



NUUO ONVIF Profile S Guide

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0 Update history

Update history		
Date	Version	Note
20130221	1.0	First edition for NUUO's ONVIF Profile S Guide

1 Introduction

This document describes how NUUO Device Pack implements ONVIF protocol to communicate with Network Video Transmitters (NVT). Basically, NUUO focus on two parts, retrieving information from NVT and setting parameter to NVT. It's highly recommended to study the ONVIF specification first for understanding the detailed information of ONVIF protocol.

Currently, NUUO follows ONVIF Profiles S specification and uses ONVIF Test Tool (Version 12.06) for compatibility testing. IP camera vendors should also follow the ONVIF Profile S specification and pass the ONVIF conformance process before testing with NUUO Device Pack.

2 Terms and Definitions

Device Pack	The NVC part of NUUO NVR. This module communicates with NVT with various protocols, including the ONVIF protocol.
DI	Digital input connector
DO	Digital relay output
MD	Motion Detection
Metadata	Addition data sending with video/audio stream. Might include status of DI/DO/MD, or other information.
Network Video Client (NVC)	Network video receiver or controller device communicating with a client that receives media data over an IP network to and from Network Video Transmitter (NVT). For example, an NVC might be a VMS software or Device Pack module in NUUO IP+ and NVRmini2/NVRsolo/Titan NVR product.
Network Video Transmitter (NVT)	An ONVIF device that sends media data over IP network to a client. For example, an NVT may be an IP network camera or an encoder device.
NUUO Embedded	Linux based NUUO surveillance system. For example, NVRmini2,

NUUO IP+ NVR NVRsolo and Titan NVR
 x86 Windows based NUUO surveillance system.
 Network Video Recorders. For example, NUUO product IP+,
 NVRmini2, NVRsolo and Titan NVR are all in the category of NVR.

3 NUUO ONVIF Profile S Requirements

Implementation of ONVIF Core Specification v1.02 or later is required.

3.1 Namespaces

Some “duplicate” name prefixes are introduced by NUUO IP+ series for the compatibility with both ONVIF 1.01 & 1.02, such as “timg”/”timg2” and “tptz”/”tptz2”. Following are the prefixes and namespaces used in NUUO IP+ series:

Prefix (Namespaces)	Namespace URI
SOAP-ENV	http://www.w3.org/2003/05/soap-envelope
SOAP-ENC	http://www.w3.org/2003/05/soap-encoding
xsi	http://www.w3.org/2001/XMLSchema-instance
xsd	http://www.w3.org/2001/XMLSchema
c14n	http://www.w3.org/2001/10/xml-exc-c14n#
wsu	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd
ds	http://www.w3.org/2000/09/xmldsig#
wsse	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd
wsrp	http://schemas.xmlsoap.org/rp/
wsa	http://www.w3.org/2005/08/addressing
wsrfbf2	http://docs.oasis-open.org/wsrf/bf-2
xmime	http://www.w3.org/2005/05/xmlmime
xop	http://www.w3.org/2004/08/xop/include
tt	http://www.onvif.org/ver10/schema
wstop	http://docs.oasis-open.org/wsn/t-1
wsrfr2	http://docs.oasis-open.org/wsrf/r-2
ONVIFCreatePullPoint	http://www.onvif.org/ver10/events/wsd/CreatePullPointBinding
ONVIFEvent	http://www.onvif.org/ver10/events/wsd/EventBinding

