ROI": 1,
                    "TemperatureType": "Average",
                    "DetectionType": "Above",
                    "ThresholdTemperature": 39,
                    "Coordinates": [
                        {
                            "x": 43,
                            "y": 23
                        },
                        {
```

```
                        "x": 274,
                        "y": 243
                    }
                ],
                "Duration": 40,
                "NormalizedEmissivity": 27,
                "AreaOverlay": false,
                "AvgTemperatureOverlay": true,
                "MinTemperatureOverlay": true,
                "MaxTemperatureOverlay": true
            },
            {
                "ROI": 2,
                "TemperatureType": "Maximum",
                "DetectionType": "Increase",
                "ThresholdTemperature": 20,
                "Coordinates": [
                    {
                        "x": 364,
                        "y": 42
                    },
                    {
                        "x": 556,
                        "y": 236
                    }
                ],
                "Duration": 48,
                "NormalizedEmissivity": 40,
                "AreaOverlay": true,
                "AvgTemperatureOverlay": true,
                "MinTemperatureOverlay": true,
                "MaxTemperatureOverlay": false
            },
            {
                "ROI": 3,
                "TemperatureType": "Minimum",
                "DetectionType": "Below",
                "ThresholdTemperature": 5,
                "Coordinates": [
                    {
                        "x": 319,
                        "y": 307
                    },
                    {
                        "x": 562,
                        "y": 451
                    }
                ],
                "Duration": 39,
```

```
                    "NormalizedEmissivity": 41,
                    "AreaOverlay": true,
                    "AvgTemperatureOverlay": false,
                    "MinTemperatureOverlay": true,
                    "MaxTemperatureOverlay": true
                }
            ]
        }
    ]
}
```

16.7.1 Changing Box Temperature Detection Settings

REQUEST

```
http://<Device IP>/stw-
cgi/eventsources.cgi?msubmenu=boxtemperaturedetection&action=set&Channel=0&ROI.1.Coord
inate=63,37,346,205&ROI.1.TemperatureType=Maximum&ROI.1.DetectionType=Above&ROI.1.Thre
sholdTemperature=10&ROI.1.Duration=26&ROI.1.NormalizedEmissivity=33&ROI.1.AreaOverlay=
True&ROI.1.AvgTemperatureOverlay=True&ROI.1.MinTemperatureOverlay=True&ROI.1.MaxTemper
atureOverlay=True
```

16.7.2 Removing Box Temperature Detection ROI Region 1

REQUEST

```
http://<Device IP>/stw-
cgi/eventsources.cgi?msubmenu=boxtemperaturedetection&action=remove&ROIIndex=1&Channel
=0
```

16.7.3 BoxTemperatureDetectionOptions

```
http://<Device IP>/ stw-
cgi/eventsources.cgi?msubmenu=boxtemperaturedetectionoptions&action=view&Channel=0
{
    "BoxTemperatureDetectionOptions": [
        {
```

```
            "Channel": 0,
            "ThresholdTemperature": [
                {
                    "TemperatureType": "Above",
                    "Celsius": {
                        "Min": -20,
                        "Max": 130
                    },
                    "Fahrenheit": {
                        "Min": -4,
                        "Max": 266
                    }
                },
                {
                    "TemperatureType": "Below",
```

```
                "Celsius": {
                    "Min": -20,
                    "Max": 130
                },
                "Fahrenheit": {
                    "Min": -4,
                    "Max": 266
                }
            },
            {
                "TemperatureType": "Increase",
                "Celsius": {
                    "Min": 10,
                    "Max": 100
                },
                "Fahrenheit": {
                    "Min": 50,
                    "Max": 212
                }
            },
            {
                "TemperatureType": "Decrease",
                "Celsius": {
                    "Min": 10,
                    "Max": 100
                },
                "Fahrenheit": {
                    "Min": 50,
                    "Max": 212
                }
            }
        ]
    }
]
}
```

16.7.4 Box Temperature Metadata Reading (Available only as Metadata)

