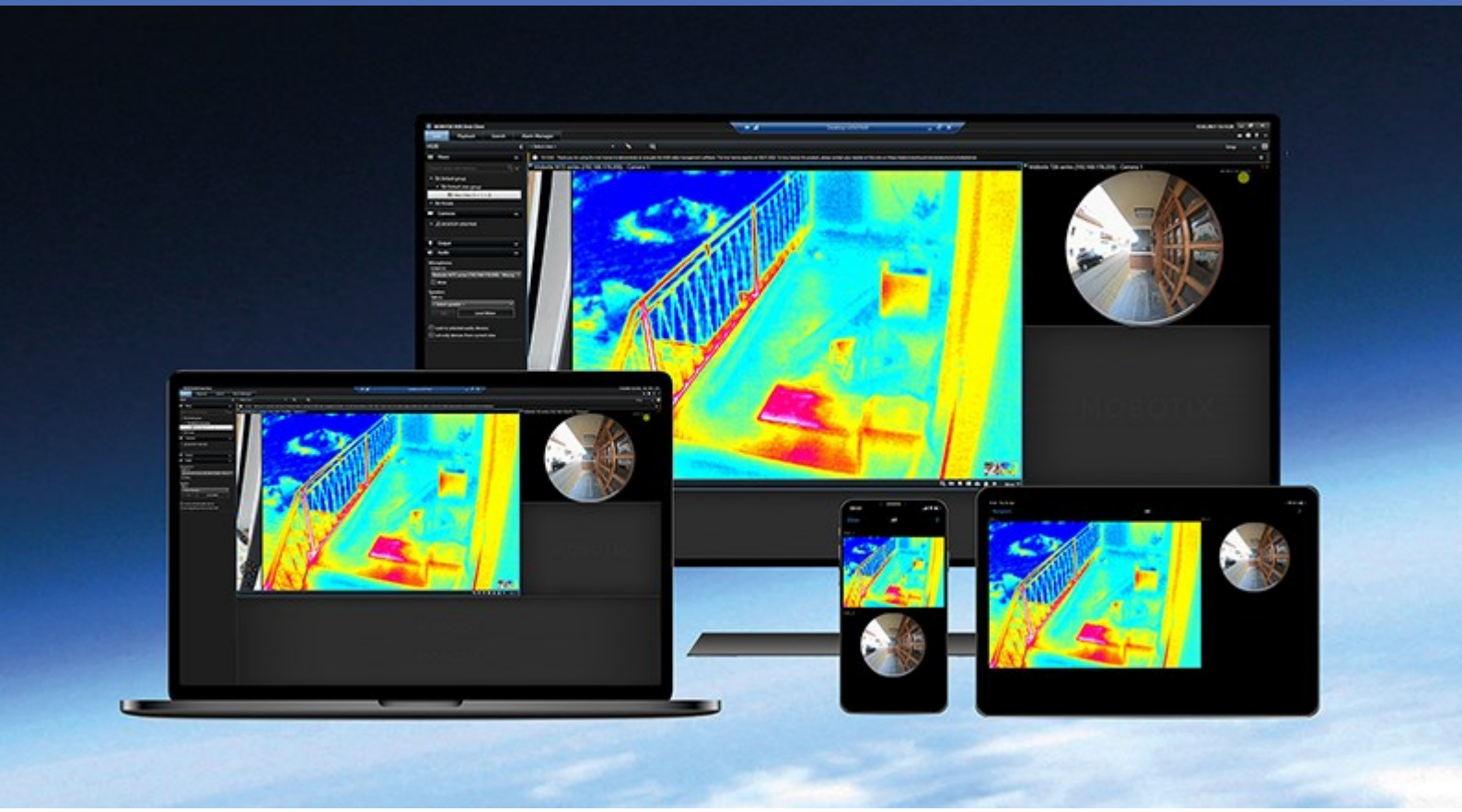
Administrator manual

MOBOTIX Open Network Bridge 2025 R1



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Contents

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Overview

MOBOTIX Open Network Bridge (explained)

MOBOTIX Open Network Bridge is an open ONVIF compliant interface for standardized video sharing from MOBOTIX HUB VMS systems to other IP-based security systems. This enables law enforcement, surveillance centers, or similar organizations (referred to as ONVIF clients) to access live and recorded video streams from the MOBOTIX HUB VMS system to the central monitoring solutions. The video streams are sent as RTSP streams over the Internet.

The key benefits are:

- Enables true interoperability and freedom of choice for large-scale, multi-vendor security deployments and seamless private-to-public video integration
- Provides external access to H.264 and H.265 video streams in the MOBOTIX HUB VMS system, both live video and playback
- Supports live audio for codecs G.711 (u-law) and AAC.
- Offers standardized interfaces that provide an easy and problem-free way of integrating MOBOTIX HUB VMS solutions with alarm centers and monitoring stations

This document provides the following:

- Information about the ONVIF standard and links to reference materials
- Instructions for installing and configuring the MOBOTIX Open Network Bridge in your MOBOTIX HUB VMS product
- Examples of how to enable various types of ONVIF clients to stream live and recorded video from MOBOTIX HUB VMS products

MOBOTIX Open Network Bridge and the ONVIF standard

The ONVIF standard facilitates information exchange by defining a common protocol. The protocol contains ONVIF profiles, which are collections of specifications for interoperability between ONVIF compliant devices.

