Application Programmer’s Guide

Hanwha

SUNAPI

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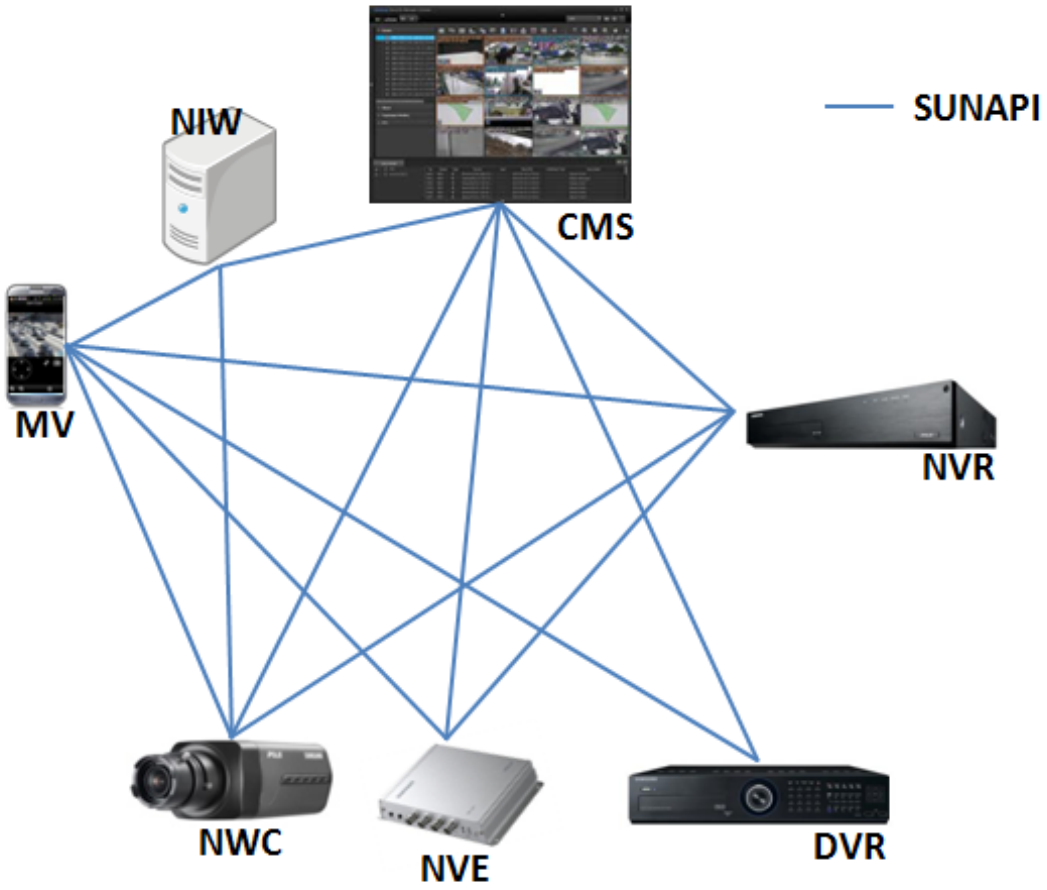
Chapter 1. Introduction

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.

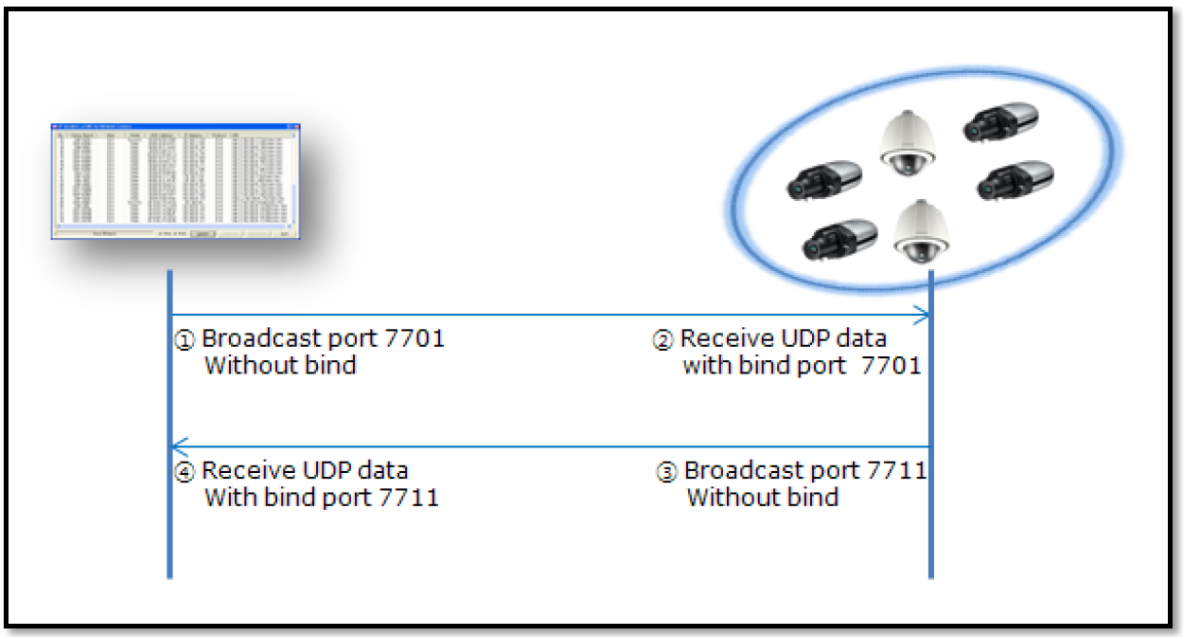


SUNAPI allows you to access product features simply by entering standard HTTP URLs. The URLs pass variables to SUNAPI's CGI, which interfaces with the specific product. This simplified interface system makes it possible for central monitoring software to access the features of a diverse set of products 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.

Chapter 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;
}
```

Chapter 3. 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: .REQUEST

```
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\ncABwVhim
gngXbn1isEwuIKZ5Q4g366/JgpSkRRCwdXZ4Xz6jObr544Dp9nCKU/UJ\n3D3bQ9FJbAkBcFN7UC
e6UISCcfUMrmn4PFOPSupqiCjDJ/oZgENIG8Ugtt392/QT\nKX9l108IDHSj+ziL2FlJ3VW8xX7K
NismZg5h8xPnwb90qQJawxyW7p5Z+ngOnJ0X\npA6X35Z0qOBsEw0L3x6QDrvKcGXA1pR6odfQlE
xj2uNT+Xg8NNeGiCGvFwBHooqh\nyMDY1EATgAtROSeTjgnO4aCz3uB2GjAw/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 **IsPasswordEncrypted**

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=Tr
ue&IsPasswordEncrypted=True
```

Body

```
Vvg2Ku93HlReI+3RseQgfYQoxUFkh9P2L5RvjZ+bLovLTGMQ23OFT+BDaIwMcgvszTwCugk0TuKH
ENsczardZMQLSosu8RBcqKUMqDq2M1x8fO6Y4S0qlklAtaKl3d9vG0fBdV7BXRqgvK6VIGEc/6Gd
Pyp4wzY31dalmfwObsdtN//eOU/cVP8MQSCiPod0b5fIWWwekHfDMbQhW2J8eY1KIeOo2O9+vo0g
ql5vBLFEeFvASZI8UEguxAbOJk4F7iaSr8IFmQhNBXsVYevcAuMgAPvGk3LbXv1DlJrUqUhj9U2r
2peMGAGl4vaLPt3M2V9UUKlEn7JR/CUI8Pk1Qg==
```

Chapter 4. Setting the password in factory default state

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

NOTE The initial password can also be configured using the IP Installer Protocol [Refer: Ipinstaller protocol document].

4.1. 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",
    "NewPasswordPolicy": true,
    "MaxPasswordLength": 64,
    "Manufacturer": "Hanwha Vision"
}
```

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": 2,
    "SpecialType": "none",
    "NewPasswordPolicy": true,
    "MaxPasswordLength" : 64,
```

```
    "SupportedPublicKeyFormats": [
        "PKCS1",
        "X509"
    ],
    "PublicKey": "-----BEGIN RSA PUBLIC KEY-----
\nMIIBCgKCAQEAxQMliqqm+N+smTfckt4t9Ab8/PaRLTWa1OfgtnYaimcNtP9O5xJx\nS7rRu1Md
MSTbXf6MSRNUjUJYK57HpGOIUlc8jPeqo7bEO27nhRYu/zWOsgkT4VS5\nALDLh85U87Z7OsTTpn
UhjBzGJltOTDToA4T51hd0BNbFNQWWIia2dHukxzdiTiGo\n8gPkEEare7HVHBqdA6ET58jkk7dM
UbmgARpOvFjm1sgYQRdRRa0JvfZz0A6hEQA0\nqG18pqTAahyQ19k4N2AHROV7UcsblmIotJ+Lql
WhSJzcy5BWSy8bm6s4r5zJoDL1\ncyYUuvvaswaMobVTk5afysS7rRu2UW/9LwIDAQAB\n-----
END RSA PUBLIC KEY-----\n",
    "Manufacturer": "Hanwha Vision"
}
```


When **SupportedPublicKeyFormats** are specified in response, it's possible to get the rsa public key in different formats, default key format is PKCS1.

NOTE	If in response **MaxPasswordLength** is not present, the maximum password length supported is 15. If present, it defines the maximum allowed password length.

Example request to get the certificate in X509 format.

REQUEST

```
http://<DeviceIP>/init-
cgi/pw_init.cgi?msubmenu=statuscheck&action=view&PublicKeyFormat=X509
```

RESPONSE


```
{
    "Initialized": false,
    "Language": "English",
    "MaxChannel": 2,
    "SpecialType": "none",
    "NewPasswordPolicy": true,
    "MaxPasswordLength" : 64,
    "SupportedPublicKeyFormats": [
        "PKCS1",
        "X509"
    ],
    "PublicKey": "-----BEGIN PUBLIC KEY-----
\nMIIBIjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAxQMliqqm+N+smTfckt4t\n9Ab8/PaR
LTWa1OfgtnYaimcNtP9O5xJxS7rRu1MdMSTbXf6MSRNUjUJYK57HpGOI\nUlc8jPeqo7bEO27nhR
```

```
Yu/zWOsgkT4VS5ALDLh85U87Z7OsTTpnUhjBzGJltOTDTo\nA4T51hd0BNbFNQWWIia2dHukxzdi
TiGo8gPkEEare7HVHBqdA6ET58jkk7dMUbmg\nARpOvFjm1sgYQRdRRa0JvfZz0A6hEQA0qG18pq
TAahyQ19k4N2AHROV7UcsblmIo\ntJ+LqlWhSJzcy5BWSy8bm6s4r5zJoDL1cyYUuvvaswaMobVT
k5afysS7rRu2UW/9\nLwIDAQAB\n-----END PUBLIC KEY-----\n",
    "Manufacturer": "Hanwha Vision"
}
```

4.2. 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",
    "Manufacturer": "Hanwha Vision"
}
```

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

NOTE The plain text initial password setting will soon be deprecated.

To set the password with password encryption, use the RSA key and follow the instructions in Chapter

Password Encryption

REQUEST (POST)

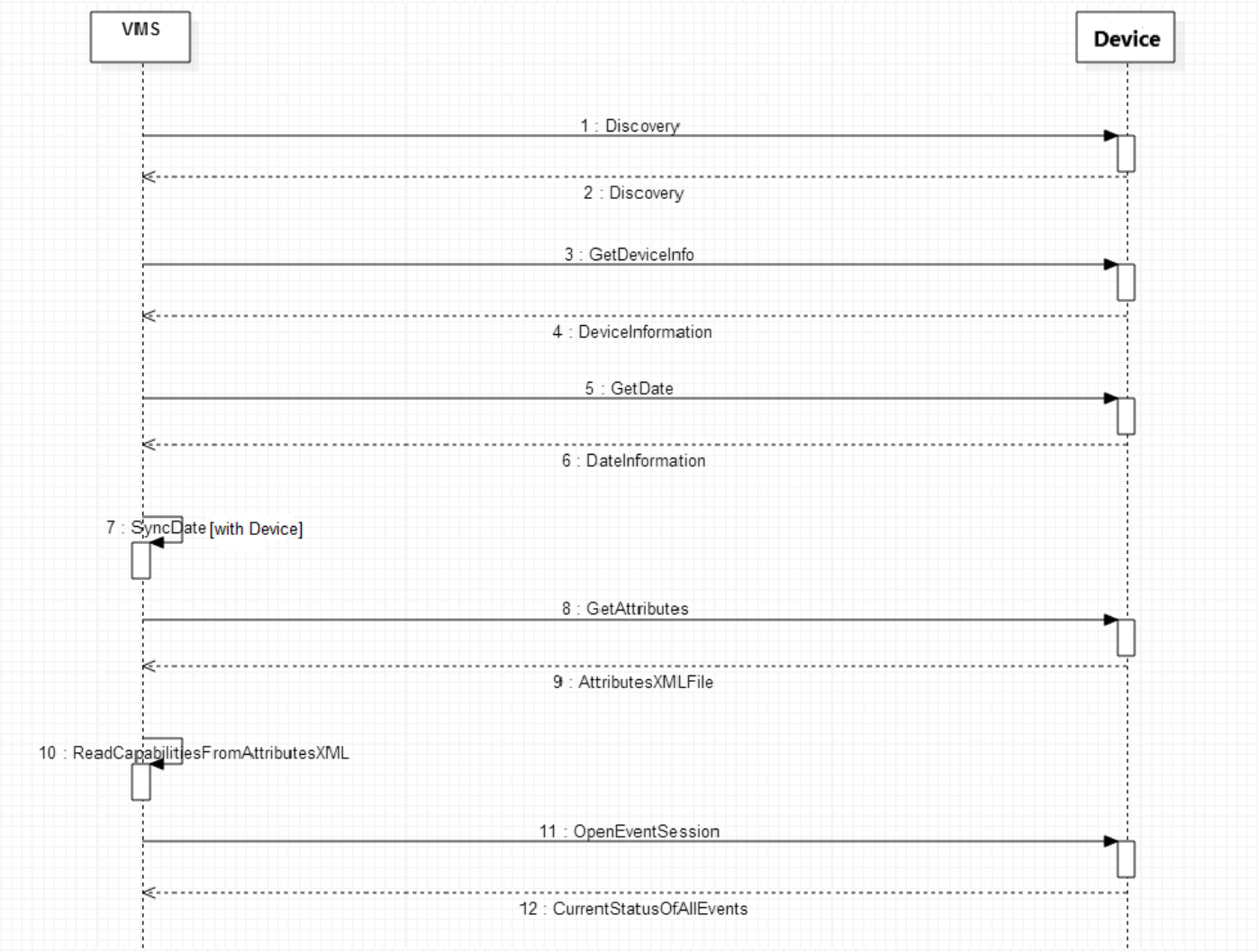
```
http://<DeviceIP>/init-
cgi/pw_init.cgi?msubmenu=setinitpassword&action=set&IsPasswordEncrypted=True
```