ONVIFNotificationConsumer	http://www.onvif.org/ver10/events/wsd/NotificationConsumerBinding
ONVIFNotificationProducer	http://www.onvif.org/ver10/events/wsd/NotificationProducerBinding
ONVIFPausableSubscriptionManager	http://www.onvif.org/ver10/events/wsd/PausableSubscriptionManagerBinding
ONVIFPullPoint	http://www.onvif.org/ver10/events/wsd/PullPointSubscriptionBinding
tev	http://www.onvif.org/ver10/events/wsd/
wsnt	http://docs.oasis-open.org/wsn/b-2
ONVIFPullPoint2	http://www.onvif.org/ver10/events/wsd/PullPointBinding
ONVIFSubscriptionManager	http://www.onvif.org/ver10/events/wsd/SubscriptionManagerBinding
ONVIFanalytics	http://www.onvif.org/ver10/analytics/wsd/AnalyticsEngineBinding
ONVIFanalytics2	http://www.onvif.org/ver20/analytics/wsd/AnalyticsEngineBinding
ONVIFruleEngine2	http://www.onvif.org/ver20/analytics/wsd/RuleEngineBinding
tan2	http://www.onvif.org/ver20/analytics/wsd/
ONVIFruleEngine	http://www.onvif.org/ver10/analytics/wsd/RuleEngineBinding
tan	http://www.onvif.org/ver10/analytics/wsd/
tds	http://www.onvif.org/ver10/device/wsd/
timg	http://www.onvif.org/ver10/imaging/wsd/
timg2	http://www.onvif.org/ver20/imaging/wsd/
tptz	http://www.onvif.org/ver10/ptz/wsd/
tptz2	http://www.onvif.org/ver20/ptz/wsd/
trt	http://www.onvif.org/ver10/media/wsd/

NUUO Embedded series only support ONVIF 1.02 or later, so some of the prefix names are different with IP+. Following are the prefixes and namespaces used in NUUO Embedded series:

Prefix (Namespaces)	Namespace URI
SOAP-ENV	http://www.w3.org/2003/05/soap-envelope
SOAP-ENC	http://www.w3.org/2003/05/soap-encoding
xsi	http://www.w3.org/2001/XMLSchema-instance
xsd	http://www.w3.org/2001/XMLSchema
c14n	http://www.w3.org/2001/10/xml-exc-c14n#
wsu	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-

	wssecurity-utility-1.0.xsd
ds	http://www.w3.org/2000/09/xmlsig#
wsse	http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd
OASISbf2	http://docs.oasis-open.org/wsr/bf-2
W3Caddressing	http://www.w3.org/2005/08/addressing
W3Cmime	http://www.w3.org/2005/05/xmlmime
W3Cxop	http://www.w3.org/2004/08/xop/include
ONVIFschema	http://www.onvif.org/ver10/schema
OASISr1	http://docs.oasis-open.org/wsn/t-1
OASISr2	http://docs.oasis-open.org/wsr/r-2
ONVIF2ptz	http://www.onvif.org/ver20/ptz/wSDL
ONVIFCreatePullPoint	http://www.onvif.org/ver10/events/wSDL/CreatePullPointBinding
ONVIFEvent	http://www.onvif.org/ver10/events/wSDL/EventBinding
ONVIFNotificationConsumer	http://www.onvif.org/ver10/events/wSDL/NotificationConsumerBinding
ONVIFNotificationProducer	http://www.onvif.org/ver10/events/wSDL/NotificationProducerBinding
ONVIFPausableSubscriptionManager	http://www.onvif.org/ver10/events/wSDL/PausableSubscriptionManagerBinding
ONVIFPullPoint	http://www.onvif.org/ver10/events/wSDL/PullPointSubscriptionBinding
ONVIFevents	http://www.onvif.org/ver10/events/wSDL
OASISb2	http://docs.oasis-open.org/wsn/b-2
ONVIFPullPoint2	http://www.onvif.org/ver10/events/wSDL/PullPointBinding
ONVIFSubscriptionManager	http://www.onvif.org/ver10/events/wSDL/SubscriptionManagerBinding
ONVIFdevice	http://www.onvif.org/ver10/device/wSDL
ONVIFmedia	http://www.onvif.org/ver10/media/wSDL
ONVIFtopics	http://www.onvif.org/ver10/topics

4 Supported Features & Limitations

NUUO surveillance system supports most of the camera features in ONVIF Profiles S: Video / Audio Stream, Stream codec getting/setting, Image parameter

getting/setting, IO status, MD status and PTZ control. Implementation details will be described later.

5 Security with ONVIF service

According to 5.12 in ONVIF Core Specification, NVC and NVT shall support both digest authentication and the user name token profile as specified in WS-Security.

NUUO surveillance system support two methods with ONVIF service security:

- No authentication service required for requested service.
- Both HTTP digest and WS-Username token with WS-Security.