```
<tt:MetadataStream>
    <tt:Event>
        <wsnt:NotificationMessage>
            <wsnt:Topic
Dialect="http://www.onvif.org/ver10/tev/topicExpression/ConcreteSet">tns1:VideoAnalyti
cs/Radiometry/BoxTemperatureReading</wsnt:Topic>
            <wsnt:Message>
                <tt:Message UtcTime="2018-09-19T04:08:46.443Z">
                    <tt:Source>
                        <tt:SimpleItem Name="VideoSourceToken" Value="VideoSourceToken-
01"/>
                        <tt:SimpleItem Name="VideoAnalyticsConfigurationToken"
```

```
Value="VideoAnalyticsConfigToken-01"/>
                    <tt:SimpleItem Name="AnalyticsModuleName"
Value="TemparetureDetectionModule-01"/>
                </tt:Source>
                <tt:Data>
                    <tt:ElementItem Name="Reading">
                        <ttr:BoxTemperatureReading ItemID="1" MaxTemperature="275.9"
MinTemperature="275.5" AverageTemperature="275.7"/>
                    </tt:ElementItem>
                    <tt:SimpleItem Name="TimeStamp" Value="2018-09-
19T04:08:46.443Z"/>
                </tt:Data>
            </tt:Message>
        </wsnt:Message>
    </wsnt:NotificationMessage>
</tt:Event>
</tt:MetadataStream>
```

16.7.5 Box temperature Event

```
<wsnt:NotificationMessage>
    <wsnt:Topic Dialect="http://www.onvif.org/ver10/tev/topicExpression/ConcreteSet
xmlns:wsnt=http://docs.oasis-open.org/wsn/b-2
xmlns:tns1=http://www.onvif.org/ver10/topics
xmlns:tnssamsung=http://www.samsungcctv.com/2011/event/topics">tns1:RuleEngine/Radiome
try/BoxTemperatureAlarm</wsnt:Topic>
    <wsnt:Message>
        <tt:Message UtcTime="2016-03-31T00:15:58.421Z" PropertyOperation="Initialized">
            <tt:Source>
                <tt:SimpleItem Name="VideoSourceConfigurationToken" Value="cb4fbc38-
e5f6-4ff0-b2e8-2e166b4414d1"/>
    <tt:SimpleItem Name="RuleName" Value="TemperatureDetection-1"/>
            </tt:Source>
            <tt:Data>
                tt:SimpleItem Name="AlarmActive" Value="false"/>
            </tt:Data>
        </tt:Message>
    </wsnt:Message>
</wsnt:NotificationMessage>
```

16.7.6 SUNAPI Event Status

Check

```
http://<Device IP>/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=check
```

Monitor

```
http://<Device IP>/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=monitor
```

Monitor diff

```
 http://<Device IP>/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=monitordiff
```

The event would be delivered as below:

```
Channel.0.BoxTemperatureDetection=True
Channel.0.BoxTemperatureDetection.RegionID.1=True
```

17 AI Camera Integration

> **Note**
> The purpose of this section is to help quick integration; however, for detailed explanation of parameters, it is recommended to refer to the corresponding cgi documents.

17.1 IVA Object Type Filter

> **Note**
> If the filter values are not delivered, the filter would work as before. If the filter is set, only when the specified object type crosses the line or enters the area, an event will be triggered.

17.2 Line Rule

17.2.1 Set operation

```
http://192.168.75.137/stw-
cgi/eventsources.cgi?msubmenu=videoanalysis2&action=set&Channel=0&Line.1.Coordinate=61
2,334,1815,1434&Line.1.Mode=Right&DetectionType=MDAndIV&Line.1.ObjectTypeFilter=Vehicl
e,Person&Line.1.RuleName=boundaryrule1
```

17.2.2 View