POST Payload

```
<base64 encoded 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.

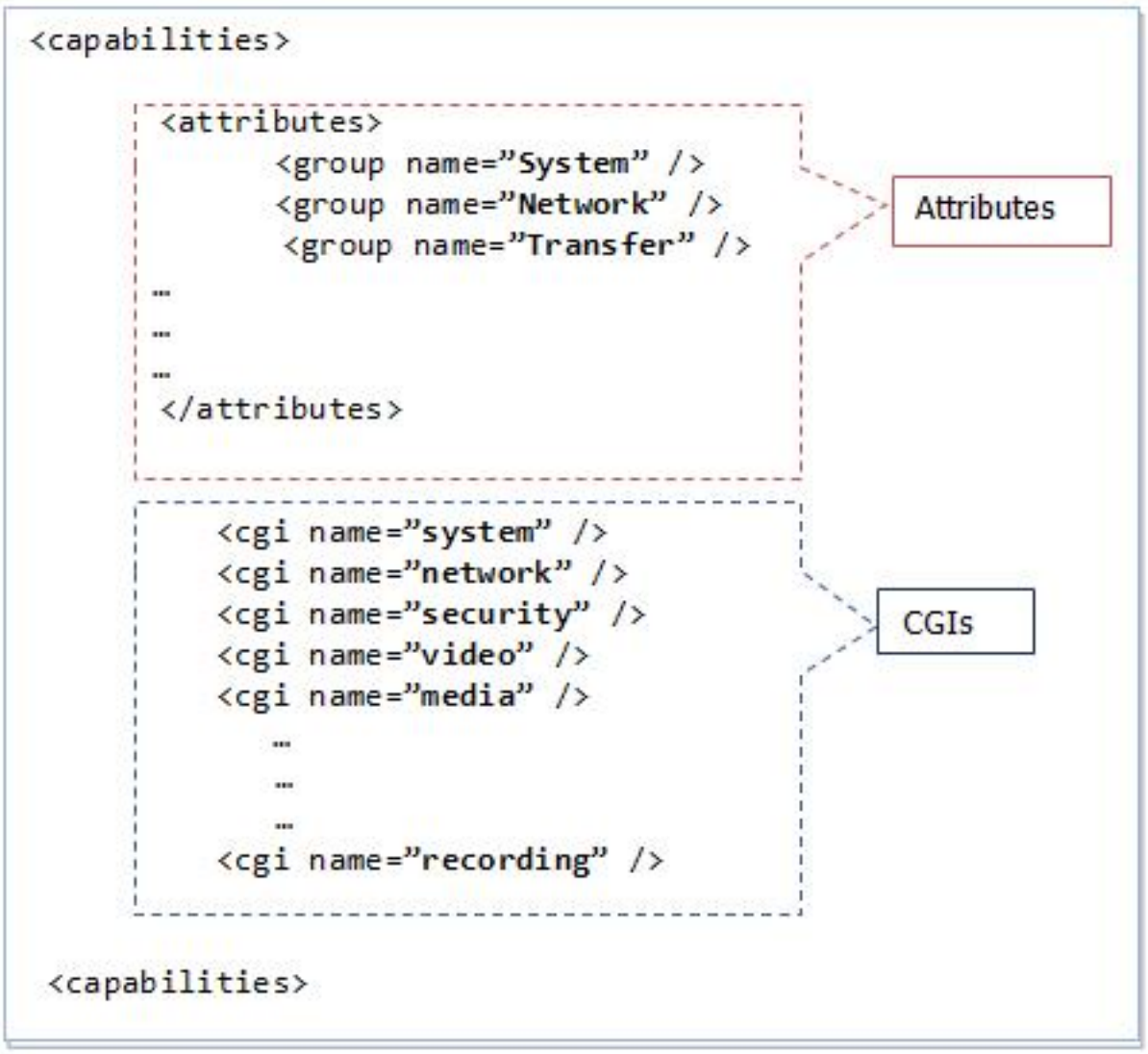
Chapter 5. Basic Setup



5.1. 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.



Attributes will be changed dynamically based on the camera connection.

For more information on the attributes, please refer to [8] SUNAPI_attributes_2.6.2 in the References section.

5.2. 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
```

NVR RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<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
}
```

CAMERA RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```

```
{
    "Model": "PNM-C7083RVD",
    "SerialNumber": "SEP70GRC0000SY",
    "FirmwareVersion": "2.21.01_20220517_R276",
    "BuildDate": "2022.05.17",
    "WebURL": "http://www.hanwhavision.com/",
    "DeviceType": "NWC",
    "ConnectedMACAddress": "00:09:18:6E:12:B0",
    "ISPVersion": "1.00_220504",
    "BootloaderVersion": "       ",
    "CGIVersion": "2.6.1",
    "ONVIFVersion": "20.12",
    "DeviceName": "Camera",
    "DeviceLocation": "Location",
    "DeviceDescription": "Description",
    "Memo": "Memo",
    "Language": "English",
    "PasswordStrength": "Strong",
    "OpenSDKVersion": "4.02_220405",
    "FirmwareGroup": "PNM-C7083RVD"
```

```
}
```

5.3. Date Information

This command will return information about the device's Date settings, such as the Time zone, DST settings, etc. Please refer to [3] SUNAPI_system_2.6.2 in the References section.

> **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
```

NVR RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```

```
{
    "NTPLastUpdatedTime":   "2022-02-13 02:10:43",
    "LocalTime":    "2022-02-13 02:10:43",
    "UTCTime":  "2022-02-13 02:10:43",
    "SyncType": "Manual",
    "NTPURLList":   "203.248.240.140",
    "NTPStatus":    "Fail",
    "DSTEnable":    true,
    "POSIXTimeZone":    "STWT0STWST,M3.5.0/1:00:00,M10.5.0/1:00:00",
    "DateFormat":   "YYYY-MM-DD",
    "TimeFormat":   "HMS24"
}
```

CAMERA RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```

```
{
    "NTPURLList": [
```

```
        "pool.ntp.org",
        "asia.pool.ntp.org",
        "europe.pool.ntp.org",
        "north-america.pool.ntp.org",
        "time.nist.gov"
    ],
    "LocalTime": "2022-05-25 03:32:52",
    "UTCTime": "2022-05-25 03:32:52",
    "SyncType": "Manual",
    "DSTEnable": false,
    "TimeZoneIndex": 33,
    "POSIXTimeZone": "STWT0STWST,M3.5.0/1,M10.5.0"
}
```

5.4. Event Session

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

NVR will send all events by channels, system events, alarm events, configuration change events, etc., to all connected VMS applications. Please refer to [7] SUNAPI_event_2.6.2 in the References section.

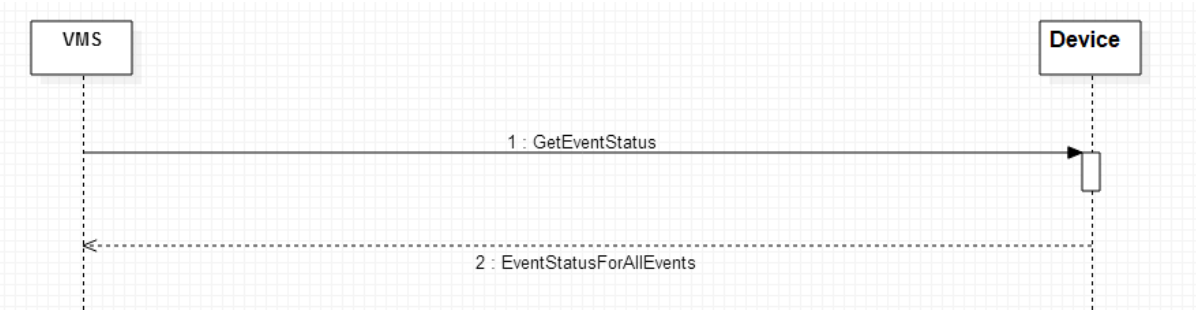
NOTE If the event is "ChangedConfigURI", VMS application has to update the corresponding configuration.

Ex: SNMP Configuration change

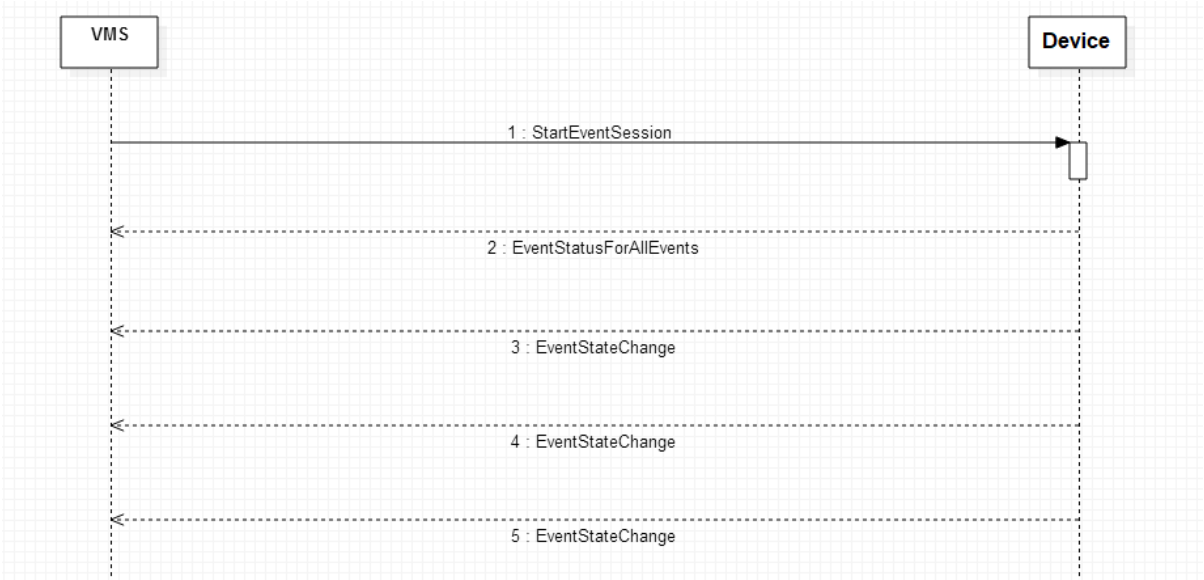
```
Timestamp=2015-05-08T02:18:59Z
SystemEvent.ConfigChange=True
ChangedConfigURI=network.cgi?msubmenu=snmp
```

Event Status has three actions –

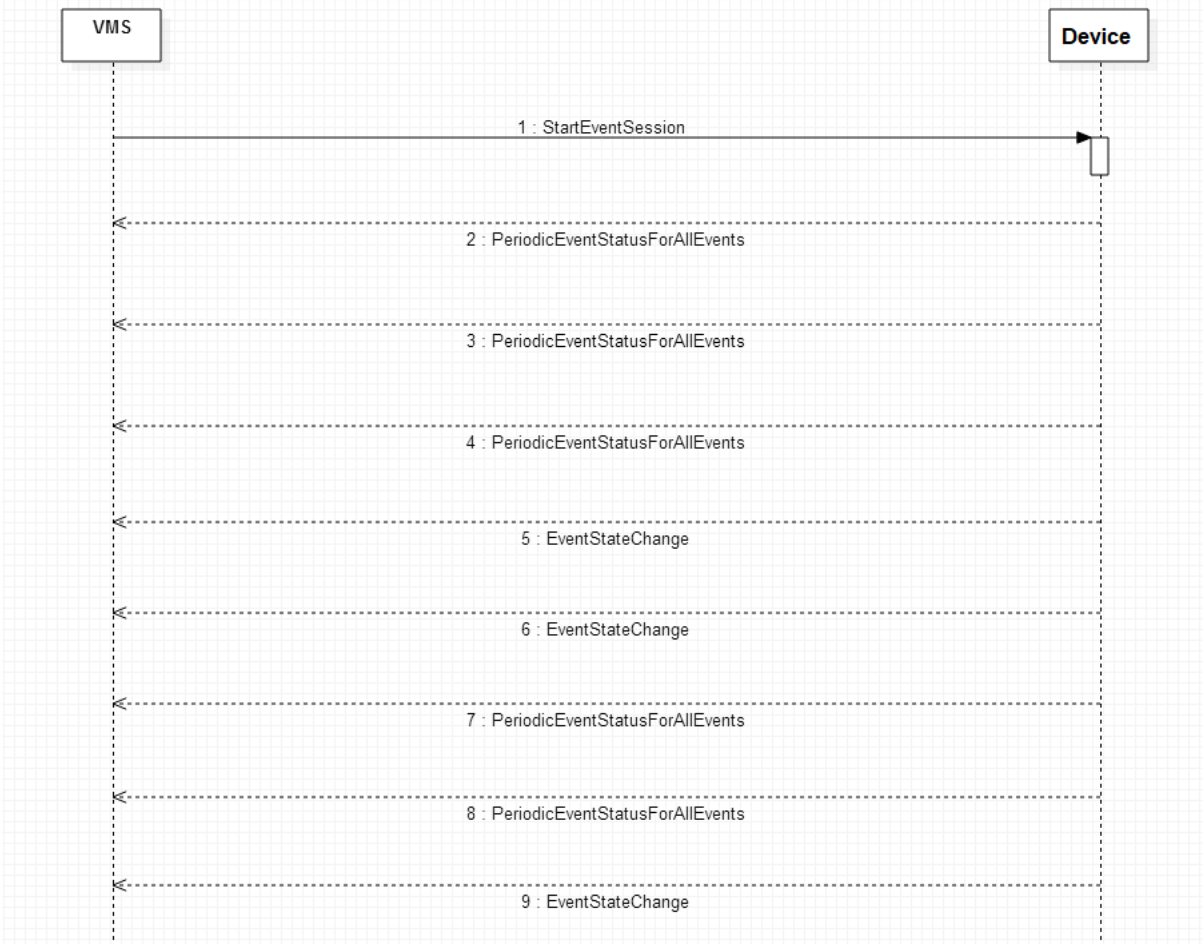
- Check : Gets the current status of all events



- 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

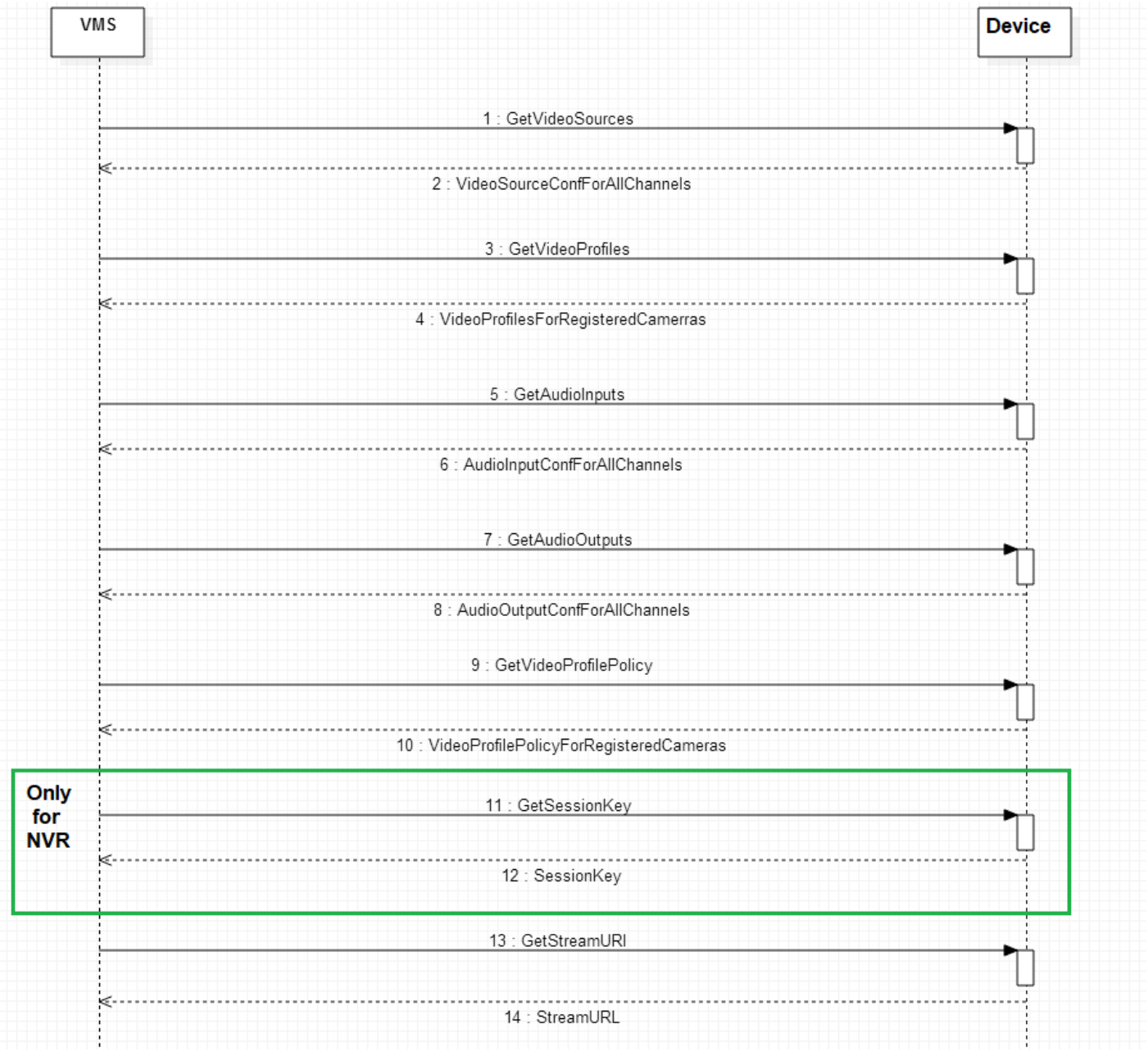
```
http://<DeviceIP>/stw-cgi/eventstatus.cgi?msubmenu=eventstatus&action=check
```

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
```

Chapter 6. Live Stream Setup



6.1. Get Video Sources

This command will return information about all video sources.

For an NVR, it will also provide information on whether the camera is registered or not, whether video is enabled or not, etc. Refer to [4] in the References section 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
```

6.2. Get Video Profiles

This command will return information about all the video profiles.