MOBOTIX Open Network Bridge is compliant with the parts of ONVIF Profile G and Profile S that provide access to live and recorded video, and the ability to control pan-tilt-zoom cameras:

- Profile G - Provides support for video recording, storage, search, and retrieval. For more information, see ONVIF Profile G Specification (https://www.onvif.org/profiles/profile-g/)
- Profile S - Provides support for streaming live video, audio streaming, and pan-tilt-zoom (PTZ) controls. For more information, see ONVIF Profile S Specification (https://www.onvif.org/profiles/profile-s/)

For more information about the ONVIF standard, see the ONVIF® website (https://www.onvif.org/).

ONVIF Profiles support “get” functions that retrieve data, and “set” functions that configure settings. Each function is either mandatory, conditional, or optional. For security reasons, MOBOTIX Open Network Bridge supports only the mandatory, conditional, and optional “get” functions that do the following:

- Request video
- Authenticate users
- Stream video
- Play recorded video

ONVIF clients (explained)

ONVIF clients are computer appliances or software programs that use ONVIF Webservices. Examples of ONVIF clients are servers, media players, IP-based surveillance systems, or ONVIF drivers.

The Real Time Streaming Protocol (RTSP) is used to establish and control media sessions between two or more endpoints. The MOBOTIX Open Network Bridge uses ONVIF Profile S and RTSP to handle requests for video from an ONVIF client, and to stream video from an MOBOTIX HUB installation to the ONVIF client.

By default, communication between ONVIF clients and the MOBOTIX Open Network Bridge server uses the following ports:

- ONVIF port 580. ONVIF clients use this port to submit requests for video streams
- RTSP port 554. MOBOTIX Open Network Bridge uses this port to stream video to ONVIF clients

ONVIF clients can access the RTSP port on the MOBOTIX Open Network Bridge directly. For example, the VLC media player or a VLC plug-in in a browser can retrieve and display video. This is described in this document in Use a media player to view a video stream on page 19.

You can use different ports to, for example, avoid a port conflict. If you change the port numbers, you must also update the RTSP stream for the ONVIF client URI.

The MOBOTIX Open Network Bridge server supports H.264, H.265 and MJPEG codecs.

Cameras must be able to stream video in either H.264 or H.265 codec. For JPEG video streams, RTSP supports video streaming from cameras providing MJPEG.

The server detects the codec type according to the device driver settings. If that fails, it tries to resolve it from the Video Stream name based on the JPEG string.

For audio streams, the MOBOTIX Open Network Bridge server supports live audio for codecs G.711 (u-law) and AAC.

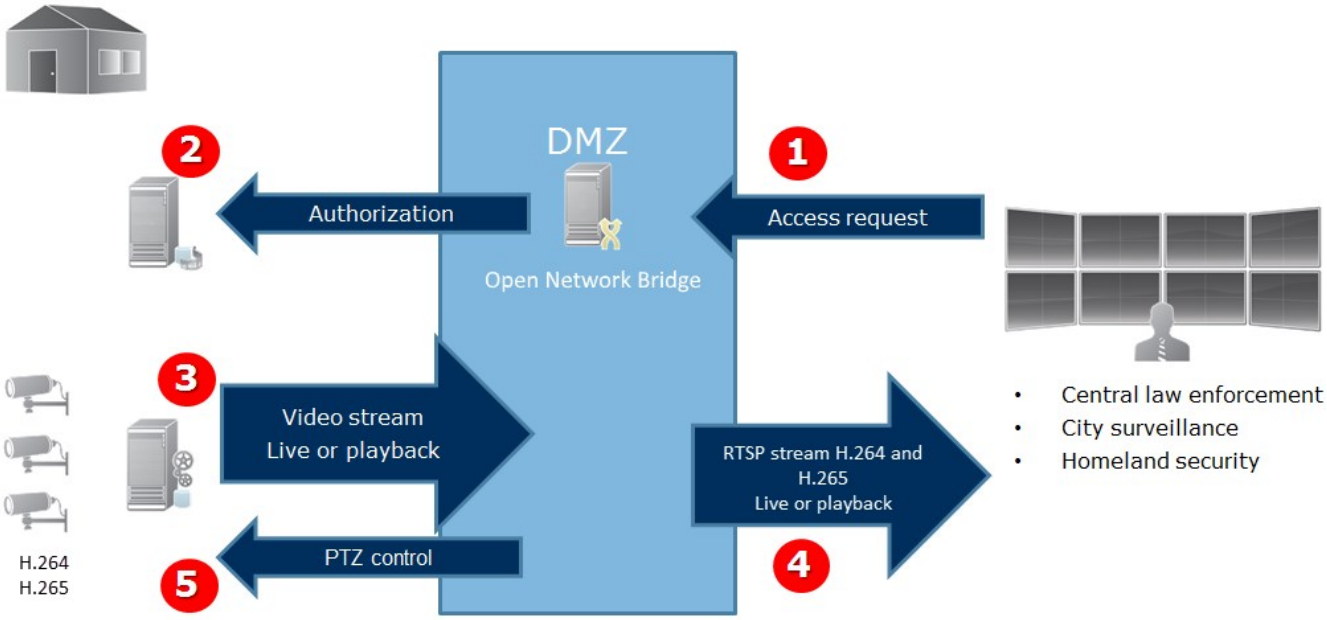
MOBOTIX Open Network Bridge interoperability