6 Device Information

NVC sends the service call “**GetDeviceInformation**” to NVT, which should response with correct information via GetDeviceInformationResponse. After parsing the elements **Manufacturer & Model**, NUUO will show corresponding camera brand & model name if the device model has been integrated before. Otherwise, system will show ONVIF / ONVIF to indicate the device is compatible with ONVIF specification.

[GetDeviceInformation_NVC](#)

[GetDeviceInformation_NVT](#)

IP Camera / Video Server Setting

Network

Name: ONVIF-ONVIF

IP Address: 192 . 168 . 2 . 34 DNS

Port: 80

User Name: user1

Password: *****

Protocol: TCP UDP HTTP

Device

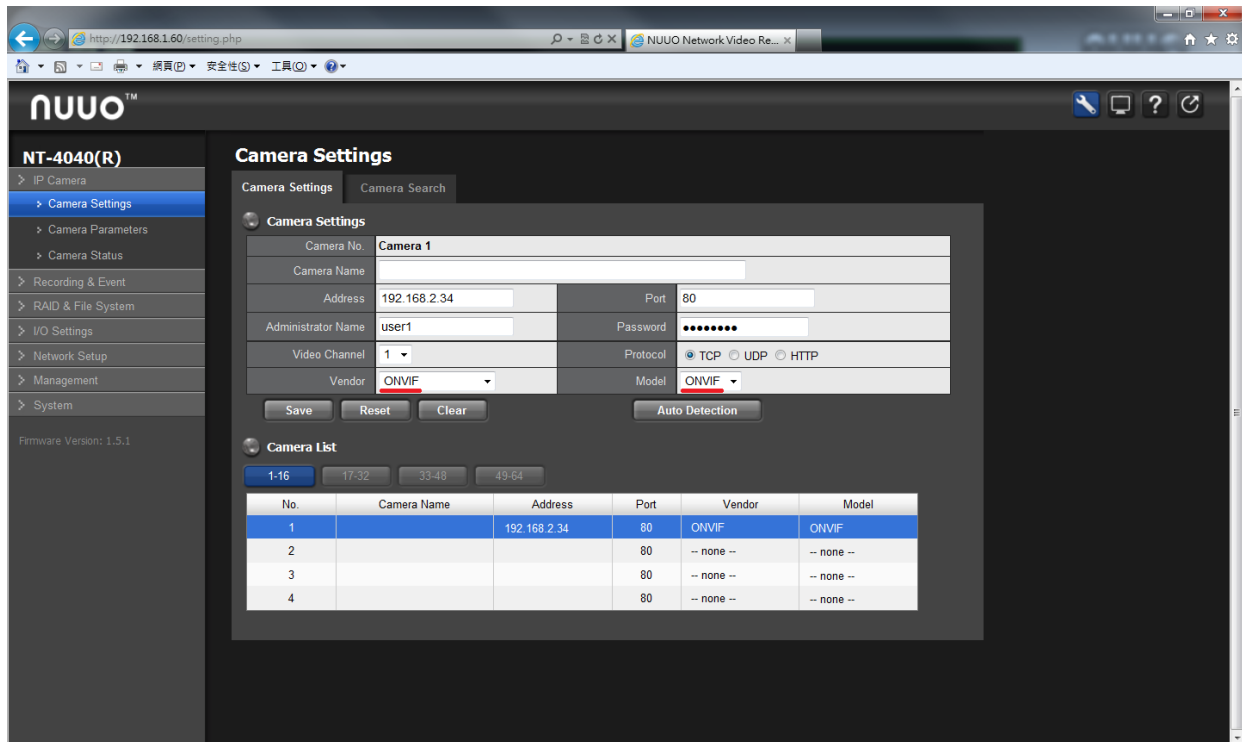
Vendor: ONVIF

Camera Model: ONVIF

Video Channel: 1 2 3 4
 5 6 7 8

Description

Video Codec: MJPEG MPEG4 H264
Audio Codec: AAC G.711 G.726
Camera: 1, DI: 1, DO: 1



7 Video/Audio Stream

Video/Audio streams are basic and necessary features in camera integration. We will describe this part in three topics: Stream connection, parameter retrieval and parameter setting.