For an NVR, we can get the video profile information of all registered cameras. Please refer to [4] SUNAPI_video.audio_2.6.2 in the References section for more information.

REQUEST

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

CAMERA RESPONSE

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

```
Channel.0.Profile.1.Name=MJPEG
Channel.0.Profile.1.EncodingType=MJPEG
Channel.0.Profile.1.RTPMulticastEnable=False
Channel.0.Profile.1.RTPMulticastType=IPV4
Channel.0.Profile.1.RTPMulticastAddress=
```

```
Channel.0.Profile.1.RTPMulticastAddressIPv6=
Channel.0.Profile.1.RTPMulticastPort=0
Channel.0.Profile.1.RTPMulticastTTL=5
Channel.0.Profile.1.CropEncodingEnable=False
Channel.0.Profile.1.CropAreaCoordinate=480,360,2080,1560
Channel.0.Profile.1.CropRatio=Manual
Channel.0.Profile.1.Resolution=2560x1920
Channel.0.Profile.1.FrameRate=1
Channel.0.Profile.1.CompressionLevel=10
Channel.0.Profile.1.Bitrate=6144
Channel.0.Profile.1.MJPEG.PriorityType=Bitrate
Channel.0.Profile.1.AudioInputEnable=False
Channel.0.Profile.1.ViewModeType=Overview
Channel.0.Profile.1.IsFixedProfile=True
Channel.0.Profile.1.ProfileToken=DefaultProfile-01-0

Channel.0.Profile.2.Name=H.264
Channel.0.Profile.2.EncodingType=H264
Channel.0.Profile.2.RTPMulticastEnable=False
Channel.0.Profile.2.RTPMulticastType=IPV4
Channel.0.Profile.2.RTPMulticastAddress=
Channel.0.Profile.2.RTPMulticastAddressIPv6=
Channel.0.Profile.2.RTPMulticastPort=0
Channel.0.Profile.2.RTPMulticastTTL=5
Channel.0.Profile.2.CropEncodingEnable=False
Channel.0.Profile.2.CropAreaCoordinate=480,360,2080,1560
Channel.0.Profile.2.CropRatio=Manual
Channel.0.Profile.2.Resolution=2560x1920
Channel.0.Profile.2.FrameRate=30
Channel.0.Profile.2.CompressionLevel=10
Channel.0.Profile.2.Bitrate=7168
Channel.0.Profile.2.H264.BitrateControlType=VBR
Channel.0.Profile.2.H264.PriorityType=FrameRate
Channel.0.Profile.2.H264.GOVLength=60
Channel.0.Profile.2.H264.Profile=High
Channel.0.Profile.2.H264.EntropyCoding=CABAC
Channel.0.Profile.2.H264.SmartCodecEnable=False
Channel.0.Profile.2.H264.MaxGOVLength=240
Channel.0.Profile.2.H264.MinGOVLength=1
Channel.0.Profile.2.H264.DynamicFPSEnable=False
Channel.0.Profile.2.H264.MinDynamicFPS=1
```

```
Channel.0.Profile.2.H264.DynamicGOVEnable=False
Channel.0.Profile.2.H264.DynamicGOVLength=240
Channel.0.Profile.2.H264.MaxDynamicGOVLength=480
Channel.0.Profile.2.AudioInputEnable=False
Channel.0.Profile.2.ViewModeType=Overview
Channel.0.Profile.2.IsFixedProfile=True
Channel.0.Profile.2.IsDigitalPTZProfile=False
Channel.0.Profile.2.ProfileToken=DefaultProfile-02-0
Channel.0.Profile.2.IsFixedFrameRateProfile=False

Channel.0.Profile.3.Name=H.265
Channel.0.Profile.3.EncodingType=H265
Channel.0.Profile.3.RTPMulticastEnable=False
Channel.0.Profile.3.RTPMulticastType=IPV4
Channel.0.Profile.3.RTPMulticastAddress=
Channel.0.Profile.3.RTPMulticastAddressIPv6=
Channel.0.Profile.3.RTPMulticastPort=0
Channel.0.Profile.3.RTPMulticastTTL=5
Channel.0.Profile.3.CropEncodingEnable=False
Channel.0.Profile.3.CropAreaCoordinate=480,360,2080,1560
Channel.0.Profile.3.CropRatio=Manual
Channel.0.Profile.3.Resolution=2560x1920
Channel.0.Profile.3.FrameRate=30
Channel.0.Profile.3.CompressionLevel=10
Channel.0.Profile.3.Bitrate=4608
Channel.0.Profile.3.H265.BitrateControlType=VBR
Channel.0.Profile.3.H265.PriorityType=FrameRate
Channel.0.Profile.3.H265.GOVLength=60
Channel.0.Profile.3.H265.Profile=Main
Channel.0.Profile.3.H265.EntropyCoding=CABAC
Channel.0.Profile.3.H265.SmartCodecEnable=False
Channel.0.Profile.3.H265.MaxGOVLength=240
Channel.0.Profile.3.H265.MinGOVLength=1
Channel.0.Profile.3.H265.DynamicFPSEnable=False
Channel.0.Profile.3.H265.MinDynamicFPS=1
Channel.0.Profile.3.H265.DynamicGOVEnable=False
Channel.0.Profile.3.H265.DynamicGOVLength=240
Channel.0.Profile.3.H265.MaxDynamicGOVLength=480
Channel.0.Profile.3.AudioInputEnable=False
Channel.0.Profile.3.ViewModeType=Overview
Channel.0.Profile.3.IsFixedProfile=True
```

```
Channel.0.Profile.3.IsDigitalPTZProfile=False
Channel.0.Profile.3.ProfileToken=DefaultProfile-03-0
Channel.0.Profile.3.IsFixedFrameRateProfile=False

Channel.0.Profile.10.Name=MOBILE
Channel.0.Profile.10.EncodingType=H264
Channel.0.Profile.10.RTPMulticastEnable=False
Channel.0.Profile.10.RTPMulticastType=IPV4
Channel.0.Profile.10.RTPMulticastAddress=
Channel.0.Profile.10.RTPMulticastAddressIPv6=
Channel.0.Profile.10.RTPMulticastPort=0
Channel.0.Profile.10.RTPMulticastTTL=5
Channel.0.Profile.10.CropEncodingEnable=False
Channel.0.Profile.10.CropAreaCoordinate=480,360,2080,1560
Channel.0.Profile.10.CropRatio=Manual
Channel.0.Profile.10.Resolution=320x240
Channel.0.Profile.10.FrameRate=10
Channel.0.Profile.10.CompressionLevel=10
Channel.0.Profile.10.Bitrate=2048
Channel.0.Profile.10.H264.BitrateControlType=VBR
Channel.0.Profile.10.H264.PriorityType=FrameRate
Channel.0.Profile.10.H264.GOVLength=20
Channel.0.Profile.10.H264.Profile=High
Channel.0.Profile.10.H264.EntropyCoding=CABAC
Channel.0.Profile.10.H264.SmartCodecEnable=False
Channel.0.Profile.10.H264.MaxGOVLength=80
Channel.0.Profile.10.H264.MinGOVLength=1
Channel.0.Profile.10.H264.DynamicFPSEnable=False
Channel.0.Profile.10.H264.MinDynamicFPS=1
Channel.0.Profile.10.H264.DynamicGOVEnable=False
Channel.0.Profile.10.H264.DynamicGOVLength=80
Channel.0.Profile.10.H264.MaxDynamicGOVLength=160
Channel.0.Profile.10.AudioInputEnable=False
Channel.0.Profile.10.ViewModeType=Overview
Channel.0.Profile.10.IsFixedProfile=False
Channel.0.Profile.10.IsDigitalPTZProfile=False
Channel.0.Profile.10.ProfileToken=DefaultProfile-04-0
Channel.0.Profile.10.IsFixedFrameRateProfile=False
```

NVR 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
```

6.3. Get Audio Inputs

This command will return information about audio the input configuration, such as enabled statuses, encoding types, etc., for all the channels. Please refer to [4] SUNAPI_video.audio_2.6.2 in the References section 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
```

6.4. Get Audio Outputs

This command will return information about the audio talk configuration, such as the enabled/disabled statuses, decoding types, etc., for all the channels. Please refer to [4] SUNAPI_video.audio_2.6.2 in the References section 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
```

6.5. Get Video Profile Policy

This command will return information about which profile is configured for what purpose. For a camera, we can check which profile is used as Default, Event Profile and Recording Profile. For an NVR, we can check which profile is used for Live, Recording and Network.

Please refer to [4] SUNAPI_video.audio_2.6.2 in the References section for more information.

REQUEST

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

NVR 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
```

CAMERA RESPONSE

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

```
Channel.0.DefaultProfile=2
Channel.0.EventProfile=1
Channel.0.RecordProfile=1
```

6.6. Get Session Key

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

Please refer to [4] SUNAPI_video.audio_2.6.2 in the References section for more information.

NOTE | This functionality is NVR specific

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
```

6.7. Get Stream URI For Live

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

Please refer to [4] SUNAPI_video.audio_2.6.2 in the References section for more information.

NVR REQUEST

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

NVR RESPONSE

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

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

CAMERA REQUEST

```
http://192.168.75.194/stw-
cgi/media.cgi?msubmenu=streamuri&action=view&Channel=0&Profile=1&MediaType=L
ive&Mode=Full&StreamType=RTPUnicast&TransportProtocol=TCP&RTSPOverHTTP=False
```

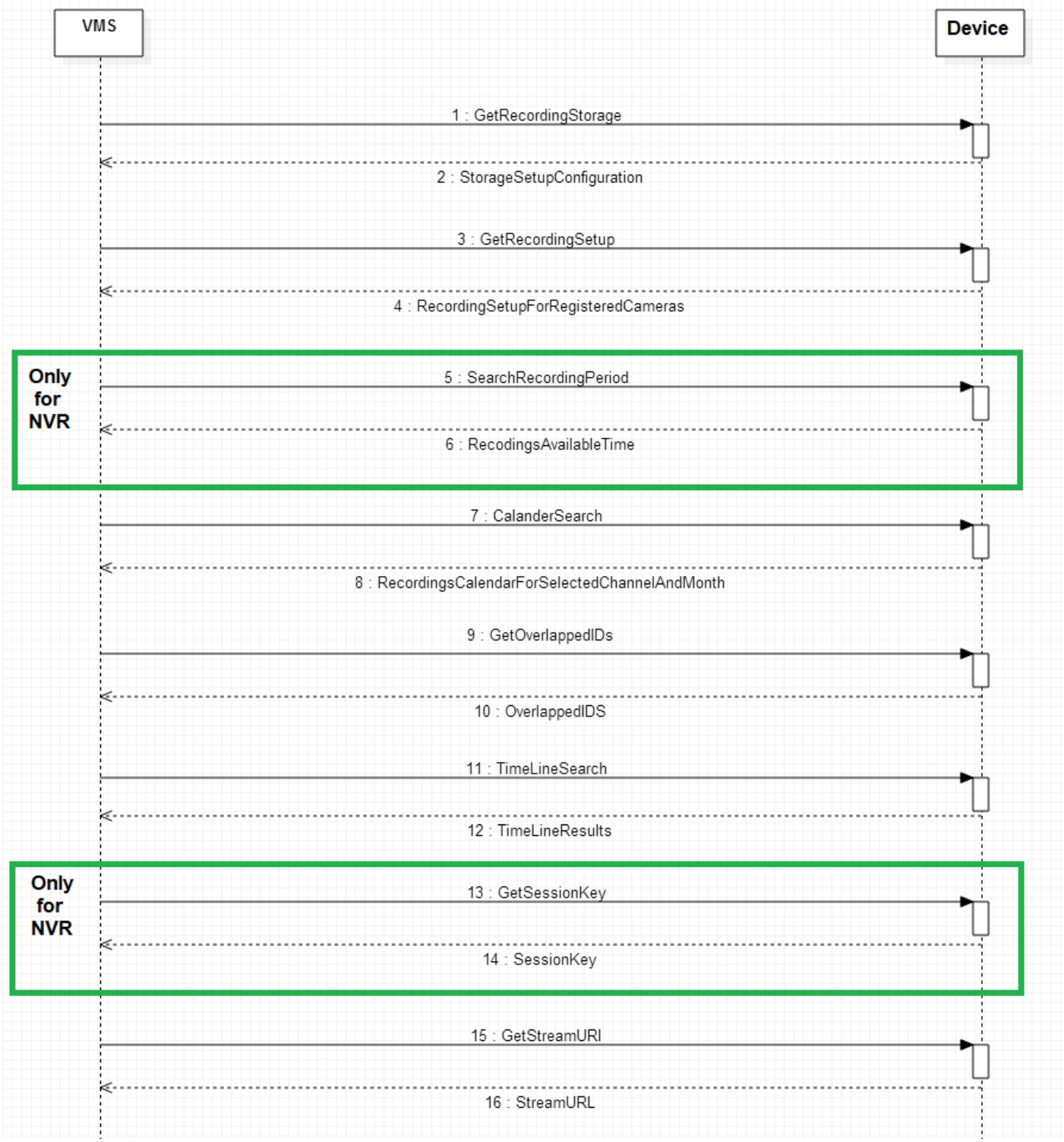
CAMERA RESPONSE

```
HTTP/1.0 200 OK
```

```
Content-type: text/plain
<Body>
```

```
URI=rtsp://192.168.75.194:554/0/profile1/media.smp
```

Chapter 7. Playback Setup



7.1. Get Storage Information

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

Please refer to [6] SUNAPI_recording_2.6.2 in the References section 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
```

7.2. Get Recording Setup

This method will return the device's current recording configuration for all the channels. Please refer to [6] SUNAPI_recording_2.6.2 in the References section 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
```

7.3. Search Recording Period

This command will return the overall recording duration in NVR. It retrieves the recording start and end time that are available from the storage.

NOTE	This only applies to NVR

Please refer to [6] SUNAPI_recording_2.6.2 in the References section 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
```

7.4. Calendar Search

This command is used to retrieve information on the availability of recordings for the selected month and channels. Please refer to [6] SUNAPI_recording_2.6.2 in the References section 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
```

7.5. 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 the time in the set was changed to 10:00:00, the recording will have a 4-hour duration and two media tracks. To access these media individually we would need the overlapped ID information. This will be passed along with the playback RTSP URL and timeline search. Please refer to [6] SUNAPI_recording_2.6.2 in the References section 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
```

7.5.1. 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.