The MOBOTIX Open Network Bridge is comprised of the following components:

- MOBOTIX Open Network Bridge server
- MOBOTIX Open Network Bridge 64-bit plug-in for Management Client

The following illustration shows a high-level view of the interoperability between an ONVIF client, the MOBOTIX Open Network Bridge, and MOBOTIX HUB VMS.

MOBOTIX recommends that you install the MOBOTIX Open Network Bridge server in a demilitarized zone (DMZ).



1. An ONVIF client connects to the MOBOTIX HUB VMS via the MOBOTIX Open Network Bridge server through the Internet. To do this, the ONVIF client needs the IP address or domain name (domain/host name) of the server where the MOBOTIX Open Network Bridge is installed, and the ONVIF port number.
2. The MOBOTIX Open Network Bridge server connects to the management server to authorize the ONVIF client user.
3. After authorization, clients can retrieve available cameras and retrieve streams via RTSP service.
4. The MOBOTIX Open Network Bridge server sends the video as RTSP streams to the ONVIF client.
5. If available, the ONVIF client user can pan-tilt-zoom PTZ cameras.

Licensing

MOBOTIX Open Network Bridge licensing

MOBOTIX Open Network Bridge does not require additional licenses, however, you must have an already running MOBOTIX HUB VMS installation with a base license for an MOBOTIX HUB VMS product.

You can download and install the software for free from the MOBOTIX AG website (https://www.mobotix.com/en/software-downloads).

Requirements and considerations

System requirements

The computer where you want to install the MOBOTIX Open Network Bridge server component must have access to the internet, and the following software must be installed:

- Microsoft® .NET Framework 3.5.
- Microsoft® .NET 4.7.2 Framework and Microsoft .NET 6 Runtime installed.
- Visual C++ Redistributable Package for Visual Studio 2013 (x64).

Cameras must support H.264 or H.265 codecs.

For FIPS 140-2 installations, the MOBOTIX Open Network Bridge uses SHA-256 as a hashing algorith. On computers that do not have FIPS enabled, you can choose between MD5 and SHA-256.

For detailed information on how to configure your MOBOTIX HUB VMS to run in FIPS 140-2 compliant mode, see the FIPS 140-2 compliance section in the hardening guide.

What's installed?

During installation, the following components are installed:

- MOBOTIX Open Network Bridge server, including the MOBOTIX Open Network Bridge service, the MOBOTIX RTSP Bridge service, and the MOBOTIX Open Network Bridge Manager, which is accessed from the tray icon
- MOBOTIX Open Network Bridge plug-in. The plug-in is available in the **Servers** node in Management Client. This happens automatically when you use a **Typical** installation method. If you use a **Custom** installation method, you install it at a later stage of the installation

Installation also does the following:

- Registers and starts the MOBOTIX Open Network Bridge service and the MOBOTIX RTSP Bridge service
- Starts the MOBOTIX Open Network Bridge Manager, which is available in the Windows notification area on the server where the MOBOTIX Open Network Bridge Server is installed and accessed from the tray icon

The actions in the MOBOTIX Open Network Bridge Manager apply to both the MOBOTIX Open Network Bridge service and the MOBOTIX RTSP Bridge service. For example, when you start or stop the MOBOTIX Open Network Bridge service, the MOBOTIX RTSP Bridge service also starts or stops.

Installation

Install MOBOTIX Open Network Bridge

When you install MOBOTIX Open Network Bridge, you install a server and a plug-in for the Management Client. For example, you use these components to manage cameras, set up users, grant permissions, and so on.

You can install and add one or more MOBOTIX Open Network Bridges to your system. However, this increases the load on the network, and can impact performance. Typically, only one MOBOTIX Open Network Bridge is added to a system because multiple ONVIF clients can connect via one bridge.

Download the installation file:

1. On the computer where you want to install MOBOTIX Open Network Bridge, go to the MOBOTIX website (https://www.mobotix.com/en/software-downloads) and locate the MOBOTIX Open Network Bridge product.
2. Click the MOBOTIX Open Network Bridge installer file.
3. Run the installer and follow the instructions.