7.1 Video/Audio Stream Connection

For stream connection, NVT must support RTSP/RTP over UDP at least as defined in ONVIF specification. However, UDP stream might be blocked under some network environments. We suggest NVT to also support RTSP/RTP over TCP and HTTP if possible.

NUUO systems support RTSP/RTP over TCP/UDP/HTTP unicast stream connection currently. We use the following ONVIF service calls to get the connecting information.

7.1.1 GetCapabilities

NVT should reply with all capability information when this service call sent from NVC with parameter **"All"**. Compatibility information includes camera

supported version of ONVIF protocol, ONVIF service address and number of IO connectors.

[GetCapabilities_NVC](#)

[GetCapabilities_NVT](#)

7.1.2 GetProfiles

NVC gets token names of all existing media profiles from NVT. In NUUO IP+ series, user can select among these profiles through video parameter page after stream connected. In NUUO embedded series, system will select the first matching profile with the user required codec among all camera profiles.

[GetProfiles_NVC](#)

[GetProfiles_NVT](#)

7.1.3 GetProfile

Device Pack will refer to the following values for configuring the encoding parameters of video/audio streams: Encoding, Resolution (Width, Height), Quality, BitrateLimit, RateControl(FrameRateLimit, EncodingInterval) , etc...

For video quality adjustment, we suggest the NVT vendors to use “Quality” value for JPEG video and the “Bitratelimit” value for H264/MPEG4 video due to ONVIF does not define CBR/VBR mode in the structure of video encoder configuration. According to our experience, users will try to adjust the “BitrateLimit” value when they need the media stream to achieve constant bitrate under their network environment. Device Pack uses the “Bitratelimit” value to show the quality under CBR mode when codec is MPEG4/H264.

Device Pack also constrains the bitrate range of H264 (and MPEG4) to 64 ~ 8192 kbps. We suggest NVT to fix the EncodingInterval to 1 due to variable interval value makes the framerate support list getting/setting procedure more complicated.

[GetProfile_NVC](#)

[GetProfile_NVT](#)

7.1.4 GetNetworkProtocols

Device Pack gets the RTSP port through this service call.

[GetNetworkProtocols_NVC](#)

[GetNetworkProtocols_NVT](#)

7.1.5 GetStreamUri

Device Pack sends this service call with stream typeset to “**RTP_Unicast**” and transport protocol set to “**RTSP**” (or “**UDP**” when connecting protocol is UDP) for obtaining the URI of the RTSP connection.

[GetStreamUri_NVC](#)

[GetStreamUri_NVT](#)

7.2 Get Stream Parameter

Device Pack gets video/audio parameters from the existing camera default profiles, while ONVIF allows NVC to create/add/change/remove additional profiles into NVT. NUUO has encountered many problems in creating new profiles before, so we don't suggest camera vendors to fix the camera default profile but allow NVC to adjust the parameters of these profiles. For this reason, NUUO will try to use camera default profiles first for obtaining maximum compatibility with NVT.

7.2.1 GetProfiles

Please refer to 7.1.2

7.2.2 GetProfile

Please refer to 7.1.3

7.2.3 GetVideoEncoderConfigurationOptions

Device Pack sends profile token to obtain available options of the corresponding video encoder

[GetVideoEncoderConfigurationOptions_NVC](#)

[GetVideoEncoderConfigurationOptions_NVT](#)

7.2.4 GetAudioEncoderConfigurationOptions

Device Pack sends profile token to obtain available options of the corresponding audio encoder

[GetAudioEncoderConfigurationOptions_NVC](#)

[GetAudioEncoderConfigurationOptions_NVT](#)

7.3 Set Stream Parameter

When user changes video parameters, such as video format, resolution, framerate or quality on camera video setting page in NUUO NVR systems, Device Pack will update relative parameters in the selected profile through the ONVIF service call “**SetVideoEncoderConfiguration**”.

7.3.1 GetProfile

Please refer to 7.1.3.

7.3.2 SetVideoEncoderConfiguration

NVT should support updating parameters with individual codec when NVC requested to connect with certain video codec. For example, some device supports more than one codec options in an encoder. Device Pack will only update H264 related parameters in the same encoder configuration when H264 stream is connected currently. Based on our past experience, some camera vendors might reserve certain encoder for specific profiles.