7.5.2. 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.

7.6. 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] SUNAPI_recording_2.6.2 in the References section for more imformation.

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=201
8-03-07T00:00:01Z&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
```

7.7. Get Stream URI for Playback

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

> **NOTE** For a camera, the Playback and Backup URL are the same.

Please refer to [4] SUNAPI_video.audio_2.6.2 in the References section for more information.

NVR REQUEST

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

NVR RESPONSE

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

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

CAMERA REQUEST

```
http://192.168.75.194/stw-
cgi/media.cgi?msubmenu=streamuri&action=view&Channel=0&MediaType=Backup&Mode
=Full&StreamType=RTPUnicast&TransportProtocol=TCP&RTSPOverHTTP=False&Overlap
pedID=0&Profile=1
```

CAMERA RESPONSE

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

```
URI=rtsp://192.168.75.194:554/0/recording/backup.smp
```

Chapter 8. PTZ Operation

PTZ operation can be performed using the PTZ CGI service. In this document we will discuss only basic PTZ functionality. Please refer to [5] SUNAPI_ptz_2.6.2 in the References section for more information.

8.1. 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
```

8.2. Stop

To stop all PTZ operation

REQUEST

```
http://<DeviceIP>/stw-
cgi/ptzcontrol.cgi?msubmenu=stop&action=control&OperationType=All&Channel=0
```

8.3. 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
```

8.4. Identifying Capability

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

8.4.1. Real PTZ

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

8.4.2. Zoom Only

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

8.4.3. PTRZ

CGI section:

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

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

8.4.4. DPTZ

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

Profile-based DPTZ support:

If any of the below parameters is listed, DPTZ is only based on the selected profile. Otherwise, DPTZ is global and applicable to all profiles in the channel.

CGI section,

```
media/videoprofile/IsDigitalPTZProfile
```

8.4.5. 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
```

8.4.6. 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
```

Chapter 9. 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
```

Chapter 10. RTSP

10.1. RTSP Live Session

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

Generally for NVR, after creating a session ID for live and getting the stream URI, we can establish a LIVE RTSP session.

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

NOTE In an NVR, 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).
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 specifications. Please refer to [12] ONVIF Streaming Spec in the References section.

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.

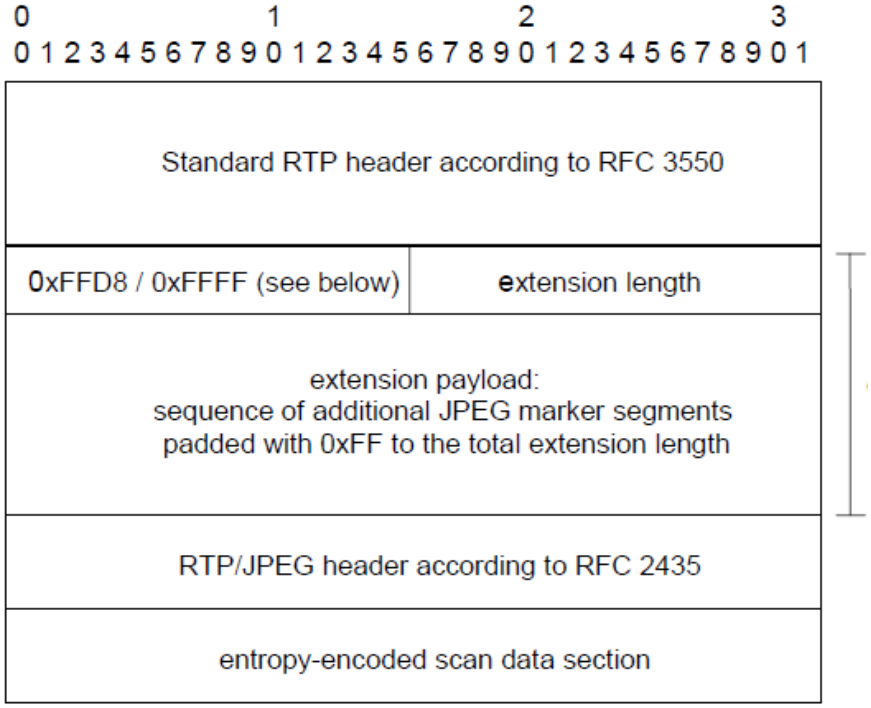
MJPEG Streaming Over 3 MP:

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

<RTP HEADER> with extension flag set

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

<RFC 2435>



10.2. RTSP Playback Session

To initiate playback streaming and playback RTSP, the URL is required.

For NVR, session is also required. 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/<Start Time>-<End
Time>/OverlappedID=<overlapid>/play.smp
```

[Type4]

```
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>&iframe
```

[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.

The 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 specifications. Please refer to [12] ONVIF Streaming Spec in the References section.

The time should be specified in the following format:

- <YYYYMMDDTHHMMSS> (e.g., 20141206T111500) for local time and <YYYYMMDDTHHMMSSZ> (e.g., 20141206T110000Z) for UTC time on the NVR.
- <YYYYMMDDHHMMSS> (e.g., 20141206111500) for local time on the camera.

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 playback will follow the ONVIF streaming spec format. Please refer to [12] ONVIF Streaming Spec in the References section.

Table 3: RTP packet layout

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 4: RTP packet with JPEG header layout

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

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.

10.2.1. 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.

NOTE NVR supports -64x to 64x. Camera supports -8x to 8x.

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

10.2.2. 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.

10.3. Backup Session

In SUNAPI, video backup is achieved using a backup RTSP session and is as follows:

> **NOTE** Backup URL is only applicable to NVR

[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=<s
id>
```

[Type4]

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

[Type5]

```
rtsp://<DeviceIP>:558/BackupChannel/<chid>/media.smp/start=<starttime>&end=<
endtime>&overlap=<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.

Chapter 11. POS

This section explains how to achieve POS (Point of Sale) integration.

> **NOTE** This section is applicable only to NVR

11.1. 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*"/>
```

11.2. 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&Ena
ble=True&Port=8001&EventPlaybackStartTime=10&ReceiptStart=Start&ReceiptEnd=E
```

```
nd&EncodingType=UTF-8&ChannelIDList=7,8,9,10
```

REQUEST

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

11.3. 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&T
otalAmount=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&Keyword
Condition=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
```

11.4. 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
```

Chapter 12. Metadata Search

NOTE | NVR Only

12.1. 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

```
http://55.101.54.147/stw-
cgi/attributes.cgi/recording/storage/set/Channel[<parameter
name="MaxResults" response="true" request="true"><dataType>]<int max="1000"
min="1"/></dataType></parameter>
```

12.2. Start Search

Request without any filters

REQUEST

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

Request with Overlapped ID

REQUEST

```
http://<DeviceIP>/stw-
cgi/recording.cgi?msubmenu=metadata&action=control&Mode=Start&MetadataType=P
OS&FromDate=2016-07-15T00:00:00Z&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=P
OS&FromDate=2016-07-15T00:00:00Z&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=P
OS&FromDate=2016-07-15T00:00:00Z&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=P
OS&FromDate=2016-07-15T00:00:00Z&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=P
OS&FromDate=2016-07-15T00:00:00Z&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=P
OS&FromDate=2016-07-15T00:00:00Z&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=P
OS&FromDate=2016-07-15T00:00:00Z&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=P
OS&FromDate=2016-07-15T00:00:00Z&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)

12.3. Cancel Search

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

12.4. Get Search Status

To get search status:

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

12.5. Renew Search Token

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

TEXT RESPONSE

```
OK
```

12.6. 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&MaxResults=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.

Chapter 13. Bypass

This section explains how the bypass feature can be used in NVR to send commands directly to a camera registered in an NVR.

NOTE | NVR Only

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

Chapter 14. 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="QueueManagemen
t"/>
```

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&Enab
le=True&CalibrationMode=ObjectSize&ObjectSizeCoordinates=2992,1390,2,1390
```

REQUEST

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

To change the Queue configuration

REQUEST

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=queuemanagementsetup&action=set&Channel=0&Queu
e.1.Name=Queue1&Queue.1.Enable=True&Queue.1.Coordinates=1316,1596,2991,1596&
Queue.1.Level.High.Count=6&Queue.1.Level.High.AlarmEnable=True&Queue.1.Level
.High.Threshold=180&Queue.1.Level.Medium.AlarmEnable=True&Queue.1.Level.Medi
um.Threshold=180&Queue.2.Name=Queue2&Queue.2.Enable=True&Queue.2.Coordinates
=2316,2596,3991,2596&Queue.2.Level.High.Count=5&Queue.2.Level.High.AlarmEnab
le=True&Queue.2.Level.High.Threshold=150&Queue.2.Level.Medium.AlarmEnable=Tr
ue&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&Schedu
leType=Weekly&WeekDay=MON
```

REQUEST

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

REQUEST

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

To get the supported event actions for Queue Management

REQUEST

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

TEXT 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=Qu
eueEvent
```

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&F
romDate=2017-01-17T00:00:00Z&ToDate=2017-01-
17T23:59:59Z&Queue.1.AveragePeople=True&Queue.2.AveragePeople=True&Queue.3.A
veragePeople=True
```

REQUEST

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

REQUEST

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

```
ium.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=1
23456
```

JSON 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"
                    ]
                }
            ]
        }
    ]
}
```

Chapter 15. 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=PeopleCount-Master
Channel.0.Enable=True
Channel.0.ReportEnable=True
Channel.0.ReportFilename=peoplecountreport
Channel.0.ReportFileType=XLSX
Channel.0.CalibrationMode=CameraHeight
Channel.0.CameraHeight=300
Channel.0.ObjectSizeCoordinate=1316,1316,1675,1675
Channel.0.Line.1.Name=Gate1
Channel.0.Line.1.Enable=True
Channel.0.Line.1.Mode=LeftToRightIn
Channel.0.Line.1.Coordinate=1043,1875,2875,1943
Channel.0.Line.2.Name=Gate2
Channel.0.Line.2.Enable=True
Channel.0.Line.2.Mode=LeftToRightIn
Channel.0.Line.2.Coordinate=2912,893,1206,706
```

JSON RESPONSE

```
{
    "PeopleCount": [
        {
            "Channel": 0,
```

```
            "MasterName": "PeopleCount-Master",
            "Enable": true,
            "ReportEnable": true,
            "ReportFilename": "peoplecountreport",
            "ReportFileType": "XLSX",
            "CalibrationMode": "CameraHeight",
            "CameraHeight": 300,
            "ObjectSizeCoordinate": [
                {
                    "x": 1316,
                    "y": 1316
                },
                {
                    "x": 1675,
                    "y": 1675
                }
            ],
            "Lines": [
                {
                    "Line": 1,
                    "Mode": "LeftToRightIn",
                    "Name": "Gate1",
                    "Enable": true,
                    "Coordinates": [
                        {
                            "x": 1043,
                            "y": 1875
                        },
                        {
                            "x": 2875,
                            "y": 1943
                        }
                    ]
                },
                {
                    "Line": 2,
                    "Mode": "LeftToRightIn",
                    "Name": "Gate2",
                    "Enable": true,
                    "Coordinates": [
                        {
```

```
                            "x": 2912,
                            "y": 893
                        },
                        {
                            "x": 1206,
                            "y": 706
                        }
                    ]
                }
            ]
        }
    ]
}
```

To update the configuration

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

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

```
http://<DeviceIP>/stw-
cgi/eventsources.cgi?msubmenu=peoplecount&action=set&Channel=0&Line.1.Name=F
rontGate&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&ReportFileName=PeopleCountReport&ReportFileType=TXT
```

To remove exclude region

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

```
1
```

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": "Gate1",
                    "InCount": 20,
                    "OutCount": 15
                },
                {
                    "LineIndex": 2,
                    "Name": "Gate2",
                    "InCount": 56,
                    "OutCount": 52
                }
            ]
        }
    ]
}
```

TEXT RESPONSE

```
Channel.0.LineIndex=1
Channel.0.LineIndex.1.Name=Gate1
Channel.0.LineIndex.1.InCount=20
Channel.0.LineIndex.1.OutCount=15
Channel.0.LineIndex=2
Channel.0.LineIndex.2.Name=Gate2
Channel.0.LineIndex.2.InCount=56
Channel.0.LineIndex.2.OutCount=52
```

To start a People Count search

People count search is an asynchronous search, initially search session is started as below, resulting search token is used later to check search status and to get the results.

> **NOTE** Here, PeopleCount-Master is **fixed** name for the camera whereas, Gate1 or Gate2 is actual name of the line in configuration.

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=peoplecountsearch&action=control&Channel=0&Mode=Start&FromDate=2016-07-01T00:00:00Z&ToDate=2016-07-01T23:59:59Z&Camera.PeopleCount-Master.Line.Gate1.Direction=In,Out&Camera.MasterCamera.Line.Gate2.Direction=In,Out
```

RESPONSE

```
{
    "SearchToken": "PeopleCount-2016-07-24T02:32:51-614"
}
```

To cancel the People Count search

REQUEST

```
http://<DeviceIP>/stw-cgi/recording.cgi?msubmenu=peoplecountsearch&action=control&Mode=Cancel&SearchToken=PeopleCount-2016-07-24T02:32:51-614
```

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&SearchT
```

```
oken=PeopleCount-2016-07-24T02:32:51-614
```

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&Search
Token=PeopleCount-2016-07-24T02:32:51-614
```

JSON RESPONSE

```
{
    "ResultInterval": "Hourly",
    "PeopleCountSearchResults": [
        {
            "Camera": "PeopleCount-Master",
            "LineResults": [
                {
                    "Line": "Gate1",
                    "DirectionResults": [
                        {
                            "Direction": "In",
                            "Result":
"0,0,0,0,0,0,2,0,0,0,0,0,0,6,0,0,0,0,0,3,0,2,2"
                        },
                        {
                            "Direction": "Out",
                            "Result":
"0,0,0,0,0,0,1,0,0,0,0,0,0,2,0,0,0,0,0,2,0,5,3"
                        }
                    ]
                },
                {
                    "Line": "Gate2",
                    "DirectionResults": [
```

```
                        {
                            "Direction": "In",
                            "Result":
"0,0,0,0,0,0,0,0,0,0,0,0,1,1,0,0,0,0,0,11,0,0,0"
                        },
                        {
                            "Direction": "Out",
                            "Result":
"0,0,0,0,0,0,2,0,0,1,1,0,0,1,6,0,0,0,0,0,11,0,3,2"
                        }
                    ]
                }
            ]
        }
    ]
}
```

TEXT RESPONSE

```
ResultInterval = Hourly
Camera.PeopleCount-Master.Line.Gate1.Direction.In.Result =
0,0,0,0,0,0,2,0,0,0,0,0,0,0,6,0,0,0,0,0,3,0,2,2
Camera.PeopleCount-Master.Line.Gate1.Direction.Out.Result =
0,0,0,0,0,0,1,0,0,0,0,0,0,0,2,0,0,0,0,0,2,0,5,3
Camera.PeopleCount-Master.Line.Gate1.Direction.In.Result =
0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,0,0,0,0,0,11,0,0,0
Camera.PeopleCount-Master.Line.Gate2.Direction.Out.Result =
0,0,0,0,0,0,2,0,0,1,1,0,0,1,6,0,0,0,0,0,11,0,3,2
```

Chapter 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="ThermalFeature
s"/>
```

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://<Device IP>/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://<Device IP>/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="TemperatureCha
ngeDetection"/>
```

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

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

16.4. Configuring Temperature Change Detection

16.4.1. Options Command

This gives the supported gap both in Celsius and Fahrenheit.