Run the installer:

1. Select the language you want to use, and then click **Continue**.
2. Read and accept the license agreement, and then click **Continue**.
3. Select the installation type, as follows:

To install the MOBOTIX Open Network Bridge server and plug-in on one computer, and apply default settings, click Typical.

1. Verify that the login as either **Network Service** or a domain user account with **User name** and **Password** is correct. Then, click **Continue**.

   To change or edit the service account credentials at a later stage, you will have to reinstall the MOBOTIX Open Network Bridge server.

2. Specify the URL or IP address, and the port number of the primary management server. The default port is 80. If you omit the port number, the system will use port 80. Then, click **Continue**.
3. Select the file location and the product language, and then click **Install**.

   When the installation is complete, a list of successfully installed components displays. Click **Close**.

To install the MOBOTIX Open Network Bridge server and plug-ins on separate computers, click Custom. Use this method if you have a distributed system.

1. To install the server, select the **MOBOTIX Open Network Bridge Server** checkbox, and then click **Continue**.
2. Establish a connection to the management server by specifying the following:
   - Verify that the login as either Network Service or a domain user account with **User name** and **Password** is correct. Then click **Continue**
   - Specify the URL or IP address, and the port number of the primary management server. The default port is 80. If you omit the port number, the system will use port 80

   Click **Continue**.
3. Select the file location and the product language, and then click **Install**.

   When the installation is complete, a list of successfully installed components displays.
4. Click **Close**, and then install the MOBOTIX Open Network Bridge plug-in on the computer where the Management Client is installed. To install the plug-in, run the installer again on that computer, select **Custom** and select the respective plug-ins.

The following components are now installed:

- MOBOTIX Open Network Bridge server
- MOBOTIX Open Network Bridge plug-in that is visible in Management Client in the **Servers** node
- MOBOTIX Open Network Bridge Manager that is running and accessible from the notification area on the server with the MOBOTIX Open Network Bridge server installed and from the tray icon
- MOBOTIX Open Network Bridge service that is registered as a service

You are ready for initial configuration (see Configuring the MOBOTIX Open Network Bridge on page 14).

Configuration

Setting up MOBOTIX Open Network Bridge security controls

MOBOTIX Open Network Bridge enforces user authorization of ONVIF clients. This controls the ONVIF client's ability to access cameras, and the types of operations the ONVIF clients can perform. For example, whether ONVIF clients can use pan-tilt-zoom (PTZ) controls on cameras.

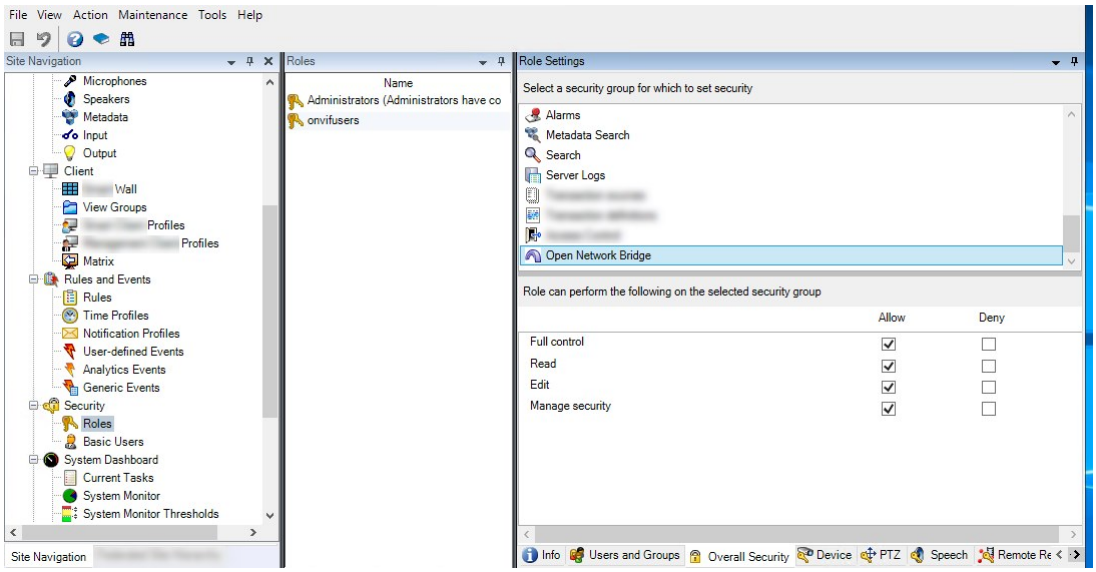
In order to get video streams, the user must also have permissions for the respective cameras. This specific permission is required for the user who configures MOBOTIX Open Network Bridge and who uses it as a service account during installation.