```
{
    "VideoAnalysis": [
        {
            "Channel": 0,
            "DetectionType": "MDAndIV",
            "SensitivityLevel": 100,
            "ObjectSizeByDetectionTypes": [
                {
                    "DetectionType": "MotionDetection",
                    "MinimumObjectSize": "0,0",
                    "MaximumObjectSize": "99,99",
                    "MinimumObjectSizeInPixels": "42,42",
                    "MaximumObjectSizeInPixels": "2560,1920",
                    "DetectionResultOverlay": false
                },
                {
                    "DetectionType": "IntelligentVideo",
                    "MinimumObjectSize": "5,7",
                    "MaximumObjectSize": "66,89",
                    "MinimumObjectSizeInPixels": "173,173",
                    "MaximumObjectSizeInPixels": "1728,1728",
                    "DetectionResultOverlay": false
                }
            ],
            "ROIs": [
                {
                    "ROI": 1,
                    "Mode": "Inside",
                    "SensitivityLevel": 1,
                    "ThresholdLevel": 5,
                    "Coordinates": [
                        {
```

```
                        "x": 0,
                        "y": 0
                    },
                    {
                        "x": 0,
                        "y": 1919
                    },
                    {
                        "x": 2559,
                        "y": 1919
                    },
                    {
                        "x": 2559,
                        "y": 0
                    }
                ],
                "HandoverIndex": 0,
                "Duration": 0
            }
        ],
        "Lines": [
            {
                "Line": 1,
                "Coordinates": [
                    {
                        "x": 612,
                        "y": 334
                    },
                    {
                        "x": 1815,
                        "y": 1434
                    }
                ],
                "Mode": "Right",
                "HandoverIndex": 0,
                 “RuleName”:”boundaryrule1”,
                “ObjectTypeFilter”: [" Vehicle ", " Person "]
            }
        ],
        "DefinedAreas": [
            {
                "DefinedArea": 1,
                "Type": "Inside",
                "Mode": [],
                "Coordinates": [
                    {
                        "x": 1343,
                        "y": 548
                    },
```

```
                    {
                        "x": 1176,
                        "y": 932
                    },
                    {
                        "x": 1667,
                        "y": 1468
                    },
                    {
                        "x": 1843,
                        "y": 448
                    }
                ],
                "AppearanceDuration": 10,
                "LoiteringDuration": 10,
                "HandoverIndex": 0,
                "IntrusionDuration": 0
            }
        ]
    }
]
}
```


17.3 Area Rule

17.3.1 Set operation

```
http://192.168.75.137/stw-
cgi/eventsources.cgi?msubmenu=videoanalysis2&action=set&Channel=0&DefinedArea.1.Coordi
nate=488,638,1971,282,2335,998,1839,1618&DefinedArea.1.Type=Inside&DefinedArea.1.Mode=
AppearDisappear,Entering,Exiting,Intrusion,Loitering&DefinedArea.1.AppearanceDuration=
10&DefinedArea.1.LoiteringDuration=10&DefinedArea.1.IntrusionDuration=0&DefinedArea.1.
ObjectTypeFilter=Vehicle,Person&DetectionType=MDAndIV&DefinedArea.1.RuleName=boundbox1
```

17.3.2 View


```
{
    "VideoAnalysis": [
        {
            "Channel": 0,
            "DetectionType": "MDAndIV",
            "SensitivityLevel": 100,
            "ObjectSizeByDetectionTypes": [
                {
                    "DetectionType": "MotionDetection",
                    "MinimumObjectSize": "0,0",
                    "MaximumObjectSize": "99,99",
                    "MinimumObjectSizeInPixels": "42,42",
                    "MaximumObjectSizeInPixels": "2560,1920",
                    "DetectionResultOverlay": false
                },
                {
```

```
                "DetectionType": "IntelligentVideo",
                "MinimumObjectSize": "5,7",
                "MaximumObjectSize": "66,89",
                "MinimumObjectSizeInPixels": "173,173",
                "MaximumObjectSizeInPixels": "1728,1728",
                "DetectionResultOverlay": false
            }
        ],
        "ROIs": [
            {
                "ROI": 1,
                "Mode": "Inside",
                "SensitivityLevel": 1,
                "ThresholdLevel": 5,
                "Coordinates": [
                    {
                        "x": 0,
                        "y": 0
                    },
                    {
                        "x": 0,
                        "y": 1919
                    },
                    {
                        "x": 2559,
                        "y": 1919
                    },
                    {
                        "x": 2559,
                        "y": 0
                    }
                ],
                "HandoverIndex": 0,
                "Duration": 0
            }
        ],
        "Lines": [
            {
                "Line": 1,
                "Coordinates": [
                    {
                        "x": 612,
                        "y": 334
                    },
                    {
                        "x": 1815,
                        "y": 1434
                    }
                ],
```