```
http://<Device IP>/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://<Device IP>/stw-cgi/eventsources.cgi?msubmenu=temperaturechangedetection&action=set&Channel=0&Enable=True
```

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://<Device IP>/stw-cgi/eventsources.cgi?msubmenu=temperaturechangedetection&action=set&Channel=0&TemperatureChange.ROI.1.Mode=Average&TemperatureChange.ROI.1.Gap=60&TemperatureChange.ROI.1.DetectionPeriod=11&TemperatureChange.ROI.1.Coordinates=142,176,477,386
```

16.4.4. View

```
http://<Device IP>/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:NotificationMessage>
    <wsnt:Topic
Dialect="http://www.onvif.org/ver10/tev/topicExpression/ConcreteSet">tns1:Vi
deoSource/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>
```

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/image.cgi?msubmenu=spottemperaturereading&action=view&Channel=0&ScreenRe
solution=640x480&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.Coordinate=63,37,346,205&ROI.1.TemperatureType=Maximum&ROI.1.DetectionType=Above&ROI.1.ThresholdTemperature=10&ROI.1.Duration=26&ROI.1.NormalizedEmissivity=33&ROI.1.AreaOverlay=True&ROI.1.AvgTemperatureOverlay=True&ROI.1.MinTemperatureOverlay=True&ROI.1.MaxTemperatureOverlay=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&Cha
nnel=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:Vi
deoAnalytics/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:RuleEngi
ne/Radiometry/TemperatureAlarm</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
```

Chapter 17. Dual Channel Thermal Camera Integration

17.1. Overview

17.1.1. Dual Channel

TNM-3620TDY has two channels, each looking in the same direction and filming the same scene, consisting of one visible channel and one thermal channel. The first channel is a general image channel, and the second channel is a thermal imaging channel.

17.1.2. Thermal Image Position Calibration

You can start a calibration process to compensate for the difference in image resolution and the minute position error between the two channels. Refer to image cgi stereosensorcalibrarion submenu.

17.1.3. Thermal Detection Mode

TNM-3620TDY has two different thermal detection modes: Body Temperature Detection mode and Normal mode. Other events are restricted while the camera is running in the Body Temperature Detection mode. The Normal mode provides the same way of representing events as before, such as Box Temperature Detection. If the thermal detection mode changes, the attributes of the camera will also change, and it can detect through the AttributeUpdate event. Refer to eventsources cgi thermaldetectionmode submenu.

Note that changing the thermal detection mode means changing to a completely different camera (because supported events and image settings change depending on the mode), so it is recommended to re-register your surveillance system.

17.2. Estimated Body Temperature Detection

17.2.1. Body Temperature Detection

The Body Temperature Detection mode is a mode in which the temperature in a specific area is measured by recognizing a person’s face. This event setting can only be set for the second channel, "thermal channel," but the event is triggered identically on both channels. Refer to eventsources cgi bodytemperaturedetection submenu for configuring the body temperature detection settings

17.2.2. Temperature Measurement Region Setting

The body temperature value is measured within the detected face area square. With the temperature measurement region setting, the user can adjust the size and position of the detected face area square to measure the body temperature value. Refer to eventsources cgi temperaturemeasurementregion submenu for changing the temperature measurement region settings

17.2.3. Improve Temperature Measurement Accuracy using blackbody device

TNM-3620TDY provides blackbody and radiometry settings. It is used to improve the accuracy of body temperature measurement. These settings work only when the camera is running in the Body

Temperature Detection mode. Refer to imagge cgi blackbodyconfig submenu for changing the settings.

17.2.4. Supported Events difference-based thermal detection mode

Supported events vary depending on the thermal detection mode set for the camera, and supported events are different for each channel; you can check image information for each channel using the following command:

http://<Device IP>/stw-cgi/attributes.cgi/attributes/Eventsource/Support

You can check whether the newly added BodyTemperatureDetection feature is supported with the following command:

```
http://<Device IP>/stw-
cgi/attributes.cgi/attributes/Eventsource/Support/[ChannelID]/
BodyTemperatureDetection
```

Supported Events	Normal Mode	Body Temperature Mode
Temperature detection	O	X
Motion detection	O	X
Tampering detection	O	X
IVA	O	X
Audio detection	O	X
Estimated body temperature detection	X	O

17.3. Sample ONVIF Event for Body temperature detection

NOTE Temperature measured in Kelvin

```
<wsnt:NotificationMessage xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2">
    <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">tns1:RuleEngine/Detection/Body
Temperature</wsnt:Topic>
    <wsnt:Message>
        <tt:Message UtcTime="2020-07-14T15:54:44Z"
xmlns:tt="https://www.onvif.org/ver10/schema/">
            <tt:Source>
                <tt:SimpleItem Name="VideoSource" Value="VideoSouceToken-
```

```
1"/>
                <tt:SimpleItem Name="RuleName"
Value="BodyTemperatureDetectionRule-1"/>
            </tt:Source>
            <tt:Data>
                <tt:SimpleItem Name="State" Value="true"/>
                <tt:SimpleItem Name="ObjectID" Value="100023"/>
                <tt:SimpleItem Name="Temperature" Value="312.0"/>
            </tt:Data>
        </tt:Message>
    </wsnt:Message>
</wsnt:NotificationMessage>
```

17.4. BodyTemperatureDetection SUNAPI event status example

REQUEST

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

TEXT RESPONSE

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

```
AlarmInput.1=False
AlarmOutput.1=False
AlarmOutput.2=False
Channel.0.BodyTemperatureDetection=True
Channel.1.BodyTemperatureDetection=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
```

JSON RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```

```
{
    "AlarmInput": {
        "1": false
    },
    "AlarmOutput": {
        "1": false,
        "2": false
    },
    "ChannelEvent": [
        {
            "Channel": 0,
            "BodyTemperatureDetection": true
        },
        {
            "Channel": 1,
            "BodyTemperatureDetection": true
        }
    ],
    "SystemEvent": {
        "TimeChange": false,
        "PowerReboot": false,
        "FWUpdate": false,
        "FactoryReset": false,
        "ConfigurationBackup": false,
        "ConfigurationRestore": false,
        "ConfigChange": false,
```

```
        "SDFormat": false,
        "SDFail": false,
        "SDFull": false,
        "SDInsert": false,
        "SDRemove": true,
        "NASConnect": false,
        "NASDisconnect": true,
        "NASFail": false,
        "NASFull": false,
        "NASFormat": false
    }
}
```

17.5. BodyTemperatureDetection SUNAPI schema-based event status example

17.5.1. Getting event status schema of body temperature detection

REQUEST

```
http://<Device IP>/stw-cgi/ stw-
cgi/eventstatus.cgi?msubmenu=eventstatusschema&action=view&EventName=BodyTem
peratureDetection
```

TEXT RESPONSE

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

```
EventStatus.1.Name=BodyTemperatureDetection
EventStatus.1.Schema.1.Name=Channel.<int>.BodyTemperatureDetection
EventStatus.1.Schema.1.Value=<boolean>
```

JSON RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```

```
{
    "type": "array",
    "items": [
        {
            "type": "object",
            "properties": {
                "Time": {
                    "type": "string"
                },
                "EventName": {
                    "enum": [
                        "BodyTemperatureDetection"
                    ]
                },
                "Source": {
                    "type": "object",
                    "properties": {
                        "Channel": {
                            "type": "number"
                        },
                    }
                },
                "Data": {
                    "type": "object",
                    "properties": {
                        "State": {
                            "type": "boolean"
                        }
                    }
                }
            }
        }
    ]
}
```

17.5.2. Getting scheme-based event status

REQUEST

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

TEXT RESPONSE

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

```
AlarmInput.1=False
AlarmOutput.1=False
AlarmOutput.2=False
Channel.0.BodyTemperatureDetection=True
Channel.1.BodyTemperatureDetection=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
```

JSON RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```

```
{
    "EventStatus": [
        {
            "EventName": "AlarmOutput",
            "Time": "2020-08-20T12:03:08.454+00:00",
```

```
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "BodyTemperatureDetection",
            "Time": "2020-08-20T12:03:08.454+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "BodyTemperatureDetection",
            "Time": "2020-08-20T12:03:08.454+00:00",
            "Source": {
                "Channel": 1
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.TimeChange",
            "Time": "2020-08-20T12:03:08.454+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
    ……
    ]
}
```

17.6. Metadata format for body temperature detection

Follows ONVIF metadata format and temperature unit is in Kelvin.

```
<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:Class>
                        <tt:Type Likelihood="0.8">HumanFace
                        </tt:Type>
                    </tt:Class>
                    <tt:HumanFace>
                        <fc:Temperature>311.75</fc:Temperature>
                    </tt:HumanFace>
                </tt:Appearance>
            </tt:Object>
        </tt:Frame>
    </tt:VideoAnalytics>
</tt:MetadataStream>
```

Chapter 18. 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.

18.1. 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.

18.2. Line Rule

18.2.1. Set operation

```
http://<Device IP>/stw-
cgi/eventsources.cgi?msubmenu=videoanalysis2&action=set&Channel=0&Line.1.Coo
rdinate=612,334,1815,1434&Line.1.Mode=Right&DetectionType=MDAndIV&Line.1.Obj
ectTypeFilter=Vehicle,Person&Line.1.RuleName=boundaryrule1
```

18.2.2. 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
```

```
                }
            ]
        }
    ]
}
```

18.3. Area Rule

18.3.1. Set operation

```
http://<Device IP>/stw-
cgi/eventsources.cgi?msubmenu=videoanalysis2&action=set&Channel=0&DefinedAre
a.1.Coordinate=488,638,1971,282,2335,998,1839,1618&DefinedArea.1.Type=Inside
&DefinedArea.1.Mode=AppearDisappear,Entering,Exiting,Intrusion,Loitering&Def
inedArea.1.AppearanceDuration=10&DefinedArea.1.LoiteringDuration=10&DefinedA
rea.1.IntrusionDuration=0&DefinedArea.1.ObjectTypeFilter=Vehicle,Person&Dete
ctionType=MDAndIV&DefinedArea.1.RuleName=boundbox1
```

18.3.2. 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 "
                    ]
                }
            ]
        }
    ]
}
```

18.4. 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.

18.4.1. Set operation

```
http://<Device IP>/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
```

18.4.2. View operation

```
http://<Device IP>/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
                        }
                    ]
                }
            ]
        }
    ]
}
```

18.5. Metaimagetransfer Submenu (BestShot Feature)

Used to enable the image sending feature in metadata

NOTE	Object detection should be enabled for this functionality to work

18.5.1. View the current settings

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

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

18.5.2. Set operation

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

18.6. 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)

18.6.1. View

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

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

```
            ]
        }
    ]
}
```

18.6.2. Set

```
http://<Device IP>/stw-
cgi/ptzconfig.cgi?msubmenu=digitalautotracking&action=set&Channel=1&ObjectTy
peFilter=Person,Vehicle
```

18.7. EventStatus Check

18.7.1. Object detection events

```
http://<Device IP>/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
```

18.8. SchemaBased Dynamic Event format

18.8.1. Check

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

18.8.2. Monitor

```
http://<Device IP>/stw-
```

```
cgi/eventstatus.cgi?msubmenu=eventstatus&action=monitor&SchemaBased=True
```

18.8.3. Monitor diff

```
http://<Device IP>/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"
    }
}
```

18.9. 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:Ru
leEngine/ObjectDetection/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.

18.10. BestShot RTP Stream

To receive the bestshot image in RTP, please refer to [4] SUNAPI_video.audio_2.6.2 in the References section for more information.

18.11. 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)

	Objects	Attributes	Supported attributes items
	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~)
		Mask	Wearing a mask or not
		Glasses	Wearing glasses or not
	Licenseplate		

18.11.1. 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:Mask>
                            <fc:Wear>true</fc:Wear>
                        </fc:Mask>
                        <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</t
t: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

Chapter 19. Self-signed Certificate Creation and Use

19.1. Attributes

Client can check the following attributes to check if their device supports creation of a self-signed certificate:

Request

```
http://<IP>/stw-
cgi/attributes.cgi/attributes/Security/Limit/MaxSelfSignedCertificates
```

Response

```
<attribute name="MaxSelfSignedCertificates" type="int" value="1" accesslevel
="guest"/>
```

19.2. Getting the List of Certificates

Request (HTTP-GET)

```
http://<IP>/stw-cgi/security.cgi?msubmenu=ssl&action=view
```

TEXT Response

```
Policy=HTTP
PublicCertificateInstalled=False
SelfSignedCertificateInstalled=True
PublicCertificateName= Certificate3
CertificateInUse=
Certificate.1.CertificateName =Certificate1
Certificate.1.Type=Unique
Certificate.1.Issuer=Hanwha
Certificate.1.Subject=/C=KR/ST=LL/L=LL/O=LL/OU=hw/CN=192.168.77.11/emailAddr
ess=test@hanwha.com
Certificate.1.SubjectAlternativeName=192.168.77.11
Certificate.1.IssueDate=2017-05-01
Certificate.1.ExpiryDate=2018-05-01
Certificate.1.Removable=False
Certificate.2.CertificateName =Certificate2
Certificate.2.Type=SelfSigned
```

```
Certificate.2.Issuer=CA
Certificate.2.Subject=/C=KR/ST=LL/L=LL/O=LL/OU=hw/CN=192.168.77.11/emailAddr
ess=test@hanwha.com
Certificate.2.SubjectAlternativeName=192.168.77.11
Certificate.2.IssueDate=2017-06-01
Certificate.2.ExpiryDate=2018-06-01
Certificate.2.Removable=True
Certificate.3.CertificateName =Certificate3
Certificate.3.Issuer=Hanwha
Certificate.3.Subject=/C=KR/ST=LL/L=LL/O=LL/OU=hw/CN=192.168.77.11/emailAddr
ess=test@hanwha.com
Certificate.3.SubjectAlternativeName=192.168.77.11
Certificate.3.IssueDate=2017-07-01
Certificate.3.ExpiryDate=2018-07-01
Certificate.3.Removable=True
```

JSON Response


```
{
    "Policy": "HTTP",
    "PublicCertificateInstalled": false,
    "SelfSignedCertificateInstalled": true,
    "PublicCertificateName": "Certificate3",
    "CertificateInUse": "",
    "Certificate": [
        {
            "Index": 1,
            "CertificateName": "Certificate1",
            "Type": "Unique",
            "Issuer": "Hanwha",
            "Subject":
"/C=KR/ST=LL/L=LL/O=LL/OU=hw/CN=192.168.77.11/emailAddress=test@hanwha.com",
            "SubjectAlternativeName": "192.168.77.11",
            "IssueDate": "2017-05-01",
            "ExpiryDate": "2018-05-01",
            "Removable": false
        },
        {
            "Index": 2,
            "CertificateName": "Certificate2",
            "Type": "SelfSigned",
```

```
            "Issuer": "CA",
            "Subject":
"/C=KR/ST=LL/L=LL/O=LL/OU=hw/CN=192.168.77.11/emailAddress=test@hanwha.com",
            "SubjectAlternativeName": "192.168.77.11",
            "IssueDate": "2017-06-01",
            "ExpiryDate": "2018-06-01",
            "Removable": true
        },
        {
            "Index": 3,
            "CertificateName": "Certificate3",
            "Type": "Public",
            "Issuer": "Hanwha",
            "Subject":
"/C=KR/ST=LL/L=LL/O=LL/OU=hw/CN=192.168.77.11/emailAddress=test@hanwha.com",
            "SubjectAlternativeName": "192.168.77.11",
            "IssueDate": "2017-07-01",
            "ExpiryDate": "2018-07-01",
            "Removable": true
        }
    ]
}
```


19.3. Creating a Self-signed Certificate

To create a new self-signed certificate for the device, the following cgi can be used:

Request (HTTP-GET)

```
http://<IP>/stw-
cgi/security.cgi?msubmenu=ssl&action=add&CertificateName=newCert&Type=SelfSi
gned&CommonName=192.168.75.123&SubjectAlternativeName=domain.com,testdom.com
&ExpiryDate=2020-09-
09&Country=KR&Province=Gyeonggi&Location=Bundang&Organization=Hanwha&Divisio
n=SS&EmailID=test@hanwha.com,test2@hanwha.com
```

TEXT Response

```
OK
```

JSON Response

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

19.4. Selecting a Certificate

To select a certificate to use on the camera's web server, the following method can be used:

Request (HTTP-GET)

```
http://<IP>/stw-
cgi/security.cgi?msubmenu=ssl&action=set&Policy=HTTPSProprietary&Certificate
InUse=newCert
```

19.5. Removing a Certificate

Any certificates with Removable status true can be removed.

Request (HTTP-GET)

```
http://<IP>/stw-
cgi/security.cgi?msubmenu=ssl&action=remove&CertificateName=Certificate2
```

TEXT Response:

```
OK
```

JSON Response:

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

Chapter 20. Intercom Camera Integration

20.1. Overview

20.1.1. Supports the SIP (Session Initation Protocol)

The TID-600R provides audio and video communications using standard SIP. It can integrate with external SIP compatible systems through a SIP server.

Refer to **sipsetup**, **sipaccount**, **siprecipients** submenus of **network.cgi** for more details to change the SIP settings.

20.1.2. NAT Traversal

The TID-600R provides NAT Traversal for seamless communication between devices located on the private network and the external internet. Refer to nattraversal submenu of network.cgi for change the NAT Traversal settings.

20.2. Difference of other cameras

20.2.1. Profile for VoIP

Video delivery of SIP requires creating a profile for VoIP. The camera uses a VoIP-only profile when SIP is connected; if no profile exists, only audio is sent. VoIP profile is activated if the camera supports SIP. Whether or not SIP is supported can be checked in attribute below.