> If you have MOBOTIX HUB L5, you can limit the users access to the MOBOTIX Open Network Bridge plug-in and settings by creating a dedicated Management Client profile.

MOBOTIX recommends that you create and add a dedicated user account for the MOBOTIX Open Network Bridge, and for each ONVIF client.

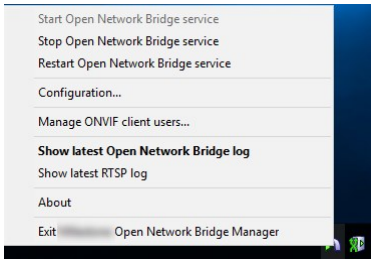
Configure user settings for an ONVIF client

1. Create a basic user in the Management Client, or a Windows user.
2. In the Management Client, create a role that can access cameras, and specify permissions for the MOBOTIX Open Network Bridge security group on the **Overall Security** tab for the role.

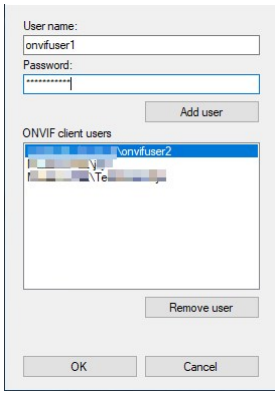


3. Add the user to that role.

4. On the MOBOTIX Open Network Bridge Manager tray icon, select **Manage ONVIF client users**.



5. Enter the domain\user name and password for each user who has ONVIF client permissions and click **Add user**.



MOBOTIX Open Network Bridge allows ONVIF clients only to request and receive video streams from cameras. ONVIF clients cannot configure settings in the MOBOTIX HUB VMS system via the MOBOTIX Open Network Bridge.

As a security precaution, MOBOTIX recommends that you install the MOBOTIX Open Network Bridge server in a demilitarized zone (DMZ). If you install the bridge in a DMZ, you must also configure port forwarding for the internal and external IP addresses.

Manage ONVIF client users

The following table describes the settings for the **Manage ONVIF client users** window.

Name	Description
User name	The domain user name or basic user of the user created for an ONVIF client. Requirement: You must set up the ONVIF client users as users in Management Client with access to cameras and the MOBOTIX Open Network Bridge.
Password	The password for the ONVIF client user.

Name	Description
Add user	After you enter a domain user name and password, click the **Add user** button to add the user.
ONVIF client users	Lists the ONVIF client users that have access to the MOBOTIX HUB VMS system through the MOBOTIX Open Network Bridge server.
Remove user	Prevent an ONVIF client from accessing the MOBOTIX Open Network Bridge. Remove a selected user from the **ONVIF client users** list.

Configuring the MOBOTIX Open Network Bridge

After you install the MOBOTIX Open Network Bridge, the MOBOTIX Open Network Bridge service is running and the MOBOTIX Open Network Bridge Manager tray icon turns green.

You must first configure access permissions, which is described in Setting up MOBOTIX Open Network Bridge security controls on page 12.

The next step is to add the MOBOTIX Open Network Bridge plug-in to the Management Client.

Add MOBOTIX Open Network Bridge to the Management Client:

1. Open the Management Client.
2. Expand **Servers**, right-click **MOBOTIX Open Network Bridge**, and select **Add New**.

   The **Add MOBOTIX Open Network Bridge** dialog box lists all registered **Add MOBOTIX Open Network Bridge** servers that have not yet been added.
3. Select a MOBOTIX Open Network Bridge server, and then click **OK**.

User interface details

This article provides information about the settings for managing users and connections, and configuration settings for cameras.

Open the Management Client and select the **MOBOTIX Open Network Bridges** node.

General tab

MOBOTIX Open Network Bridge settings

The following table describes the settings for the MOBOTIX Open Network Bridge server and ONVIF clients.

When these settings are changed, for them to take effect, MOBOTIX Open Network Bridge server must be restarted.

Name	Description
ONVIF port	The port number of the ONVIF port. ONVIF clients use this port to connect to the MOBOTIX Open Network Bridge server. The default port number is 580.
RTSP port	The port number of the RTSP port. The MOBOTIX Open Network Bridge server sends RTSP video streams through this port to ONVIF clients. The default port number is 554.
Enable WS-Discovery	WS-Discovery (Web Services Dynamic Discovery) is a technical specification that defines a multicast discovery protocol to locate services on a local network.

Default camera settings (as reported to the ONVIF clients)

These settings for the MOBOTIX Open Network Bridge list the default settings for all cameras that the MOBOTIX Open Network Bridge provides to the ONVIF clients when the clients connect and request video streams.

The settings do not reflect the actual configuration of the cameras, and do not affect the video stream. The system uses the settings to speed up the exchange of video between the MOBOTIX Open Network Bridge and the ONVIF client. The ONVIF client will use the actual settings from the RTSP stream.