```
                    "Mode": "Right",
                    "HandoverIndex": 0
                }
            ],
            "DefinedAreas": [
                {
                    "DefinedArea": 1,
                    "Type": "Inside",
                    "Mode": [
                        "AppearDisappear",
                        "Entering",
                        "Exiting",
                        "Intrusion",
                        "Loitering"
                    ],
                    "Coordinates": [
                        {
                            "x": 488,
                            "y": 638
                        },
                        {
                            "x": 1971,
                            "y": 282
                        },
                        {
                            "x": 2335,
                            "y": 998
                        },
                        {
                            "x": 1839,
                            "y": 1618
                        }
                    ],
                    "AppearanceDuration": 10,
                    "LoiteringDuration": 10,
                    "HandoverIndex": 0,
                    "IntrusionDuration": 0,
“RuleName”:” boundbox1”,
                     “ObjectTypeFilter”: [" Vehicle ", " Person "]
                }
            ]
        }
    ]
}
```

17.4 Object Detection Submenu

> **Note**
> Only when Object detection or IVA is enabled, object metadata would be generated.

In **`ObjectDetection`** submenu, if no object types are selected, no event would be triggered and only

metadata would be generated.

17.4.1 Set operation

```
http://192.168.75.52/stw-
cgi/eventsources.cgi?msubmenu=objectdetection&action=set&Channel=0&ObjectTypes=Vehicle
,Person,Face,LicensePlate&Sensitivity=50&Enable=True&ExcludeArea.1.Coordinate=672,1002
,1044,254,2291,326,2275,1662
```

17.4.2 View operation

```
http://192.168.75.52/stw-cgi/eventsources.cgi?msubmenu=objectdetection&action=view
```

```
{
    "ObjectDetection": [
        {
            "Channel": 0,
            "Enable": true,
            "Duration": 1,
            "Sensitivity": 80,
            "MinimumObjectSize": "4,7",
            "MaximumObjectSize": "50,89",
            "MinimumObjectSizeInPixels": "194,194",
            "MaximumObjectSizeInPixels": "1944,1944",
            "ObjectTypes": [
                "Person",
                "Vehicle",
                "Face",
                "LicensePlate"
            ],
            "ExcludeAreas": [
                {
                    "ExcludeArea": 1,
                    "Coordinates": [
                        {
                            "x": 1248,
                            "y": 502
                        },
                        {
                            "x": 3173,
                            "y": 502
                        },
                        {
                            "x": 3317,
                            "y": 1743
                        },
                        {
                            "x": 972,
                            "y": 1701
                        }
                    ]
```

```
            }
        ]
    }
]
}
```

17.5 Metaimagetransfer Submenu (BestShot Feature)

Used to enable the image sending feature in metadata

> **Note**
> Object detection should be enabled for this functionality to work

17.5.1 View the current settings

```
http://IP/eventsources.cgi?msubmenu=metaimagetransfer&action=view
```

```
{
 " MetaImageTransfer " :[
{
 " Channel " :0,
 " ObjectTypes": [" Vehicle ", " Person ", " Face ", " LicensePlate "],
}
]
}
```

17.5.2 Set operation

```
http://IP/eventsources.cgi?msubmenu=metaimagetransfer&action=set&Channel=0&ObjectTypes
=Face,LicensePlate
```

17.6 Digital Auto Tracking

For setting the digital autotracking filter setting based on object types

> **Note**
> Only Channel 1 supports this feature (Which is a DPTZ channel)

17.6.1 View

```
http://192.168.75.137/stw-cgi/ptzconfig.cgi?msubmenu=digitalautotracking&action=view
```