```
http://<Device IP>/stw-cgi/attributes.cgi/attributes/Network/Support/SIP
```

VoIP profile is limited in supported codecs, resolution, and bitrates, so you need to check and set the video codec information. Refer to videocodecinfo submenu of media.cgi to get video codec information.

20.2.2. Power relay output

The TID-600R model provides a power relay output. Unlike typical Open Collector type IC output, external device control is possible through power connections without requiring additional circuit configuration. The output ports that provide power relay can be found by the attributes below.

```
http://<Device IP>/stw-
cgi/attributes.cgi/attributes/IO/Support/PowerRelayIndices
```

20.3. Events

20.3.1. Call Request

The TID-600R supports SIP calls for audio and video communication. And you can also integrate with video surveillance systems for call features. When a button is pressed or a touchless sensor is detected, a

CallRequest event will be triggered and an SIP call will be requested. The event will persist until the recipient accepts the call, reaches the CallingTimeout, or sends a stop request command. If you want to check the CallRequest event on the video surveillance system and stop a SIP call, Refer to sipcall submenu of network.cgi, and refer to callrequest submenu of eventsources.cgi for change the CallRequest event settings.

Note that the CallRequest event is the fixed event for intercom model cameras and cannot be disabled.

20.3.2. DTMF Received

It can perform defined actions by receiving DTMF(Dual Tone Multi Frequency) signals through SIP. User-defined actions such as recording, door opening, and alarm triggering can be performed through a specific DTMF signal. This model supports DTMF reception over RTP payload (RFC2833) and SIP INFO Method (RFC2976). Refer to dtmf submenu of eventsources.cgi for change the DTMF event settings.

20.3.3. Tampering Switch

The tampering switch is an event that can detect security threats caused by physical damage or disassembly of the product by an external intruder. Refer to tamperingswitch submenu of eventsources.cgi for change the tampering switch event settings.

20.4. Video codec information for VoIP-only profile

20.4.1. Getting all resolution information based on Encoding Type

REQUEST

```
http://<Device IP>/stw-
cgi/media.cgi?msubmenu=videocodecinfo&action=view&EncodingType=H264
```

TEXT RESPONSE

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

```
Channel.0.EncodingType=H264
H264.General.1920X1080.Width=1920
H264.General.1920X1080.Height=1080
H264.General.1920X1080.MaxFPS=30000
H264.General.1920X1080.DefaultFPS=30000
H264.General.1920X1080.MaxCBRTargetBitrate=20480
H264.General.1920X1080.MinCBRTargetBitrate=1024
H264.General.1920X1080.DefaultCBRTargetBitrate=2560
H264.General.1920X1080.MaxVBRTargetBitrate=30720
```

```
H264.General.1920X1080.MinVBRTargetBitrate=1536
H264.General.1920X1080.DefaultVBRTargetBitrate=2560
H264.General.1920X1080.IsTruncated=Normal
H264.General.1920X1080.FrameLockMaxFPS=30000
H264.General.1280X1024.Width=1280
H264.General.1280X1024.Height=1024
H264.General.1280X1024.MaxFPS=30000
H264.General.1280X1024.DefaultFPS=30000
H264.General.1280X1024.MaxCBRTargetBitrate=20480
H264.General.1280X1024.MinCBRTargetBitrate=1024
H264.General.1280X1024.DefaultCBRTargetBitrate=2048
H264.General.1280X1024.MaxVBRTargetBitrate=30720
H264.General.1280X1024.MinVBRTargetBitrate=1536
H264.General.1280X1024.DefaultVBRTargetBitrate=2048
H264.General.1280X1024.IsTruncated=Crop
H264.General.1280X1024.FrameLockMaxFPS=30000
H264.General.1280X960.Width=1280
H264.General.1280X960.Height=960
H264.General.1280X960.MaxFPS=30000
H264.General.1280X960.DefaultFPS=30000
H264.General.1280X960.MaxCBRTargetBitrate=20480
H264.General.1280X960.MinCBRTargetBitrate=1024
H264.General.1280X960.DefaultCBRTargetBitrate=2048
H264.General.1280X960.MaxVBRTargetBitrate=30720
H264.General.1280X960.MinVBRTargetBitrate=1536
H264.General.1280X960.DefaultVBRTargetBitrate=2048
H264.General.1280X960.IsTruncated=Crop
H264.General.1280X960.FrameLockMaxFPS=30000
H264.General.1280X720.Width=1280
H264.General.1280X720.Height=720
H264.General.1280X720.MaxFPS=30000
H264.General.1280X720.DefaultFPS=30000
H264.General.1280X720.MaxCBRTargetBitrate=20480
H264.General.1280X720.MinCBRTargetBitrate=1024
H264.General.1280X720.DefaultCBRTargetBitrate=2048
H264.General.1280X720.MaxVBRTargetBitrate=30720
H264.General.1280X720.MinVBRTargetBitrate=1536
H264.General.1280X720.DefaultVBRTargetBitrate=2048
H264.General.1280X720.IsTruncated=Normal
H264.General.1280X720.FrameLockMaxFPS=30000
H264.General.1024X768.Width=1024
```

```
H264.General.1024X768.Height=768
H264.General.1024X768.MaxFPS=30000
H264.General.1024X768.DefaultFPS=30000
H264.General.1024X768.MaxCBRTargetBitrate=20480
H264.General.1024X768.MinCBRTargetBitrate=1024
H264.General.1024X768.DefaultCBRTargetBitrate=2048
H264.General.1024X768.MaxVBRTargetBitrate=30720
H264.General.1024X768.MinVBRTargetBitrate=1536
H264.General.1024X768.DefaultVBRTargetBitrate=2048
H264.General.1024X768.IsTruncated=Crop
H264.General.1024X768.FrameLockMaxFPS=30000
H264.General.800X600.Width=800
H264.General.800X600.Height=600
H264.General.800X600.MaxFPS=30000
H264.General.800X600.DefaultFPS=30000
H264.General.800X600.MaxCBRTargetBitrate=20480
H264.General.800X600.MinCBRTargetBitrate=512
H264.General.800X600.DefaultCBRTargetBitrate=1024
H264.General.800X600.MaxVBRTargetBitrate=30720
H264.General.800X600.MinVBRTargetBitrate=512
H264.General.800X600.DefaultVBRTargetBitrate=1024
H264.General.800X600.IsTruncated=Crop
H264.General.800X600.FrameLockMaxFPS=30000
H264.General.800X448.Width=800
H264.General.800X448.Height=448
H264.General.800X448.MaxFPS=30000
H264.General.800X448.DefaultFPS=30000
H264.General.800X448.MaxCBRTargetBitrate=20480
H264.General.800X448.MinCBRTargetBitrate=512
H264.General.800X448.DefaultCBRTargetBitrate=1024
H264.General.800X448.MaxVBRTargetBitrate=30720
H264.General.800X448.MinVBRTargetBitrate=512
H264.General.800X448.DefaultVBRTargetBitrate=1024
H264.General.800X448.IsTruncated=Normal
H264.General.800X448.FrameLockMaxFPS=30000
H264.General.720X576.Width=720
H264.General.720X576.Height=576
H264.General.720X576.MaxFPS=30000
H264.General.720X576.DefaultFPS=30000
H264.General.720X576.MaxCBRTargetBitrate=20480
H264.General.720X576.MinCBRTargetBitrate=512
```

```
H264.General.720X576.DefaultCBRTargetBitrate=1024
H264.General.720X576.MaxVBRTargetBitrate=30720
H264.General.720X576.MinVBRTargetBitrate=512
H264.General.720X576.DefaultVBRTargetBitrate=1024
H264.General.720X576.IsTruncated=Crop
H264.General.720X576.FrameLockMaxFPS=30000
H264.General.720X480.Width=720
H264.General.720X480.Height=480
H264.General.720X480.MaxFPS=30000
H264.General.720X480.DefaultFPS=30000
H264.General.720X480.MaxCBRTargetBitrate=20480
H264.General.720X480.MinCBRTargetBitrate=512
H264.General.720X480.DefaultCBRTargetBitrate=1024
H264.General.720X480.MaxVBRTargetBitrate=30720
H264.General.720X480.MinVBRTargetBitrate=512
H264.General.720X480.DefaultVBRTargetBitrate=1024
H264.General.720X480.IsTruncated=Crop
H264.General.720X480.FrameLockMaxFPS=30000
H264.General.640X480.Width=640
H264.General.640X480.Height=480
H264.General.640X480.MaxFPS=30000
H264.General.640X480.DefaultFPS=30000
H264.General.640X480.MaxCBRTargetBitrate=20480
H264.General.640X480.MinCBRTargetBitrate=512
H264.General.640X480.DefaultCBRTargetBitrate=1024
H264.General.640X480.MaxVBRTargetBitrate=30720
H264.General.640X480.MinVBRTargetBitrate=512
H264.General.640X480.DefaultVBRTargetBitrate=1024
H264.General.640X480.IsTruncated=Crop
H264.General.640X480.FrameLockMaxFPS=30000
H264.General.640X360.Width=640
H264.General.640X360.Height=360
H264.General.640X360.MaxFPS=30000
H264.General.640X360.DefaultFPS=30000
H264.General.640X360.MaxCBRTargetBitrate=20480
H264.General.640X360.MinCBRTargetBitrate=512
H264.General.640X360.DefaultCBRTargetBitrate=1024
H264.General.640X360.MaxVBRTargetBitrate=30720
H264.General.640X360.MinVBRTargetBitrate=512
H264.General.640X360.DefaultVBRTargetBitrate=1024
H264.General.640X360.IsTruncated=Normal
```

```
H264.General.640X360.FrameLockMaxFPS=30000
H264.General.320X240.Width=320
H264.General.320X240.Height=240
H264.General.320X240.MaxFPS=30000
H264.General.320X240.DefaultFPS=30000
H264.General.320X240.MaxCBRTargetBitrate=20480
H264.General.320X240.MinCBRTargetBitrate=256
H264.General.320X240.DefaultCBRTargetBitrate=512
H264.General.320X240.MaxVBRTargetBitrate=30720
H264.General.320X240.MinVBRTargetBitrate=256
H264.General.320X240.DefaultVBRTargetBitrate=512
H264.General.320X240.IsTruncated=Crop
H264.General.320X240.FrameLockMaxFPS=30000
H264.Record.1920X1080.MaxFPS=30000
H264.Record.1920X1080.DefaultFPS=30000
H264.Record.1920X1080.MinCBRTargetBitrate=1024
H264.Record.1920X1080.MaxCBRTargetBitrate=6144
H264.Record.1920X1080.DefaultCBRTargetBitrate=5120
H264.Record.1920X1080.MinVBRTargetBitrate=1536
H264.Record.1920X1080.MaxVBRTargetBitrate=6144
H264.Record.1920X1080.DefaultVBRTargetBitrate=5120
H264.Record.1920X1080.FrameLockMaxFPS=30000
H264.Record.1280X1024.MaxFPS=30000
H264.Record.1280X1024.DefaultFPS=30000
H264.Record.1280X1024.MinCBRTargetBitrate=1024
H264.Record.1280X1024.MaxCBRTargetBitrate=6144
H264.Record.1280X1024.DefaultCBRTargetBitrate=5120
H264.Record.1280X1024.MinVBRTargetBitrate=1536
H264.Record.1280X1024.MaxVBRTargetBitrate=6144
H264.Record.1280X1024.DefaultVBRTargetBitrate=5120
H264.Record.1280X1024.FrameLockMaxFPS=30000
H264.Record.1280X960.MaxFPS=30000
H264.Record.1280X960.DefaultFPS=30000
H264.Record.1280X960.MinCBRTargetBitrate=1024
H264.Record.1280X960.MaxCBRTargetBitrate=6144
H264.Record.1280X960.DefaultCBRTargetBitrate=5120
H264.Record.1280X960.MinVBRTargetBitrate=1536
H264.Record.1280X960.MaxVBRTargetBitrate=6144
H264.Record.1280X960.DefaultVBRTargetBitrate=5120
H264.Record.1280X960.FrameLockMaxFPS=30000
H264.Record.1280X720.MaxFPS=30000
```

```
H264.Record.1280X720.DefaultFPS=30000
H264.Record.1280X720.MinCBRTargetBitrate=1024
H264.Record.1280X720.MaxCBRTargetBitrate=6144
H264.Record.1280X720.DefaultCBRTargetBitrate=5120
H264.Record.1280X720.MinVBRTargetBitrate=1536
H264.Record.1280X720.MaxVBRTargetBitrate=6144
H264.Record.1280X720.DefaultVBRTargetBitrate=5120
H264.Record.1280X720.FrameLockMaxFPS=30000
H264.Record.1024X768.MaxFPS=30000
H264.Record.1024X768.DefaultFPS=30000
H264.Record.1024X768.MinCBRTargetBitrate=1024
H264.Record.1024X768.MaxCBRTargetBitrate=6144
H264.Record.1024X768.DefaultCBRTargetBitrate=5120
H264.Record.1024X768.MinVBRTargetBitrate=1536
H264.Record.1024X768.MaxVBRTargetBitrate=6144
H264.Record.1024X768.DefaultVBRTargetBitrate=5120
H264.Record.1024X768.FrameLockMaxFPS=30000
H264.Record.800X600.MaxFPS=30000
H264.Record.800X600.DefaultFPS=30000
H264.Record.800X600.MinCBRTargetBitrate=512
H264.Record.800X600.MaxCBRTargetBitrate=6144
H264.Record.800X600.DefaultCBRTargetBitrate=5120
H264.Record.800X600.MinVBRTargetBitrate=512
H264.Record.800X600.MaxVBRTargetBitrate=6144
H264.Record.800X600.DefaultVBRTargetBitrate=5120
H264.Record.800X600.FrameLockMaxFPS=30000
H264.Record.800X448.MaxFPS=30000
H264.Record.800X448.DefaultFPS=30000
H264.Record.800X448.MinCBRTargetBitrate=512
H264.Record.800X448.MaxCBRTargetBitrate=6144
H264.Record.800X448.DefaultCBRTargetBitrate=5120
H264.Record.800X448.MinVBRTargetBitrate=512
H264.Record.800X448.MaxVBRTargetBitrate=6144
H264.Record.800X448.DefaultVBRTargetBitrate=5120
H264.Record.800X448.FrameLockMaxFPS=30000
H264.Record.720X576.MaxFPS=30000
H264.Record.720X576.DefaultFPS=30000
H264.Record.720X576.MinCBRTargetBitrate=512
H264.Record.720X576.MaxCBRTargetBitrate=6144
H264.Record.720X576.DefaultCBRTargetBitrate=5120
H264.Record.720X576.MinVBRTargetBitrate=512
```