[SetVideoEncoderConfiguration NVC](#)

[SetVideoEncoderConfiguration NVT](#)

8 DI / DO / MD

Currently, Device Pack receives metadata stream over RTP for DI/DO/MD notifications, NVT needs to support RTP metadata stream and satisfies some “TopicSet” constraints to make it work.

8.1 DI / DO number

Device Pack gets the number of camera DI/DO through the service call “**GetCapabilities**” (please refer to 7.1.1). NVT should fill correct number into **InputConnectors** and **RelayOutputs** field.

8.2 Set DO status

Device Pack sets camera DI/DO through three service calls:

“**GetRelayOutputs**“, “**SetRelayOutputSettings**“ and

“**SetRelayOutputState**“.

8.2.1 GetRelayOutputs

Get camera relay output status

[GetRelayOutputs NVC](#)

[GetRelayOutputs NVT](#)

8.2.2 SetRelayOutputSettings

Device Pack sets the relay output mode to “Bistable”, the relay output should remains in its state after receiving this service call.

[SetRelayOutputSettings_NVC](#)

[SetRelayOutputSettings_NVT](#)

8.2.3 SetRelayOutputState

Change the “LogicalState” to “active” or “inactive”.

[SetRelayOutputState_NVC](#)

[SetRelayOutputState_NVT](#)

8.3 Get DI/DO/MD statuses

Before starting to query DI/DO/MD status, Device Pack will check camera capabilities through ONVIF event service. Service call “**GetEventProperties**” must be implemented. Furthermore, NVC must support “**MetadataConfiguration**” related service calls, and Device Pack will get event notifications from ONVIF metadata stream over RTP. If a stream profile does not include a “**MetadataConfiguration**”, “**GetCompatibleMetadataConfigurations**” and “**AddMetadataConfiguration**” must be supported for Device Pack to add a suitable metadata configuration to NVT instead.

Device Pack will check the “**TopicSet**” part in the response of “**GetEventProperties**” to decide which features (DI/DO/MD) are supported by NVT.

8.3.1 Topic Set

A topic set includes event topics which NVT implemented, and NVC could then configure NVT with the topics to receive specific events.

Following are the patterns which will be recognized by Device Pack currently:

DI : Alarm

DO : Relay

MD : Motion, Inside

8.3.2 GetEventProperties

Device Pack checks which features are supported by NVT through this service call.

[GetEventProperties_NVC](#)

[GetEventProperties_NVT](#)

8.3.3 GetMetadataConfigurations

Like “GetProfiles” (Please refer to 7.1.2), Device Pack checks how many “MetadataConfiguration”s the NVT supports via this service call.

[GetMetadataConfigurations_NVC](#)

[GetMetadataConfigurations_NVT](#)

8.3.4 **GetCompatibleMetadataConfigurations**

Device Pack checks which “MetadataConfiguration” is compatible with the current profile of NVT and meet NVC requirements.

[GetCompatibleMetadataConfigurations_NVC](#)

[GetCompatibleMetadataConfigurations_NVT](#)

8.3.5 **GetMetadataConfiguration**

Device Pack will select the first compatible “MetadataConfiguration” for obtaining necessary information.

[GetMetadataConfiguration_NVC](#)

[GetMetadataConfiguration_NVT](#)

8.3.6 **AddMetadataConfiguration**

If profile does not contain any “**MetadataConfiguration**”, one will be added.

[AddMetadataConfiguration_NVC](#)

[AddMetadataConfiguration_NVT](#)

8.3.7 **SetMetadataConfiguration**

Device Pack will add three specific event topic filters into “MetadataConfiguration”

“ONVIFtopics:RuleEngine/FieldDetector/ObjectsInside”

"ONVIFtopics:UserAlarm"

"ONVIFtopics:Device/Trigger/Relay"

[SetMetadataConfiguration_NVC](#)

[SetMetadataConfiguration_NVT](#)

8.3.8 **Metadata Streaming**

Device Pack will receive events from metadata stream over RTP if a “**MetadataConfiguration**” could be added into or already in a profile.