```
{
    "digitalautotracking": [
        {
            "Channel": 1,
            " ObjectTypeFilter": [
                "Person",
                "Vehicle"
                 ]
        }
    ]
}
```

17.6.2 Set

```
http://192.168.75.137/stw-
cgi/ptzconfig.cgi?msubmenu=digitalautotracking&action=set&Channel=1&ObjectTypeFilter=P
erson,Vehicle
```

17.7 EventStatus Check

17.7.1 Object detection events

```
http://192.168.75.52/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=check
```

```
AlarmInput.1=False
AlarmOutput.1=False
Channel.0.MotionDetection=False
Channel.0.MotionDetection.RegionID.1=False
Channel.0.FaceDetection=False
Channel.0.Tampering=False
Channel.0.AudioDetection=False
Channel.0.DefocusDetection=False
Channel.0.FogDetection=False
Channel.0.Profile.1.DigitalAutoTracking=False
Channel.0.Profile.2.DigitalAutoTracking=False
Channel.0.Profile.3.DigitalAutoTracking=False
Channel.0.Profile.4.DigitalAutoTracking=False
Channel.0.Profile.5.DigitalAutoTracking=False
Channel.0.Profile.6.DigitalAutoTracking=False
Channel.0.Profile.7.DigitalAutoTracking=False
Channel.0.Profile.8.DigitalAutoTracking=False
Channel.0.Profile.9.DigitalAutoTracking=False
Channel.0.Profile.10.DigitalAutoTracking=False
Channel.0.VideoAnalytics.Passing=False
Channel.0.VideoAnalytics.Intrusion=False
Channel.0.VideoAnalytics.Entering=False
Channel.0.VideoAnalytics.Exiting=False
Channel.0.VideoAnalytics.Appearing=True
Channel.0.VideoAnalytics.Loitering=False
Channel.0.AudioAnalytics.Scream=False
Channel.0.AudioAnalytics.Gunshot=False
Channel.0.AudioAnalytics.Explosion=False
Channel.0.AudioAnalytics.GlassBreak=False
Channel.0.ObjectDetection=False
Channel.0.ObjectDetection.Person=False
Channel.0.ObjectDetection.Vehicle=False
Channel.0.ObjectDetection.Face=False
Channel.0.ObjectDetection.LicensePlate=False
Channel.0.Connected=True
SystemEvent.TimeChange=False
SystemEvent.PowerReboot=False
```

```
SystemEvent.FWUpdate=False
SystemEvent.FactoryReset=False
SystemEvent.ConfigurationBackup=False
SystemEvent.ConfigurationRestore=False
SystemEvent.ConfigChange=False
SystemEvent.SDFormat=False
SystemEvent.SDFail=False
SystemEvent.SDFull=False
SystemEvent.SDInsert=False
SystemEvent.SDRemove=True
SystemEvent.NASConnect=False
SystemEvent.NASDisconnect=True
SystemEvent.NASFail=False
SystemEvent.NASFull=False
SystemEvent.NASFormat=False
```

17.8 SchemaBased Dynamic Event format

17.8.1 Check

```
http://192.168.71.167/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=check&SchemaBased=True
```

17.8.2 Monitor

```
http://192.168.71.167/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=monitor&SchemaBased=True
```

17.8.3 Monitor diff

```
http://192.168.71.167/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=monitordiff&SchemaBased=True
```

```
{
          "EventName": "ObjectDetection",
          "Time": "2019-06-16T00:22:46.802+00:00",
          "Source": {
              "Channel": 0
          },
          "Data": {
              "State": true,
               “ObjectTypes”:”Face, Vehicle”
          }
      }
```

17.9 ONVIF/MetaEvent Notification (Based on ONVIF Draft)

Sample object detection event in metadata is shown below:

```
<tt:Event>
       <wsnt:NotificationMessage>
                   <wsnt:Topic
```

