# ONVIF™
# Provisioning Service Specification

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## 1 Scope

This document defines the web service interface for ONVIF Provisioning features. A provisioning feature involves limited-lifetime components such as a stepper motor, where the vendor expects the feature to be used only during device installation

Web service usage is outside of the scope of this document. Please refer to the ONVIF core specification.

## 2 Normative References

ONVIF Core Specification

<http://www.onvif.org/specs/core/ONVIF-Core-Specification-v261.pdf>

ONVIF Device I/O Specification

<http://www.onvif.org/specs/srv/io/ONVIF-DeviceIo-Service-Spec-v1606.pdf>

# 3 Definitions

| | |
|---|---|
| Provisioning | Doing something in advance to prepare for something else. |
| Video Source | Entity defined by [ONVIF Device I/O Specification] |
| Video Source Token | Token referencing a Device I/O Video Source |

# 4 Overview

The provisioning service allows device adjustments that are not intended for general day-to-day use. Its methods allow the following device adjustments:

- Pan (left/right)
- Tilt (up/down)
- Zoom (wide/telephoto)
- Roll (clockwise/counterclockwise, auto-level)
- Focus (near/far, auto-focus)

There is a *Stop* method to stop movement on all provisioning methods. There is a *GetUsage* method to determine how much a particular movement has been used. Finally, there is a *GetServiceCapabilities* method used after device discovery to determine which provisioning methods are available on the device. The WSDL for this service is specified in <http://www.onvif.org/ver10/provisioning/wsdl/provisioning.wsdl>.

**Table 1: Referenced namespaces with prefix**

| Prefix | Namespace URI |
|---|---|
| env | http://www.w3.org/2003/05/soap-envelope |
| ter | http://www.onvif.org/ver10/error |
| xs | http://www.w3.org/2001/XMLSchema |
| tt | http://www.onvif.org/ver10/schema |
| tpv | http://www.onvif.org/ver10/provisioning/wsdl |

All sections in this specification are normative unless explicitly marked as informative.

# 5 Provisioning Service

## 5.1 Move Operations

These operations continuously move the device until the requested timeout expires, the client sends a Stop command, the client sends another provisioning Move command, or the device reaches a physical limit and cannot move in the specified direction anymore. If the request doesn't contain a timeout duration, then the device shall stop when the default timeout expires.

A device shall accept any given value of timeout. If necessary the device may adapt this parameter value without returning an error.

For simplicity in managing timeouts on the device, a timeout expiration on any axis may result in stopping movement on all axes, emulating a *Stop* operation.

### 5.1.1 Pan Move

This operation continuously moves the camera left or right.

A device indicating MaximumPanMoves capability greater than zero shall support the provisional pan through the PanMove command.

**Table 2: PanMove command**

| **PanMove** | Access Class: WRITE_SYSTEM |
|---|---|
| **Message name** | **Description** |
| PanMoveRequest | *This message contains a request for the device to move left or right.*<br><br>tt:ReferenceToken **VideoSource** [1][1]<br>tpv:PanDirection **Direction** [1][1]<br>xs:Duration **Timeout** [0][1] |
| PanMoveResponse | *This is an empty message.* |
| **Fault codes** | **Description** |
| env:Sender<br>ter:InvalidArgVal<br>ter:NoSource | *The video source does not exist.* |
| env:Sender<br>ter:ActionNotSupported<br>ter:NoProvisioning | *Provisioning is not supported for this operation on the given video source.* |

### 5.1.2 Tilt Move

This operation continuously moves the camera up or down.

A device indicating MaximumTiltMoves capability greater than zero shall support the provisional tilt through the TiltMove command.

**Table 3: TiltMove command**

| **TiltMove** | Access Class: WRITE_SYSTEM |
|---|---|
| **Message name** | **Description** |
| TiltMoveRequest | *This message contains a request for the device to move up or down.*<br><br>tt:ReferenceToken **VideoSource** [1][1]<br>tpv:TiltDirection **Direction** [1][1]<br>xs:Duration **Timeout** [0][1] |
| TiltMoveResponse | *This is an empty message.* |
| **Fault codes** | **Description** |
| env:Sender<br>ter:InvalidArgVal<br>ter:NoSource | *The video source does not exist.* |
| env:Sender<br>ter:ActionNotSupported<br>ter:NoProvisioning | *Provisioning is not supported for this operation on the given video source.* |

### 5.1.3 Zoom Move

This operation continuously moves the lens focal point in or out.