According to ONVIF Streaming specification, camera vendors who implement ONVIF metadata streaming over RTP should follow 2 principles:

- a. A dynamic payload (96-127) must be used.
- b. RTP marker bit must be set to 1 when XML document is closed.

After video stream connected, Device Pack will parse the symbol “tt:MetadataStream” located in the root node of the metadata stream.

Appendix A shows how to setup metadata stream over RTSP, and the example also shows some event notifications received within RTSP stream.

Appendix B is an example shows a notification message send from NVT.

9 PTZ

Device Pack supports all common PTZ operations with ONVIF PTZ service, such as Pan, Tilt, Zoom, Focus, Auto Focus, Preset Go/Set/Clear, and Home.

9.1 Check camera PTZ capabilities

Before triggering ONVIF PTZ operations, the PTZ capabilities need to be checked first. Relative service calls should be implemented by NVT as follows:

9.1.1 GetConfigurations

NVT should fill in the field of

“DefaultContinuousPanTiltVelocitySpace”/

“DefaultContinuousZoomVelocitySpace” if it supports continuous move
, and

“DefaultRelativePanTiltTranslationSpace”/

“DefaultRelativeZoomTranslationSpace” if it supports relative move.

Device Pack does not support absolute move currently, the parameters of absolute move part will be ignored.

[GetConfigurations_NVC](#)

[GetConfigurations_NVT](#)

9.1.2 GetNodes

Device Pack checks the parameter “MaximumNumberOfPresets” to decide how many preset points could be supported by NVT.

[GetNodes_NVC](#)

[GetNodes_NVT](#)

9.1.3 GetImagingSettings

Parameters of focus are classified in the ONVIF Imaging service category.

Device Pack will check the focus capabilities through “**GetImagingSettings**”.

Please refer to the example in 10.1.1.

9.1.4 GetImagingMoveOption

Device Pack checks which focus move mode is supported by NVT through

“**GetImagingMoveOption**”. NVT should fill the field by “**Continuous**” if it

supports focus with continuous move, and “**Relative**” if it supports focus with relative (step) move.

[GetImagingMoveOption_NVC](#)

[GetImagingMoveOption_NVT](#)

9.2 Pan / Tilt / Zoom

Device Pack will use Continuous PTZ in first priority and then Relative PTZ.

9.2.1 ContinuousMove

NVC sends “**ContinuousMove**” with proper PTZ profile token and speed value to control NVT device.

[ContinuousMove_NVC\(Pan/Tilt\)](#)

[ContinuousMove_NVT\(Pan/Tilt\)](#)

[ContinuousMove_NVC\(Zoom\)](#)

[ContinuousMove_NVT\(Zoom\)](#)

9.2.2 RelativeMove

NVC sends “**RelativeMove**” with proper PTZ profile token and speed value to control NVT device.

[RelativeMove_NVC](#)

[RelativeMove_NVT](#)

9.2.3 Stop

Device Pack sends PTZ “Stop” to NVT device after each PTZ action.

[Stop_NVC\(PTZ\)](#)

[Stop_NVT\(PTZ\)](#)

9.3 Home

For ONVIF Home function, Device Pack checks the response of the service call “**GetNodes**” (Please refer to 9.1.2) to determine whether NVT supports this function or not.

9.3.1 GotoHomePosition

NVC sends “**GotoHomePosition**” to move the lens of NVT to the Home position.

[GotoHomePosition_NVC](#)

[GotoHomePosition_NVT](#)

9.4 Preset

Preset points are enumerated first before calling any of the following service calls: “GotoPreset”, “SetPreset” and “RemovePreset”.

9.4.1 GetPresets

NVC sends “**GetPresets**” to NVT to obtain the information of all preset points set to the device before.

[GetPresets_NVC](#)

[GetPresets_NVT](#)

9.4.2 GotoPreset

NVC sends “**GotoPreset**” to NVT to move the lens of NVT to one of the pre-specified positions.

[GotoPreset_NVC](#)

[GotoPreset_NVT](#)

9.4.3 SetPreset

NVC sends “**SetPreset**” to NVT to assign the current lens position as a preset point in the list.