```
Dialect="http://www.onvif.org/ver10/tev/topicExpression/ConcreteSet">tns1:RuleEngine/O
bjectDetection/Object</wsnt:Topic>
                    <wsnt:Message>
                                <tt:Message UtcTime="2019-11-14T05:50:51.290Z"
PropertyOperation="Changed">
                                            <tt:Source>
                                                        <tt:SimpleItem
Name="VideoSource" Value="VideoSourceToken-0"/>
                                                        <tt:SimpleItem Name="RuleName"
Value="ObjectDetectionRule-1"/>
                                            </tt:Source>
                                            <tt:Data>
                                                        <tt:SimpleItem
Name="ClassTypes" Value="Person Vehicle"/>
                                            </tt:Data>
                                </tt:Message>
                    </wsnt:Message>
        </wsnt:NotificationMessage>
</tt:Event>
```

Note

Whenever there is a change in detection types, ClassTypes field will be updated; if nothing is detected, an empty ClassType will be sent.

17.10 BestShot RTP Stream

To receive a bestshot image in RTP, please refer to Sunapi_audio_video document.

17.11 Metadata Format

The supported attributes are shown in the table shown below:

Note

Those marked in RED are not supported in the current release and have fixed values as marked in the table below.

	Objects	Attributes	Supported attributes items
Attributes	Person	Gender	Female, Male
		Upper(Color)	Black, Gray, White, Red, Orange, Yellow, Green, Blue, Purple (up to 2 colors at the same time)
		Lower(Color)	
		Upper(Clothing)	Long, Short **(always Long)**
		Lower(Clothing)	Long, Short **(always Long)**
		Hat	Wear Hat or Not **(always False)**
		Bag	Bag (If Bag is detected)
	Vehicle	Type	Car(Sedan/SUV/Van...etc), Bus, Truck, Motorcycle, Bicycle

		Color	Black, Gray, White, Red, Orange, Yellow, Green, Blue, Purple (up to 2 colors at the same time)
	Face	Gender	Female, Male
		Age	Young (0~19), Adult (20~44), Middle (45~64), Senior (65~)
		Hat	Wear Hat or Not **(always False)**
		Glasses	Wear Glasses or Not
	Licenseplate		

17.11.1 Sample Meta Frame with all fields (Only for reference)

```
<tt:MetadataStream xmlns:tt="http://www.onvif.org/ver10/schema"
xmlns:fc="http://www.onvif.org/ver20/analytics/humanface"
xmlns:bd="http://www.onvif.org/ver20/analytics/humanbody">
<tt:VideoAnalytics>
<tt:Frame UtcTime="2019-05-15T12:24:57.321">
<tt:Transformation>
<tt:Translate x="-1.0" y="1.0" />
<tt:Scale x="0.000781" y="-0.001042" />
</tt:Transformation>
<tt:Object ObjectId="15" Parent="12" >
<tt:Appearance>
<tt:Shape>
<tt:BoundingBox left="15.0" top="141.0" right="51.0" bottom="291.0" />
<tt:CenterOfGravity x="31.0" y="218.0" />
</tt:Shape>
<tt:Color>
<tt:ColorCluster>
<tt:Color X="58" Y="105" Z="212" />
<tt:Covariance XX="7.2" YY="6" ZZ="3" />
<tt:Weight>90</tt:Weight>
<tt:ColorString>WHITE</tt:ColorString>
</tt:ColorCluster>
<tt:ColorCluster>
<tt:Color X="165" Y="44" Z="139" />
<tt:Covariance XX="4" YY="4" ZZ="4" />
<tt:Weight>5</tt:Weight>
<tt:ColorString>BLUE</tt:ColorString>
</tt:ColorCluster>
</tt:Color>
<tt:Class>
<tt:Type Likelihood="0.8">LicensePlate</tt:Type>
</tt:Class>
<tt:VehicleInfo>
<tt:Type Likelihood="0.8"> car </tt:Type>
</tt:VehicleInfo>
<tt:HumanFace>
```