You can change the default settings that MOBOTIX Open Network Bridge provides to the ONVIF client, for example, if you want the values to reflect the actual configuration of the cameras.

Name	Description
Max days of retention	Default value is 30.
Frame per seconds	Default value is 5.
Width	Default value is 1920. This corresponds to full HD quality.
Height	Default value is 1080. This corresponds to full HD quality.
Bitrate Kbps	Default value is 512.
GOP size	Default value is 5.
Codec	Select one of the codec profiles. The default value is H.264 Baseline Profile.

Use configurations from devices setting

Default is enabled. Enable this to use the actual configuration of the devices instead of the default average values defined above.

> If you enable this setting, the response time between the MOBOTIX HUB system and the ONVIF clients may increase.

Ignore privacy masking in the ONVIF clients setting

Default is disabled. Enable this to view video streams that have liftable privacy masks.

> To view the video streams in the ONVIF clients, you must have the permission to lift privacy masks.

RTSP tab

Real Time Streaming Protocol settings

Name	Description
Skip gaps in recordings	When the client performs RTSP playback of recorded video, if there are gaps in the recordings, they will be omitted during playback. This is enabled by default.
Repeat frames	Some players do not behave well when the distance between frames is more than 500 ms. This setting repeats individual frames and adjusts the timestamp, so that when played the video appears to have more frames.
Maximum time between frames:	This setting defines the time in milliseconds between frames. The default value is 350 milliseconds.
Prefer absolute time over normalized	This setting defines the RTSP server playback response, where the client's time interval for playback is not specified. Select this option if you want your RTSP server to use real time as opposed to scaled or normalized playback.

Name	Description
	However, if your client application is set to use either relative time intervals or real time intervals (in UTC), the RTSP server replies with those intervals defined in the client.
Return sequences on command	Enable this to return information for sequences on the DESCRIBE command response.
Maximum number to return	Set the maximum number of sequences to be sent to the client. The default value is 10.
Return from start or end of recording	Select from where to start searching the sequences. from the start or from the end of the recording.

RTSP multicast settings

Name	Description
IP address	The multicast address that the hosts can subscribe to. The default value is 239.1.2.3.
TTL	The maximum number of routers a data packet can be forwarded.

Real-time Transport Protocol settings

Name	Description
RTP protocol for AAC streams	The payload format that indicates the encoded format of the data. Most clients support both RFC 6414 and RFC 3640, but if you experience issues with the audio streaming, you can try changing the RTP protocol.

Operation

Using ONVIF clients to view video streams

ONVIF clients can be many different things, ranging from advanced custom surveillance systems to basic media players.

> If your have applied a permanent privacy mask on your video, you won't be able to stream the video from an ONVIF client.

This section provides examples of how to connect to the MOBOTIX Open Network Bridge.

Use a Network Video Client to view a live stream

This example describes how to install the ONVIF Device Manager, and configure it to stream live video from an MOBOTIX HUB installation.

The ONVIF Device Manager is a free, open source Network Video Client from iDeviceDesign that complies with ONVIF standards. The tool makes it easy to discover and view video from ONVIF compliant cameras on a network. However, the ONVIF Device Manager only streams live video. Additionally, you cannot capture and save the video data in the stream.

> The ONVIF Device Manager does not support FIPS 140-2 or H.265 codec.

Before you start, you must have the following information:

- The login credentials for the user that was created for the MOBOTIX Open Network Bridge
- The IP address or computer name of the computer where the MOBOTIX Open Network Bridge is installed

To install the ONVIF Device Manager, follow these steps:

1. Go to the Sourceforge ONVIF Device Manager site (https://sourceforge.net/projects/onvifdm/) and then download and run the installer. You can install the ONVIF Device Manager on any computer.
2. When the installation completes, an icon is available on your desktop. Double-click the icon to start the ONVIF Device Manager.
3. When you start the ONVIF Device Manager, it automatically discovers ONVIF compliant devices on the network. However, it might not discover the MOBOTIX Open Network Bridge.
    - If it does, go to step 6
    - If it does not, add the bridge manually. Continue with step 4
4. To add a MOBOTIX Open Network Bridge, click **ADD**.

5. In the **Add device** dialog box, in the **URI** field, provide the name or IP address of the computer where the MOBOTIX Open Network Bridge is installed, and the ONVIF port number. For example, the string should look like this: *http://[IP address]:580/onvif/device_service*.
6. After you add the bridge, it is available at the bottom of the **Device** list. Select it.
7. Enter the login credentials for the user that was created for the ONVIF client above the list. If this is a Windows user, you must enter the domain\user name.

Use a media player to view a video stream

This example describes how to use the VLC media player to retrieve and view a live video feed or recorded video from a camera in an MOBOTIX HUB installation.

VLC media player is a free, open source multimedia player from VideoLan that supports various streaming protocols, including RTSP. For example, using VLC media player is useful when you want a very fast way to connect to a camera, or just to test the connection to a camera.