```
H264.Record.720X576.MaxVBRTargetBitrate=6144
H264.Record.720X576.DefaultVBRTargetBitrate=5120
H264.Record.720X576.FrameLockMaxFPS=30000
H264.Record.720X480.MaxFPS=30000
H264.Record.720X480.DefaultFPS=30000
H264.Record.720X480.MinCBRTargetBitrate=512
H264.Record.720X480.MaxCBRTargetBitrate=6144
H264.Record.720X480.DefaultCBRTargetBitrate=5120
H264.Record.720X480.MinVBRTargetBitrate=512
H264.Record.720X480.MaxVBRTargetBitrate=6144
H264.Record.720X480.DefaultVBRTargetBitrate=5120
H264.Record.720X480.FrameLockMaxFPS=30000
H264.Record.640X480.MaxFPS=30000
H264.Record.640X480.DefaultFPS=30000
H264.Record.640X480.MinCBRTargetBitrate=512
H264.Record.640X480.MaxCBRTargetBitrate=6144
H264.Record.640X480.DefaultCBRTargetBitrate=5120
H264.Record.640X480.MinVBRTargetBitrate=512
H264.Record.640X480.MaxVBRTargetBitrate=6144
H264.Record.640X480.DefaultVBRTargetBitrate=5120
H264.Record.640X480.FrameLockMaxFPS=30000
H264.Record.640X360.MaxFPS=30000
H264.Record.640X360.DefaultFPS=30000
H264.Record.640X360.MinCBRTargetBitrate=512
H264.Record.640X360.MaxCBRTargetBitrate=6144
H264.Record.640X360.DefaultCBRTargetBitrate=5120
H264.Record.640X360.MinVBRTargetBitrate=512
H264.Record.640X360.MaxVBRTargetBitrate=6144
H264.Record.640X360.DefaultVBRTargetBitrate=5120
H264.Record.640X360.FrameLockMaxFPS=30000
H264.Record.320X240.MaxFPS=30000
H264.Record.320X240.DefaultFPS=30000
H264.Record.320X240.MinCBRTargetBitrate=256
H264.Record.320X240.MaxCBRTargetBitrate=6144
H264.Record.320X240.DefaultCBRTargetBitrate=5120
H264.Record.320X240.MinVBRTargetBitrate=256
H264.Record.320X240.MaxVBRTargetBitrate=6144
H264.Record.320X240.DefaultVBRTargetBitrate=5120
H264.Record.320X240.FrameLockMaxFPS=30000
H264.VoIP.1280X720.Width=1280
H264.VoIP.1280X720.Height=720
```

```
H264.VoIP.1280X720.MaxFPS=30000
H264.VoIP.1280X720.DefaultFPS=30000
H264.VoIP.1280X720.MaxCBRTargetBitrate=2048
H264.VoIP.1280X720.MinCBRTargetBitrate=1024
H264.VoIP.1280X720.DefaultCBRTargetBitrate=1024
H264.VoIP.1280X720.MinVBRTargetBitrate=1536
H264.VoIP.1280X720.MaxVBRTargetBitrate=2048
H264.VoIP.1280X720.DefaultVBRTargetBitrate=1536
H264.VoIP.1024X768.Width=1024
H264.VoIP.1024X768.Height=768
H264.VoIP.1024X768.MaxFPS=30000
H264.VoIP.1024X768.DefaultFPS=30000
H264.VoIP.1024X768.MaxCBRTargetBitrate=2048
H264.VoIP.1024X768.MinCBRTargetBitrate=1024
H264.VoIP.1024X768.DefaultCBRTargetBitrate=1024
H264.VoIP.1024X768.MinVBRTargetBitrate=1536
H264.VoIP.1024X768.MaxVBRTargetBitrate=2048
H264.VoIP.1024X768.DefaultVBRTargetBitrate=1536
H264.VoIP.800X600.Width=800
H264.VoIP.800X600.Height=600
H264.VoIP.800X600.MaxFPS=30000
H264.VoIP.800X600.DefaultFPS=30000
H264.VoIP.800X600.MaxCBRTargetBitrate=1024
H264.VoIP.800X600.MinCBRTargetBitrate=512
H264.VoIP.800X600.DefaultCBRTargetBitrate=512
H264.VoIP.800X600.MinVBRTargetBitrate=512
H264.VoIP.800X600.MaxVBRTargetBitrate=1024
H264.VoIP.800X600.DefaultVBRTargetBitrate=512
H264.VoIP.800X448.Width=800
H264.VoIP.800X448.Height=448
H264.VoIP.800X448.MaxFPS=30000
H264.VoIP.800X448.DefaultFPS=30000
H264.VoIP.800X448.MaxCBRTargetBitrate=1024
H264.VoIP.800X448.MinCBRTargetBitrate=512
H264.VoIP.800X448.DefaultCBRTargetBitrate=512
H264.VoIP.800X448.MinVBRTargetBitrate=512
H264.VoIP.800X448.MaxVBRTargetBitrate=1024
H264.VoIP.800X448.DefaultVBRTargetBitrate=512
H264.VoIP.720X576.Width=720
H264.VoIP.720X576.Height=576
H264.VoIP.720X576.MaxFPS=30000
```

```
H264.VoIP.720X576.DefaultFPS=30000
H264.VoIP.720X576.MaxCBRTargetBitrate=1024
H264.VoIP.720X576.MinCBRTargetBitrate=512
H264.VoIP.720X576.DefaultCBRTargetBitrate=512
H264.VoIP.720X576.MinVBRTargetBitrate=512
H264.VoIP.720X576.MaxVBRTargetBitrate=1024
H264.VoIP.720X576.DefaultVBRTargetBitrate=512
H264.VoIP.720X480.Width=720
H264.VoIP.720X480.Height=480
H264.VoIP.720X480.MaxFPS=30000
H264.VoIP.720X480.DefaultFPS=30000
H264.VoIP.720X480.MaxCBRTargetBitrate=1024
H264.VoIP.720X480.MinCBRTargetBitrate=512
H264.VoIP.720X480.DefaultCBRTargetBitrate=512
H264.VoIP.720X480.MinVBRTargetBitrate=512
H264.VoIP.720X480.MaxVBRTargetBitrate=1024
H264.VoIP.720X480.DefaultVBRTargetBitrate=512
H264.VoIP.640X480.Width=640
H264.VoIP.640X480.Height=480
H264.VoIP.640X480.MaxFPS=30000
H264.VoIP.640X480.DefaultFPS=30000
H264.VoIP.640X480.MaxCBRTargetBitrate=1024
H264.VoIP.640X480.MinCBRTargetBitrate=512
H264.VoIP.640X480.DefaultCBRTargetBitrate=512
H264.VoIP.640X480.MinVBRTargetBitrate=512
H264.VoIP.640X480.MaxVBRTargetBitrate=1024
H264.VoIP.640X480.DefaultVBRTargetBitrate=512
H264.VoIP.640X360.Width=640
H264.VoIP.640X360.Height=360
H264.VoIP.640X360.MaxFPS=30000
H264.VoIP.640X360.DefaultFPS=30000
H264.VoIP.640X360.MaxCBRTargetBitrate=1024
H264.VoIP.640X360.MinCBRTargetBitrate=512
H264.VoIP.640X360.DefaultCBRTargetBitrate=512
H264.VoIP.640X360.MinVBRTargetBitrate=512
H264.VoIP.640X360.MaxVBRTargetBitrate=1024
H264.VoIP.640X360.DefaultVBRTargetBitrate=512
H264.VoIP.320X240.Width=320
H264.VoIP.320X240.Height=240
H264.VoIP.320X240.MaxFPS=30000
H264.VoIP.320X240.DefaultFPS=30000
```

```
H264.VoIP.320X240.MaxCBRTargetBitrate=512
H264.VoIP.320X240.MinCBRTargetBitrate=256
H264.VoIP.320X240.DefaultCBRTargetBitrate=256
H264.VoIP.320X240.MinVBRTargetBitrate=256
H264.VoIP.320X240.MaxVBRTargetBitrate=512
H264.VoIP.320X240.DefaultVBRTargetBitrate=256
```

JSON RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```


```
{
    "VideoCodecInfo": [
        {
            "Channel": 0,
            "ViewModes": [
                {
                    "ViewMode": "Overview",
                    "Codecs": [
                        {
                            "EncodingType": "H264",
                            "General": [
                                {
                                    "Width": 1920,
                                    "Height": 1080,
                                    "MaxFPS": 30000,
                                    "DefaultFPS": 30000,
                                    "MaxCBRTargetBitrate": 20480,
                                    "MinCBRTargetBitrate": 1024,
                                    "DefaultCBRTargetBitrate": 2560,
                                    "MaxVBRTargetBitrate": 30720,
                                    "MinVBRTargetBitrate": 1536,
                                    "DefaultVBRTargetBitrate": 2560,
                                    "IsTruncated": "Normal",
                                    "FrameLockMaxFPS": 30000
                                },
                                {
                                    "Width": 1280,
                                    "Height": 1024,
```

```
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 20480,
                "MinCBRTargetBitrate": 1024,
                "DefaultCBRTargetBitrate": 2048,
                "MaxVBRTargetBitrate": 30720,
                "MinVBRTargetBitrate": 1536,
                "DefaultVBRTargetBitrate": 2048,
                "IsTruncated": "Crop",
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 1280,
                "Height": 960,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 20480,
                "MinCBRTargetBitrate": 1024,
                "DefaultCBRTargetBitrate": 2048,
                "MaxVBRTargetBitrate": 30720,
                "MinVBRTargetBitrate": 1536,
                "DefaultVBRTargetBitrate": 2048,
                "IsTruncated": "Crop",
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 1280,
                "Height": 720,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 20480,
                "MinCBRTargetBitrate": 1024,
                "DefaultCBRTargetBitrate": 2048,
                "MaxVBRTargetBitrate": 30720,
                "MinVBRTargetBitrate": 1536,
                "DefaultVBRTargetBitrate": 2048,
                "IsTruncated": "Normal",
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 1024,
```

```
                "Height": 768,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 20480,
                "MinCBRTargetBitrate": 1024,
                "DefaultCBRTargetBitrate": 2048,
                "MaxVBRTargetBitrate": 30720,
                "MinVBRTargetBitrate": 1536,
                "DefaultVBRTargetBitrate": 2048,
                "IsTruncated": "Crop",
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 800,
                "Height": 600,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 20480,
                "MinCBRTargetBitrate": 512,
                "DefaultCBRTargetBitrate": 1024,
                "MaxVBRTargetBitrate": 30720,
                "MinVBRTargetBitrate": 512,
                "DefaultVBRTargetBitrate": 1024,
                "IsTruncated": "Crop",
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 800,
                "Height": 448,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 20480,
                "MinCBRTargetBitrate": 512,
                "DefaultCBRTargetBitrate": 1024,
                "MaxVBRTargetBitrate": 30720,
                "MinVBRTargetBitrate": 512,
                "DefaultVBRTargetBitrate": 1024,
                "IsTruncated": "Normal",
                "FrameLockMaxFPS": 30000
            },
            {
```

```
                    "Width": 720,
                    "Height": 576,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MaxCBRTargetBitrate": 20480,
                    "MinCBRTargetBitrate": 512,
                    "DefaultCBRTargetBitrate": 1024,
                    "MaxVBRTargetBitrate": 30720,
                    "MinVBRTargetBitrate": 512,
                    "DefaultVBRTargetBitrate": 1024,
                    "IsTruncated": "Crop",
                    "FrameLockMaxFPS": 30000
                },
                {
                    "Width": 720,
                    "Height": 480,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MaxCBRTargetBitrate": 20480,
                    "MinCBRTargetBitrate": 512,
                    "DefaultCBRTargetBitrate": 1024,
                    "MaxVBRTargetBitrate": 30720,
                    "MinVBRTargetBitrate": 512,
                    "DefaultVBRTargetBitrate": 1024,
                    "IsTruncated": "Crop",
                    "FrameLockMaxFPS": 30000
                },
                {
                    "Width": 640,
                    "Height": 480,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MaxCBRTargetBitrate": 20480,
                    "MinCBRTargetBitrate": 512,
                    "DefaultCBRTargetBitrate": 1024,
                    "MaxVBRTargetBitrate": 30720,
                    "MinVBRTargetBitrate": 512,
                    "DefaultVBRTargetBitrate": 1024,
                    "IsTruncated": "Crop",
                    "FrameLockMaxFPS": 30000
                },
```

```
                {
                    "Width": 640,
                    "Height": 360,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MaxCBRTargetBitrate": 20480,
                    "MinCBRTargetBitrate": 512,
                    "DefaultCBRTargetBitrate": 1024,
                    "MaxVBRTargetBitrate": 30720,
                    "MinVBRTargetBitrate": 512,
                    "DefaultVBRTargetBitrate": 1024,
                    "IsTruncated": "Normal",
                    "FrameLockMaxFPS": 30000
                },
                {
                    "Width": 320,
                    "Height": 240,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MaxCBRTargetBitrate": 20480,
                    "MinCBRTargetBitrate": 256,
                    "DefaultCBRTargetBitrate": 512,
                    "MaxVBRTargetBitrate": 30720,
                    "MinVBRTargetBitrate": 256,
                    "DefaultVBRTargetBitrate": 512,
                    "IsTruncated": "Crop",
                    "FrameLockMaxFPS": 30000
                }
            ],
            "Record": [
                {
                    "Width": 1920,
                    "Height": 1080,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MinCBRTargetBitrate": 1024,
                    "MaxCBRTargetBitrate": 6144,
                    "DefaultCBRTargetBitrate": 5120,
                    "MinVBRTargetBitrate": 1536,
                    "MaxVBRTargetBitrate": 6144,
                    "DefaultVBRTargetBitrate": 5120,
```

```
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 1280,
                "Height": 1024,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MinCBRTargetBitrate": 1024,
                "MaxCBRTargetBitrate": 6144,
                "DefaultCBRTargetBitrate": 5120,
                "MinVBRTargetBitrate": 1536,
                "MaxVBRTargetBitrate": 6144,
                "DefaultVBRTargetBitrate": 5120,
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 1280,
                "Height": 960,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MinCBRTargetBitrate": 1024,
                "MaxCBRTargetBitrate": 6144,
                "DefaultCBRTargetBitrate": 5120,
                "MinVBRTargetBitrate": 1536,
                "MaxVBRTargetBitrate": 6144,
                "DefaultVBRTargetBitrate": 5120,
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 1280,
                "Height": 720,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MinCBRTargetBitrate": 1024,
                "MaxCBRTargetBitrate": 6144,
                "DefaultCBRTargetBitrate": 5120,
                "MinVBRTargetBitrate": 1536,
                "MaxVBRTargetBitrate": 6144,
                "DefaultVBRTargetBitrate": 5120,
                "FrameLockMaxFPS": 30000
            },
```