```
<fc:Gender> Male </fc:Gender>
<fc:AgeType>Adult</fc:AgeType>
<fc:Accessory>
<fc:Opticals>
<fc:Wear>true</fc:Wear>
</fc:Opticals>
<fc:Hat>
<fc:Wear>false</fc:Wear>
</fc:Hat>
</fc:Accessory>
</tt:HumanFace>
<tt:HumanBody>
<bd:Gender> Male </bd:Gender>
<bd:Clothing>
<bd:Hat>
<bd:Wear>false</bd:Wear>
</bd:Hat>
<bd:Tops>
<tt:Color>
<tt:ColorCluster>
<tt:Color X="58" Y="105" Z="212" />
<tt:Covariance XX="7.2" YY="6" ZZ="3" />
<tt:Weight>90</tt:Weight>
<tt:ColorString>WHITE</tt:ColorString>
</tt:ColorCluster>
<tt:ColorCluster>
<tt:Color X="165" Y="44" Z="139" />
<tt:Covariance XX="4" YY="4" ZZ="4" />
<tt:Weight>5</tt:Weight>
<tt:ColorString>BLUE</tt:ColorString>
</tt:ColorCluster>
</tt:Color>
<bd:Length>Long</bd:Length>
</bd:Tops>
<bd:Bottoms>
<tt:Color>
<tt:ColorCluster>
<tt:Color X="58" Y="105" Z="212" />
<tt:Covariance XX="7.2" YY="6" ZZ="3" />
<tt:Weight>90</tt:Weight>
<tt:ColorString>WHITE</tt:ColorString>
</tt:ColorCluster>
<tt:ColorCluster>
<tt:Color X="165" Y="44" Z="139" />
<tt:Covariance XX="4" YY="4" ZZ="4" />
<tt:Weight>5</tt:Weight>
<tt:ColorString>BLUE</tt:ColorString>
</tt:ColorCluster>
</tt:Color>
```

```
<bd:Length>Long</bd:Length>
</bd:Bottoms>
</bd:Clothing>
<bd:Belonging>
<bd:Bag>
<bd:Category>Bag</bd:Category>
</bd:Bag>
</bd:Belonging>
</tt:HumanBody >
<tt:ImageRef>
http://192.168.75.150/download/objectid_1_1548728068_100.jpg
</tt:ImageRef>
<tt:ImageRefShape>
<tt:BoundingBox left="15.0" top="141.0" right="51.0" bottom="291.0" />
<tt:CenterOfGravity x="31.0" y="218.0" />
</tt:ImageRefShape>
</tt:Appearance>
</tt:Object>
</tt:Frame>
</tt:VideoAnalytics>
</tt:MetadataStream>
```

ImageRef

A URL can also have a relative address.

../download/objected_1_23323333_100.jpg

18 Sample Application to get Device Information

Simple client example using cURL library.

```
#include <string.h>
#include <iostream>
#include <sys/stat.h>
#include <fcntl.h>
#include <curl/curl.h>
using namespace std;
class CurlObject
{
        public:
                CurlObject(string &,string &,string &);        //URL, Username, Password
                virtual ~CurlObject();
                bool Get();     //Process the request
                string GetLastError();          // To get Error Message
                string GetResponseBody();    // To get Response Body
                string GetResponseHeader(); // To get Response Header

        private:
                void SetDefaultCurlOptions();
                static int StringWriter(char *,size_t,size_t,string *);          //Callback Function

        private:
                CURL *mpCurl;
                char mErrorStr[CURL_ERROR_SIZE];
                string mUrl;
                string mAuth;
                string mResponseBody;
                  string mResponseHeader;
        };

        CurlObject::CurlObject(string &sUri,string &sUser,string &sPassword){
        mUrl = sUri;
        mAuth = sUser + ":" + sPassword;
        memset(mErrorStr,0,sizeof(mErrorStr));
        mpCurl = curl_easy_init();
        SetDefaultCurlOptions();
        cout << mUrl << endl;
          }