When you connect to a camera to view recorded video, the MOBOTIX Open Network Bridge streams the video sequences, starting with the first sequence.

Before you start, get the following information from the person who administrates the MOBOTIX HUB installation:

- The login credentials for the user account that is assigned to the MOBOTIX Open Network Bridge
- The IP address or computer name of the computer where the MOBOTIX Open Network Bridge is installed

In addition, depending on the schema that you use, you need the following information:

- If you use `rtsp://[rtsp_server]:554/live/[camera_id]`

  Then you need the GUID of the device that you want to stream video from

  > The camera GUID is available in Management Client. To find the GUID, select the recording server where the camera has been added, and then select the camera. Click the **Info** tab, press and hold CTRL on your keyboard, and then click the camera's video preview.

- If you use `rtsp://[rtsp_server]:554/live/[camera_id]/[stream_number]`

  Then you need the stream number. This is a numeric value between 0 and 15.

- If you use `rtsp://[rtsp_server]:554/live/[camera_id]/[stream_id]`

  Then you need the stream ID. This is the GUID that identifies the stream in MOBOTIX HUB VMS.

  The current MOBOTIX HUB VMS multi-streaming implementation GUIDs that identify the steams are fixed to:

  - 28dc44c3-079e-4c94-8ec9-60363451eb40 - for stream 0
  - 28dc44c3-079e-4c94-8ec9-60363451eb41 - for stream 1
  - ...
  - 28dc44c3-079e-4c94-8ec9-60363451eb4f - for stream 15

This description is based on VLC 2.2.4 for Windows.

To install the VLC media player, and connect it to an MOBOTIX HUB system, follow these steps:

1. Go to https://www.videolan.org/vlc/, and then download the installer for the VLC media player.
2. Run the installer, and follow the instructions for each step.
3. On the toolbar, click **Media**, and select **Open Network Stream**.
4. In the **Open media** dialog box, enter the following RTSP string. Replace the variables in the square brackets [MOBOTIX Open Network Bridge IP Address] and [Camera GUID] with the correct information:
   - To view a live video stream, enter **rtsp://[MOBOTIX Open Network Bridge IP Address]:554/live/[Camera GUID]**
   - To view recorded video, enter **rtsp://[MOBOTIX Open Network Bridge IP Address]:554/vod/[Camera GUID]**
5. Click **Play**, and then enter the user name and password of the user account that was added to the MOBOTIX Open Network Bridge.

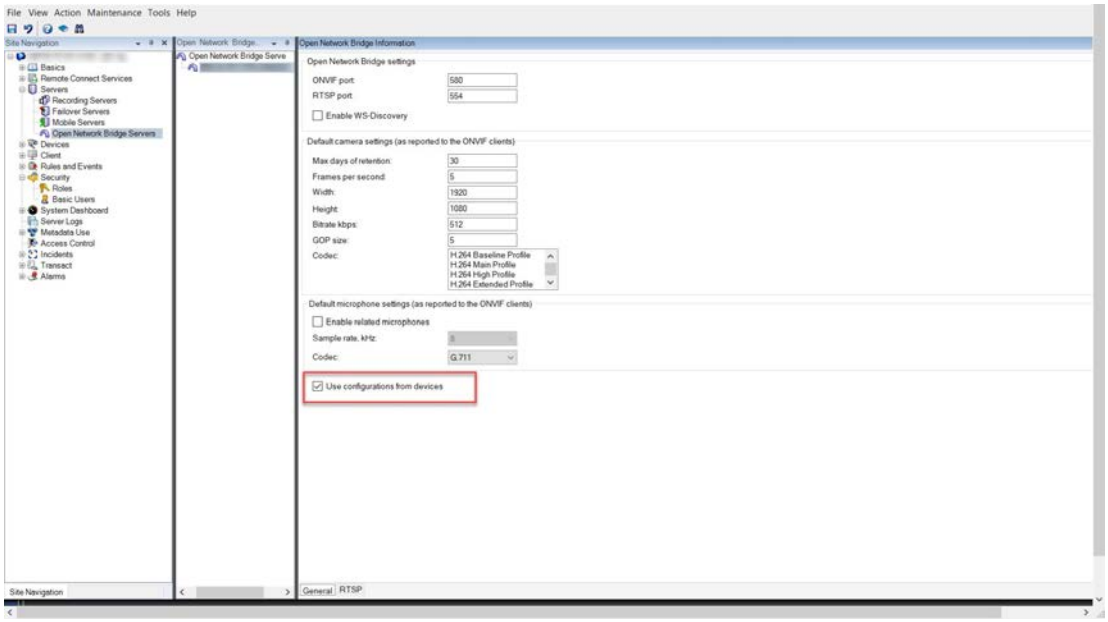
Manage video playback

Playback controls comply with RTSP standards and the ONVIF Streaming Specification (https://www.onvif.org/profiles/specifications/).