[SetPreset_NVC](#)

[SetPreset_NVT](#)

9.4.4 RemovePreset

NVC sends “**RemovePreset**” to NVT to remove the preset point with specific preset token.

[RemovePreset_NVC](#)

[RemovePreset_NVT](#)

9.5 Focus

In order to make the lens of NVT focus near/far manually, NVC needs to make sure the focus mode of device is “**MANUAL**” through “**GetImagingSettings**” first (please refer to 9.5.1). Otherwise, NVC has to set it to “**MANUAL**” through “**SetImagingSettings**” (Please refer to 9.5.2).

9.5.1 GetImagingSettings

Device Pack uses “**GetImagingSettings**” to get the current focus mode of NVT.

[GetImagingSettings_NVC](#)

[GetImagingSettings_NVT](#)

9.5.2 SetImagingSettings

Device Pack will sets focus mode to “**AUTO**” or “**MANUAL**” through “**SetImagingSettings**”.

[SetImagingSettings_NVC](#)

[SetImagingSettings NVT](#)

9.5.3 Focus Move

Continuous move, which is controlled by focus speed, will be the approach with first priority for controlling focus near/far if it is supported by NVT.

Relative move using relative position will be the second choice otherwise.

[Focus Move NVC](#)

[Focus Move NVT](#)

9.5.4 Focus Stop

Device pack sends Focus Stop to NVT after each focus near/far action.

[Stop NVC\(Focus\)](#)

[Stop NVT\(Focus\)](#)

9.6 Auto Focus

When user needs NVT to focus automatically, NVC must make sure the focus mode is “**AUTO**” (please refer to 9.5.1), or sets it to if it was set to “**MANUAL**” (please reference 9.5.2) previously.

9.6.1 GetImagingSettings

Please refer to 9.5.1

9.6.2 SetImagingSettings

Please refer to 9.5.2

10 Image Settings

ONVIF Image settings, such as Brightness, Contrast and Saturation, are supported through the following service calls:

10.1 GetImagingSetOptions

Device Pack uses “**GetImagingSetOptions**” to obtain the valid range of imaging parameters, such as Brightness, Contrast and Saturation, if NVT provides such information properly.

[GetImagingSetOptions NVC](#)

[GetImagingSetOptions NVT](#)

10.2 GetImagingSettings

Device Pack uses “**GetImagingSettings**” to get the values of imaging parameters, such as Brightness, Contrast and Saturation, if NVT provides the information properly.

[GetImagingSettings_NVC](#)

[GetImagingSettings_NVT](#)

10.3 SetImagingSettings

Device Pack set Brightness, Contrast and Saturation values through the service call “**SetImagingSettings**”.

[SetImagingSettings_NVC](#)

[SetImagingSettings_NVT](#)

Appendix

Appendix A. Metadata Streaming (Aggregated Video, Audio and Metadata RTSP session)

[RTSP session with Metadata Streaming](#)

```
DESCRIBE rtsp://192.168.1.185:554/cgi-bin/rtspStreamOvf/0 RTSP/1.0
CSeq: 13
Accept: application/sdp
User-Agent: NUUO_MainConsole2 (NUUO Streaming Media v2007.08.03)
```

```
RTSP/1.0 200 OK
CSeq: 13
Date: Thu, Jan 31 2013 08:37:40 GMT
Content-Base: rtsp://192.168.1.185:554/cgi-bin/rtspStreamOvf/0/
Content-Type: application/sdp
Content-Length: 495
```

```
v=0
o=- 1359621460087400 1 IN IP4 192.168.1.185
s=Everfocus Media Server
t=0 0
c=IN IP4 0.0.0.0
a=tool:Everfocus Streaming Media Aug 24 2012 v1.0.1
a=type:broadcase
a=control:*
m=video 0 RTP/AVP 96
a=framerate:25
a=control:track1
a=rtpmap:96 H264/90000
a=fmtp:96 packetization-mode=1; profile-level-id=4d0020; sprop-parameter-sets=Z00AIJWoFAHmQA==,aM48gA==
m=audio 0 RTP/AVP 0
a=control:track2
m=application 0 RTP/AVP 100
a=control:track3
a=rtpmap:100 vnd.onvif.metadata/90000
```