CurlObject::~CurlObject()
{
```

```
		curl_easy_cleanup(mpCurl);
}
```

```
void CurlObject::SetDefaultCurlOptions()
{
		if(mpCurl)
		{
			curl_easy_setopt(mpCurl,CURLOPT_NOSIGNAL,1);
			curl_easy_setopt(mpCurl,CURLOPT_TIMEOUT,60);		//Request Timeout
			curl_easy_setopt(mpCurl,CURLOPT_CONNECTTIMEOUT,10); //Connection Timeout
			curl_easy_setopt(mpCurl,CURLOPT_ERRORBUFFER,mErrorStr);
			curl_easy_setopt(mpCurl,CURLOPT_URL,mUrl.c_str());
		curl_easy_setopt(mpCurl,CURLOPT_HTTPAUTH,CURLAUTH_DIGEST);
		//Digest Authentication
			curl_easy_setopt(mpCurl,CURLOPT_USERPWD,mAuth.c_str());
			curl_easy_setopt(mpCurl,CURLOPT_HEADER,0);
			curl_easy_setopt(mpCurl,CURLOPT_FOLLOWLOCATION,1);
			curl_easy_setopt(mpCurl,CURLOPT_SSL_VERIFYHOST,2);		//SSL
			curl_easy_setopt(mpCurl,CURLOPT_SSL_VERIFYPEER,0);		//SSL
			curl_easy_setopt(mpCurl,CURLOPT_HEADERFUNCTION,StringWriter);
		//Callback Function
			curl_easy_setopt(mpCurl,CURLOPT_WRITEHEADER,&mResponseHeader);
		//Response Header
		}
}

string CurlObject::GetLastError()
{
		return mErrorStr;
}

string CurlObject::GetResponseBody()
{
		return mResponseBody;
}
```

```

string CurlObject::GetResponseHeader()
{
		return mResponseHeader;
}

bool CurlObject::Get()
{
		bool retVal = true;
```

```
        if(mpCurl)
        {
                curl_easy_setopt(mpCurl,CURLOPT_HTTPGET,1);
                curl_easy_setopt(mpCurl,CURLOPT_WRITEFUNCTION,StringWriter);
                curl_easy_setopt(mpCurl,CURLOPT_WRITEDATA,&mResponseBody);

                if(curl_easy_perform(mpCurl) != CURLE_OK)
                {
                        cout << mErrorStr << endl;
                        retVal = false;
                }
        }
 return retVal;
}

int CurlObject::StringWriter(char *pData,size_t size,size_t nmem,string *sBuffer)
{
        int result = 0;

        if(sBuffer)
        {
                sBuffer->append(pData,size*nmem);
                result = size*nmem;
        }

        return result;
}

int main(int argc, char *argv[])
{
        string sIp = argv[1];                   //Device IP
        string sUser = argv[2];         //Username
        string sPwd = argv[3];          //Password

        string sCommand = "/stw-cgi/system.cgi?msubmenu=deviceinfo&action=view";
        //SUNAPI Command
        string sUrl = sIp+sCommand;

        CurlObject *pCurl = new CurlObject(sUrl,sUser,sPwd);
        if(pCurl)
        {
                if(pCurl->Get())
```

```
                                        cout << pCurl->GetResponseBody() << endl;
            //Response Body
                        else
                                        cout << pCurl->GetLastError() << endl;      //Error Message

                        delete pCurl;
            }

            return 0;
}
```

19 References

[1] IP Installer Guide v1.25.pdf

[2] SUNAPI_network_2.5.7_en.pdf

[3] SUNAPI_system_2.5.7_en.pdf

[4] SUNAPI_video.audio_2.5.7_en.pdf

[5] SUNAPI_ptz_2.5.7_en.pdf

[6] SUNAPI_recording_2.5.7_en.pdf

[7] SUNAPI_event_2.5.7_en.pdf

[8] SUNAPI_attributes_2.5.7_en.pdf

[9] SUNAPI_image_2.5.7_en.pdf

[10] SUNAPI_io_2.5.7_en.pdf

[11] SUNAPI_security_2.5.7_en.pdf

[12] ONVIF-Streaming-Spec-v210.pdf

[13] SUNAPI_bypass_2.5.7_en.pdf

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[15] SUNAPI_display_2.5.7_en.pdf

[16] SUNAPI_transfer_2.5.7_en.pdf