A device indicating MaximumZoomMoves capability greater than zero shall support the provisional zoom through the ZoomMove command.

**Table 4: ZoomMove command**

| **ZoomMove** | Access Class: WRITE_SYSTEM |
|---|---|
| **Message name** | **Description** |
| ZoomMoveRequest | *This message contains a request for the device lens to move towards wide angle or telephoto.*<br><br>tt:ReferenceToken **VideoSource** [1][1]<br>tpv:ZoomDirection **Direction** [1][1]<br>xs:Duration **Timeout** [0][1] |
| ZoomMoveResponse | *This is an empty message.* |
| **Fault codes** | **Description** |
| env:Sender<br>ter:InvalidArgVal<br>ter:NoSource | *The video source does not exist.* |
| env:Sender<br>ter:ActionNotSupported<br>ter:NoProvisioning | *Provisioning is not supported for this operation on the given video source.* |

### 5.1.4 Roll Move

This operation continuously moves the camera clockwise or counterclockwise.

A device indicating MaximumRollMoves capability greater than zero shall support the provisional roll through the RollMove command.

If a device supports the AutoLevel capability, the direction may be *Auto*.

**Table 5: RollMove command**

| **RollMove** | Access Class: WRITE_SYSTEM |
|---|---|
| **Message name** | **Description** |
| RollMoveRequest | *This message contains a request for the device to roll clockwise or counterclockwise, or to auto-level.*<br><br>tt:ReferenceToken **VideoSource** [1][1]<br>tpv:RollDirection **Direction** [1][1]<br>xs:Duration **Timeout** [0][1] |
| RollMoveResponse | *This is an empty message.* |
| **Fault codes** | **Description** |
| env:Sender<br>ter:InvalidArgVal<br>ter:NoSource | *The video source does not exist.* |
| env:Sender<br>ter:ActionNotSupported<br>ter:NoProvisioning | *Provisioning is not supported for this operation on the given video source.* |
| env:Sender<br>ter:ActionNotSupported<br>ter:NoAutoMode | *Cannot set position automatically.* |

### 5.1.5 Focus Move

This operation continuously moves the camera lens in or out.

A device indicating MaximumFocusMoves capability greater than zero shall support the provisional focus through the FocusMove command.

If a device supports the AutoFocus capability, the direction may be *Auto*.

**Table 6: FocusMove command**

| **FocusMove** | Access Class: WRITE_SYSTEM |
|---|---|
| **Message name** | **Description** |
| FocusMoveRequest | *This message contains a request for the device lens to focus near or far, or to auto-focus.*<br><br>tt:ReferenceToken **VideoSource** [1][1]<br>tpv:FocusDirection **Direction** [1][1]<br>xs:Duration **Timeout** [0][1] |
| FocusMoveResponse | *This is an empty message.* |
| **Fault codes** | **Description** |
| env:Sender<br>ter:InvalidArgVal | *The video source does not exist.* |

| | |
|---|---|
| ter:NoSource | |
| env:Sender<br>ter:ActionNotSupported<br>ter:NoProvisioning | *Provisioning is not supported for this operation on the given video source.* |
| env:Sender<br>ter:ActionNotSupported<br>ter:NoAutoMode | *Cannot set position automatically.* |

### 5.1.6 Stop

This operation immediately stops movement on all axes.

**Table 7: Stop command**

| **Stop** | Access Class: WRITE_SYSTEM |
|---|---|
| **Message name** | **Description** |
| StopRequest | *This message contains a request to stop all movement.*<br><br>tt:ReferenceToken **VideoSource** [1][1] |
| StopResponse | *This is an empty message.* |
| **Fault codes** | **Description** |
| env:Sender<br>ter:InvalidArgVal<br>ter:NoSource | *The video source does not exist.* |

## 5.2 Usage Operation

This operation returns information about how many provisioning operations have been performed on each axis. These values can be compared to the lifetime limits from *GetServiceCapabilities* to determine how close to (or past) vendor defined life limits the device is. The values shall survive a *SetSystemFactoryDefault* operation.