```
                        {
                            "Width": 1024,
                            "Height": 768,
                            "MaxFPS": 30000,
                            "DefaultFPS": 30000,
                            "MinCBRTargetBitrate": 1024,
                            "MaxCBRTargetBitrate": 6144,
                            "DefaultCBRTargetBitrate": 5120,
                            "MinVBRTargetBitrate": 1536,
                            "MaxVBRTargetBitrate": 6144,
                            "DefaultVBRTargetBitrate": 5120,
                            "FrameLockMaxFPS": 30000
                        },
                        {
                            "Width": 800,
                            "Height": 600,
                            "MaxFPS": 30000,
                            "DefaultFPS": 30000,
                            "MinCBRTargetBitrate": 512,
                            "MaxCBRTargetBitrate": 6144,
                            "DefaultCBRTargetBitrate": 5120,
                            "MinVBRTargetBitrate": 512,
                            "MaxVBRTargetBitrate": 6144,
                            "DefaultVBRTargetBitrate": 5120,
                            "FrameLockMaxFPS": 30000
                        },
                        {
                            "Width": 800,
                            "Height": 448,
                            "MaxFPS": 30000,
                            "DefaultFPS": 30000,
                            "MinCBRTargetBitrate": 512,
                            "MaxCBRTargetBitrate": 6144,
                            "DefaultCBRTargetBitrate": 5120,
                            "MinVBRTargetBitrate": 512,
                            "MaxVBRTargetBitrate": 6144,
                            "DefaultVBRTargetBitrate": 5120,
                            "FrameLockMaxFPS": 30000
                        },
                        {
                            "Width": 720,
```

```
                "Height": 576,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MinCBRTargetBitrate": 512,
                "MaxCBRTargetBitrate": 6144,
                "DefaultCBRTargetBitrate": 5120,
                "MinVBRTargetBitrate": 512,
                "MaxVBRTargetBitrate": 6144,
                "DefaultVBRTargetBitrate": 5120,
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 720,
                "Height": 480,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MinCBRTargetBitrate": 512,
                "MaxCBRTargetBitrate": 6144,
                "DefaultCBRTargetBitrate": 5120,
                "MinVBRTargetBitrate": 512,
                "MaxVBRTargetBitrate": 6144,
                "DefaultVBRTargetBitrate": 5120,
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 640,
                "Height": 480,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MinCBRTargetBitrate": 512,
                "MaxCBRTargetBitrate": 6144,
                "DefaultCBRTargetBitrate": 5120,
                "MinVBRTargetBitrate": 512,
                "MaxVBRTargetBitrate": 6144,
                "DefaultVBRTargetBitrate": 5120,
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 640,
                "Height": 360,
                "MaxFPS": 30000,
```

```
                "DefaultFPS": 30000,
                "MinCBRTargetBitrate": 512,
                "MaxCBRTargetBitrate": 6144,
                "DefaultCBRTargetBitrate": 5120,
                "MinVBRTargetBitrate": 512,
                "MaxVBRTargetBitrate": 6144,
                "DefaultVBRTargetBitrate": 5120,
                "FrameLockMaxFPS": 30000
            },
            {
                "Width": 320,
                "Height": 240,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MinCBRTargetBitrate": 256,
                "MaxCBRTargetBitrate": 6144,
                "DefaultCBRTargetBitrate": 5120,
                "MinVBRTargetBitrate": 256,
                "MaxVBRTargetBitrate": 6144,
                "DefaultVBRTargetBitrate": 5120,
                "FrameLockMaxFPS": 30000
            }
        ],
        "VoIP": [
            {
                "Width": 1280,
                "Height": 720,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 2048,
                "MinCBRTargetBitrate": 1024,
                "DefaultCBRTargetBitrate": 1024,
                "MinVBRTargetBitrate": 1536,
                "MaxVBRTargetBitrate": 2048,
                "DefaultVBRTargetBitrate": 1536
            },
            {
                "Width": 1024,
                "Height": 768,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
```

```
                    "MaxCBRTargetBitrate": 2048,
                    "MinCBRTargetBitrate": 1024,
                    "DefaultCBRTargetBitrate": 1024,
                    "MinVBRTargetBitrate": 1536,
                    "MaxVBRTargetBitrate": 2048,
                    "DefaultVBRTargetBitrate": 1536
                },
                {
                    "Width": 800,
                    "Height": 600,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MaxCBRTargetBitrate": 1024,
                    "MinCBRTargetBitrate": 512,
                    "DefaultCBRTargetBitrate": 512,
                    "MinVBRTargetBitrate": 512,
                    "MaxVBRTargetBitrate": 1024,
                    "DefaultVBRTargetBitrate": 512
                },
                {
                    "Width": 800,
                    "Height": 448,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MaxCBRTargetBitrate": 1024,
                    "MinCBRTargetBitrate": 512,
                    "DefaultCBRTargetBitrate": 512,
                    "MinVBRTargetBitrate": 512,
                    "MaxVBRTargetBitrate": 1024,
                    "DefaultVBRTargetBitrate": 512
                },
                {
                    "Width": 720,
                    "Height": 576,
                    "MaxFPS": 30000,
                    "DefaultFPS": 30000,
                    "MaxCBRTargetBitrate": 1024,
                    "MinCBRTargetBitrate": 512,
                    "DefaultCBRTargetBitrate": 512,
                    "MinVBRTargetBitrate": 512,
                    "MaxVBRTargetBitrate": 1024,
```

```
                "DefaultVBRTargetBitrate": 512
            },
            {
                "Width": 720,
                "Height": 480,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 1024,
                "MinCBRTargetBitrate": 512,
                "DefaultCBRTargetBitrate": 512,
                "MinVBRTargetBitrate": 512,
                "MaxVBRTargetBitrate": 1024,
                "DefaultVBRTargetBitrate": 512
            },
            {
                "Width": 640,
                "Height": 480,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 1024,
                "MinCBRTargetBitrate": 512,
                "DefaultCBRTargetBitrate": 512,
                "MinVBRTargetBitrate": 512,
                "MaxVBRTargetBitrate": 1024,
                "DefaultVBRTargetBitrate": 512
            },
            {
                "Width": 640,
                "Height": 360,
                "MaxFPS": 30000,
                "DefaultFPS": 30000,
                "MaxCBRTargetBitrate": 1024,
                "MinCBRTargetBitrate": 512,
                "DefaultCBRTargetBitrate": 512,
                "MinVBRTargetBitrate": 512,
                "MaxVBRTargetBitrate": 1024,
                "DefaultVBRTargetBitrate": 512
            },
            {
                "Width": 320,
                "Height": 240,
```

```
                                    "MaxFPS": 30000,
                                    "DefaultFPS": 30000,
                                    "MaxCBRTargetBitrate": 512,
                                    "MinCBRTargetBitrate": 256,
                                    "DefaultCBRTargetBitrate": 256,
                                    "MinVBRTargetBitrate": 256,
                                    "MaxVBRTargetBitrate": 512,
                                    "DefaultVBRTargetBitrate": 256
                                }
                            ]
                        }
                    ]
                }
            ]
        }
    ]
}
```

20.5. Usage Scenarios

20.5.1. VMS Usage (When SIP not supported)

When using with VMS that does not support SIP. Based on the callrequest submenu settings, callrequest event would be notified in eventstatus and metadata when call button is pressed. On receiving this callrequest event, VMS can establish RTSP Connection to Doorcam with Video, Audio and AudioBackChannel. On successful verification of the person at door, either power relay connected to door or emergency alarm can be activated.

Additionally VMS can also check for any ongoing SIP call using the sipcall submenu and if VMS accepts the CallRequest, a command must be requested to terminate SIP call.

20.5.2. SIP Call Usage

On camera Sipsetup, Nat traversal settings, Sipaccount settings and sip recipients needs to be configured properly before usage. If operator has to do some action after receiving the call, DTMF event settings needs to be configured appropriately (Example: on receving a DTMF code camera can operate the powerrelay) When call button is pressed, a SIP call would be initiated with the registered recipients. After accepting the call on the recipient end, operator can send specific DTMF code either to raise alarm or operate the relay / open the door.

20.6. SUNAPI event status example

20.6.1. Getting event status

REQUEST

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

TEXT RESPONSE

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

```
AlarmInput.1=False
AlarmInput.2=False
AlarmOutput.1=False
AlarmOutput.2=False
Channel.0.MotionDetection=False
Channel.0.MotionDetection.RegionID.1=False
Channel.0.Tampering=False
Channel.0.AudioDetection=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=False
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.ShockDetection=False
Channel.0.CallRequest=False
Channel.0.TamperingSwitch=False
Channel.0.DTMFReceived=False
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=True
SystemEvent.SDRemove=False
SystemEvent.NASConnect=False
SystemEvent.NASDisconnect=True
SystemEvent.NASFail=False
SystemEvent.NASFull=False
SystemEvent.NASFormat=False
```

JSON RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```

```
{
    "AlarmInput": {
        "1": false,
        "2": false
    },
    "AlarmOutput": {
        "1": false,
        "2": false
    },
    "ChannelEvent": [
        {
            "Channel": 0,
            "MotionDetection": false,
            "MotionDetectionRegions": {
                "1": false
            },
            "Tampering": false,
            "AudioDetection": false,
            "VideoAnalytics": {
                "Passing": false,
                "Intrusion": false,
                "Entering": false,
                "Exiting": false,
                "Appearing": false,
                "Loitering": false
            },
```

```
            "AudioAnalytics": {
                "Scream": false,
                "Gunshot": false,
                "Explosion": false,
                "GlassBreak": false
            },
            "ShockDetection": false,
            "CallRequest": false,
            "TamperingSwitch": false,
            "DTMFReceived": false
        }
    ],
    "SystemEvent": {
        "TimeChange": false,
        "PowerReboot": false,
        "FWUpdate": false,
        "FactoryReset": false,
        "ConfigurationBackup": false,
        "ConfigurationRestore": false,
        "ConfigChange": false,
        "SDFormat": false,
        "SDFail": false,
        "SDFull": false,
        "SDInsert": true,
        "SDRemove": false,
        "NASConnect": false,
        "NASDisconnect": true,
        "NASFail": false,
        "NASFull": false,
        "NASFormat": false
    }
}
```

20.6.2. Getting scheme-based event status

REQUEST

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

TEXT RESPONSE

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

```
AlarmInput.1=False
AlarmInput.2=False
AlarmOutput.1=False
AlarmOutput.2=False
Channel.0.MotionDetection=True
Channel.0.MotionDetection.RegionID.1=False
Channel.0.MotionDetection.RegionID.2=False
Channel.0.Tampering=False
Channel.0.AudioDetection=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=False
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.ShockDetection=False
Channel.0.CallRequest=False
Channel.0.TamperingSwitch=False
Channel.0.DTMFReceived=False
Channel.0.DTMFReceived.Index.1=False
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=True
```

```
SystemEvent.SDRemove=False
SystemEvent.NASConnect=False
SystemEvent.NASDisconnect=True
SystemEvent.NASFail=False
SystemEvent.NASFull=False
SystemEvent.NASFormat=False
```

JSON RESPONSE

```
HTTP/1.0 200 OK
Content-type: application/json
<Body>
```

```
{
    "EventStatus": [
        {
            "EventName": "AlarmInput",
            "Time": "2021-05-03T09:59:00.862+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "AlarmInput",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "AlarmOutput",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
```

```
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "AlarmOutput",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "MotionDetection",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0,
                "ROIID": 1
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "MotionDetection",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0,
                "ROIID": 2
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "Tampering",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
```

```
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "AudioDetection",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "AudioAnalytics.Scream",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "AudioAnalytics.Gunshot",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "AudioAnalytics.Explosion",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
```

```
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "AudioAnalytics.GlassBreak",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "ShockDetection",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "CallRequest",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "TamperingSwitch",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
```

```
                "State": false
            }
        },
        {
            "EventName": "DTMFReceived",
            "Time": "2021-05-03T09:59:00.863+00:00",
            "Source": {
                "Channel": 0,
                "Index": 1
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.TimeChange",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.PowerReboot",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.FWUpdate",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
```

```
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.FactoryReset",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.ConfigurationBackup",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.ConfigurationRestore",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.ConfigChange",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
```

```
            }
        },
        {
            "EventName": "SystemEvent.SDFormat",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.SDFail",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.SDFull",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.SDInsert",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": true
            }
```

```
        },
        {
            "EventName": "SystemEvent.SDRemove",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.NASConnect",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.NASDisconnect",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": true
            }
        },
        {
            "EventName": "SystemEvent.NASFail",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
```

```
        {
            "EventName": "SystemEvent.NASFull",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        },
        {
            "EventName": "SystemEvent.NASFormat",
            "Time": "2021-05-03T09:59:00.864+00:00",
            "Source": {
                "Channel": 0
            },
            "Data": {
                "State": false
            }
        }
    ]
}
```

20.7. Metadata format

20.7.1. CallRequest event

```
<wsnt:NotificationMessage xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2">
    <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">tns1:Device/Trigger/CallReques
t</wsnt:Topic>
    <wsnt:Message>
        <tt:Message UtcTime="2020-07-14T15:54:44Z"
            xmlns:tt="https://www.onvif.org/ver10/schema/">
            <tt:Source>
                <tt:SimpleItem Name="SourceToken" Value="CallRequest-1"/>
            </tt:Source>
            <tt:Data>
                <tt:SimpleItem Name="State" Value="true"/>
```

```
            </tt:Data>
        </tt:Message>
    </wsnt:Message>
</wsnt:NotificationMessage>
```

20.7.2. TamperingSwitch event

```
<wsnt:NotificationMessage xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2">
    <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">tns1:Device/Trigger/TamperingS
witch</wsnt:Topic>
    <wsnt:Message>
        <tt:Message UtcTime="2020-07-14T15:54:44Z"
            xmlns:tt="https://www.onvif.org/ver10/schema/">
            <tt:Source>
                <tt:SimpleItem Name="SourceToken"
Value="TamperingSwitchToken-1"/>
            </tt:Source>
            <tt:Data>
                <tt:SimpleItem Name="State" Value="true"/>
            </tt:Data>
        </tt:Message>
    </wsnt:Message>
</wsnt:NotificationMessage>
```

20.7.3. DTMF event

```
<wsnt:NotificationMessage xmlns:wsnt="http://docs.oasis-open.org/wsn/b-2">
    <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">tns1:Device/Trigger/DTMF</wsnt
:Topic>
    <wsnt:Message>
        <tt:Message UtcTime="2020-07-14T15:54:44Z"
            xmlns:tt="https://www.onvif.org/ver10/schema/">
            <tt:Source>
                <tt:SimpleItem Name="RuleName" Value="DTMF-1"/>
```

```
            </tt:Source>
            <tt:Data>
                <tt:SimpleItem Name="State" Value="true"/>
            </tt:Data>
        </tt:Message>
    </wsnt:Message>
</wsnt:NotificationMessage>
```

Chapter 21. 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;
}
```

Chapter 22. References

[1] SUNAPI_ipinstaller_2.6.2.pdf

[2] SUNAPI_network_2.6.2.pdf

[3] SUNAPI_system_2.6.2.pdf

[4] SUNAPI_video_audio_2.6.2.pdf

[5] SUNAPI_ptz_2.6.2.pdf

[6] SUNAPI_recording_2.6.2.pdf

[7] SUNAPI_event_2.6.2.pdf

[8] SUNAPI_attributes_2.6.2.pdf

[9] SUNAPI_image_2.6.2.pdf

[10] SUNAPI_io_2.6.2.pdf

[11] SUNAPI_security_2.6.2.pdf

[12] ONVIF Streaming Spec

[13] SUNAPI_bypass_2.6.2.pdf

[14] SUNAPI_ai_2.6.2.pdf

[15] SUNAPI_display_2.6.2.pdf

[16] SUNAPI_transfer_2.6.2.pdf