SETUP rtsp://192.168.1.185:554/cgi-bin/rtspStreamOvf/0/track1 RTSP/1.0
CSeq: 14
Transport: RTP/AVP/TCP;unicast;interleaved=0-1
User-Agent: NUUO_MainConsole2 (NUUO Streaming Media v2007.08.03)

RTSP/1.0 200 OK
CSeq: 14
Date: Thu, Jan 31 2013 08:37:40 GMT
Transport:
RTP/AVP/TCP;unicast;destination=192.168.1.233;source=192.168.1.185;interleaved=0-1
Session: 123009;timeout=120

SETUP rtsp://192.168.1.185:554/cgi-bin/rtspStreamOvf/0/track2 RTSP/1.0
CSeq: 15
Transport: RTP/AVP/TCP;unicast;interleaved=2-3
Session: 123009
User-Agent: NUUO_MainConsole2 (NUUO Streaming Media v2007.08.03)

RTSP/1.0 200 OK
CSeq: 15
Date: Thu, Jan 31 2013 08:37:40 GMT
Transport:
RTP/AVP/TCP;unicast;destination=192.168.1.233;source=192.168.1.185;interleaved=2-3
Session: 123009;timeout=120

SETUP rtsp://192.168.1.185:554/cgi-bin/rtspStreamOvf/0/track3 RTSP/1.0
CSeq: 16
Transport: RTP/AVP/TCP;unicast;interleaved=4-5
Session: 123009
User-Agent: NUUO_MainConsole2 (NUUO Streaming Media v2007.08.03)

RTSP/1.0 200 OK
CSeq: 16
Date: Thu, Jan 31 2013 08:37:40 GMT
Transport:
RTP/AVP/TCP;unicast;destination=192.168.1.233;source=192.168.1.185;interleaved=4-5
Session: 123009;timeout=120

PLAY rtsp://192.168.1.185:554/cgi-bin/rtspStreamOvf/0/ RTSP/1.0

CSeq: 17

Session: 123009

Range: npt=0.000-

User-Agent: NUUO_MainConsole2 (NUUO Streaming Media v2007.08.03)

RTSP/1.0 200 OK

CSeq: 17

Date: Thu, Jan 31 2013 08:37:40 GMT

Range: npt=0.000-

Session: 123009;timeout=120

RTP-Info: url=rtsp://192.168.1.185:554/cgi-

bin/rtspStreamOvf/0/track1;seq=1720;rtptime=2313245563,url=rtsp://192.168.1.185:554/c
gi-bin/rtspStreamOvf/0/track2;seq=28648;rtptime=2114549182

Appendix B. Received Metadata

[Metadata_NVT](#)

```
<tt:MetaDataStream xmlns:tt="http://www.onvif.org/ver10/schema" xmlns:wsnt="
http://docs.oasis-open.org/wsn/b-2"xmlns:tns1="http://www.onvif.org/ver10
/topics" xmlns:tnsitx="http://www.itxsecurity.com/onvif/event0/topics">
  <tt:Event>
    <wsnt:NotificationMessage>
      <wsnt:Topic Dialect="http://www.onvif.org/ver10/tev/topicExpression/Conc
reteSet">tns1:VideoAnalytics/tns1:FieldDetector/tns1:ObjectsInside
      </wsnt:Topic>
      <wsnt:Message>
        <tt:Message UtcTime="2013-01-31T09:47:36Z" PropertyOperation="Changed">
          <tt:Source>
            <tt:SimpleItem Name="VideoSourceConfigurationToken" Value="
VideoSource1"/>
          </tt:Source>
          <tt:Source>
            <tt:SimpleItem Name="VideoAnalyticsConfigurationToken" Value="
VideoAnalytics1"/>
          </tt:Source>
          <tt:Source>
            <tt:SimpleItem Name="Rule" Value="FieldDetector1"/>
          </tt:Source>
          <tt>Data>
            <tt:SimpleItem Name="IsInside" Value="true"/>
          </tt>Data>
        </tt:Message>
      </wsnt:Message>
    </wsnt:NotificationMessage>
  </tt:Event>
</tt:MetaDataStream>
```