A single provisioning operation may increase the corresponding usage number by more than 1. For example, pan usage may increment by the number of steps the stepper motor has moved, which can be multiple steps per operation.

If a particular provisioning axis is not supported, the corresponding usage value may be omitted from the response.

**Table 8: GetUsage command**

| **GetUsage** | Access Class: READ_SYSTEM |
|---|---|
| **Message name** | **Description** |
| GetUsageRequest | *This message contains a request for the number of operations performed on each axis.*<br><br>tt:ReferenceToken **VideoSource** [1][1] |
| GetUsageResponse | *This message contains the number of operations that have been performed on each axis over the life of the device.*<br><br>tpv:Usage **Usage** [1][1] |
| **Fault codes** | **Description** |
| env:Sender<br>ter:InvalidArgVal<br>ter:NoSource | *The video source does not exist.* |

### 5.3 Capabilities

The capabilities reflect optional functions and functionality of a service. The information is static and does not change during device operation.

There is one global capability:

| | |
|---|---|
| **DefaultTimeout** | Device-defined timeout after which movement stops. |

The rest of the capabilities is related to a specific video source and returned in a separate element (tpv:SourceCapabilities) containing the following properties:

| | |
|---|---|
| **VideoSourceToken** | The identifier of the video source, a device shall supply this value. |
| **MaximumPanMoves** | Lifetime limit for pan moves on this video source; indication of pan move support as described in Section 5.1.1. |
| **MaximumTiltMoves** | Lifetime limit for tilt moves on this video source; indication of tilt move support as described in Section 5.1.15.1.2. |
| **MaximumZoomMoves** | Lifetime limit for zoom moves on this video source; indication of zoom move support as described in Section 5.1.3. |
| **MaximumRollMoves** | Lifetime limit for roll moves on this video source; indication of roll move support as described in Section 5.1.4. |
| **AutoLevel** | Indication of an auto-level option in a roll move as described in Section 5.1.4. If *MaximumRollMoves* is not defined, *AutoLevel* is ignored. |
| **MaximumFocusMoves** | Lifetime limit for focus moves on this video source; indication of focus move support as described in Section 5.1.5. |
| **AutoFocus** | Indication of an auto-focus option in a focus move as described in Section 5.1.5. If *MaximumFocusMoves* is not defined, *AutoFocus* is ignored. |

**Table 9: GetServiceCapabilities command**

| **GetServiceCapabilities** | Access Class: PRE_AUTH |
|---|---|
| **Message name** | **Description** |
| GetServiceCapablitiesRequest | *This is an empty message.* |
| GetServiceCapabilitiesResponse | *The capability response message contains the requested service capabilities using a hierarchical XML capability structure*<br><br>tpv:Capabilities **Capabilities** [1][1] |
| **Fault codes** | **Description** |
| | *No command-specific fault codes.* |

## 5.4 Service specific fault codes

The table below lists the provisioning service specific fault codes. Additionally, each command can also generate a generic fault as defined in [ONVIF Core specification].

**Table 10: Provisioning service specific fault codes**

| **Fault Code** | **Parent Subcode**<br>**Subcode** | **Fault Reason** | **Description** |
|---|---|---|---|
| env:Sender | ter:InvalidArgVal<br>ter:NoSource | The video source does not exist. | There is no Video Source associated with the specified token. |
| env:Sender | ter:ActionNotSupported<br>ter:NoProvisioning | Provisioning is not supported for this operation. | The operation was called on a Video Source that does not support that command, as indicated in GetServiceCapabilities. |
| env:Sender | ter:ActionNotSupported<br>ter:NoAutoMode | Cannot set position automatically. | The operation was called requesting a direction of Auto on a Video Source that does not support that mode, as indicated in GetServiceCapabilities. |

## Annex A. Revision History

| Rev. | Date | Editor | Changes |
|---|---|---|---|
| 16.12 | Dec-2016 | Steve Wolf<br>Ottavio Campana | First release |