Recording summary

You can get an overview of all recorded video available on the device by using the `GetRecordingSummary` command. This is not required, but it provides useful information prior to conducting a search.

You can use `GetRecordingSummary` and/or `GetMediaAttributes` to get the timestamp of the first and the last recording, but you must first enable the **Use configurations from cameras** setting on the MOBOTIX Open Network Bridge plug-in in the MOBOTIX HUB Management Client.



Create a proxy for the `RecordingSearch` service using the service endpoint returned by `GetServices`. Create request and response objects, then call `GetRecordingSummary`.

```
SearchBindingProxy searchProxy( &soapSearch );

std::string searchEndpoint = "http://" + host + "/onvif/recording_search_service";

_tse__GetRecordingSummary tse__GetRecordingSummary;

_tse__GetRecordingSummaryResponse tse__GetRecordingSummaryResponse;

result = searchProxy.GetRecordingSummary( searchEndpoint.c_str(), NULL,

   &tse__GetRecordingSummary, &tse__GetRecordingSummaryResponse );
```

Search for recordings

The Search service method `FindRecordings` starts an asynchronous search on the camera. `FindRecordings` returns a token that references the search results. Even though there is only one recording available, a search is the proper way to obtain a reference for that recording.

Send a `FindRecordings` request with the following mandatory parameters:

- `SearchScope` > `IncludedSources` > `Token` – you must provide the camera GUID token
- `SearchScope` > `RecordingInformationFilter` – string with the following parameters:
  - `timestamp` (in UTC format)
  - `maxTimeBefore` (the time before the requested timestamp, in milliseconds)
  - `maxCountBefore` (the maximum number of tracks before requested timestamp)
  - `maxTimeAfter` (the time after the requested timestamp, in milliseconds)
  - `maxCountAfter` (the maximum number of tracks after requested timestamp)

For example:

```
boolean(//Track[TrackType = "Video"]),2016-12-06T08:07:43Z,99999999,20,99999999,20
```

You will get a response with a `SearchToken`, which is unique for the search criteria.

Pass the `SearchToken` to `GetRecordingSearchResults` and you will get a list with all the tracks corresponding to the search criteria.

Initiating playback

When viewing video playback, the default speed is 1 (normal playback in the forward direction).

Playback is initiated by means of the RTSP PLAY method. A range can be specified. If no range is specified, the stream is played from the beginning and plays to the end, or, if the stream is paused, it is resumed at the point it was paused. In this example, "Range: npt=3-20" instructs the RTSP server to start playback from the third second until 20th second.

For example:

```
PLAY rtsp://user:1234@test01:554/vod/943ffaad-42be-4584-bc2c-c8238ed96373 RTSP/1.0
CSeq: 123
Session: 12345678
Require: onvif-replay
Range: npt=3-20
Rate-Control: no
```

Reverse playback

ONVIF devices MAY support reverse playback. Reverse playback is indicated using the Scale header field with a negative value. For example to play in reverse without data loss, a value of –1.0 would be used.

The MOBOTIX Open Network Bridge supports values [-32 : 32].

```
PLAY rtsp://user:1234@test01:554/vod/943ffaad-42be-4584-bc2c-c8238ed96373 RTSP/1.0
```

```
CSeq: 123

Session: 12345678

Require: onvif-replay

Range: clock=20090615T114900.440Z

Rate-Control: no

Scale: -1.0
```

Change speed

Speed is controlled by the RTSP Rate-Control header. If "Rate-Control=yes", then the server is in control of the playback speed. The stream is delivered in real time using standard RTP timing mechanisms. If "Rate-Control=no", then the client is in control of the playback speed. Rate-controlled replay will typically only be used by non-ONVIF specific clients because they will not specify “Rate-Control=no”.

To control playback speed in a client, use the provided controllers. For example, with the VLC media player, select **Playback** > **Speed** > **Faster** or **Slower**. This increases or decreases the speed by 0.5.

Faster Fine and **Slower Fine** change the speed by 0.25.

Manage VLC media player playback with command line entries

You can manage video playback in the VLC media player by using command lines. Refer to the VLC command line help (https://wiki.videolan.org/VLC_command-line_help/) for details.

Such commands allow you to, for example, reverse playback and change the start time of the playback.

An example of a typical command line:

```
>vlc.exe --rate=-1.0 --start-time=3600 "rtsp://user:1234@test01:554/vod/943ffaad-42be-
4584-bc2c-c8238ed96373"
```

Where:

- Rate is the scale and speed parameter
- Start-time is seconds after the database start

Following are the playback controls for VLC media player:

Code	What can I achieve with the code?
input-	<integer [-2147483648 .. 2147483647]>

Code	What can I achieve with the code?
repeat=	Input repetitions Number of times the same input will be repeated
start-time=	<float> Start time The stream will start at this position (in seconds)
stop-time=	<float> Stop time The stream will stop at this position (in seconds)
run-time=	<float> Run time The stream will run this duration (in seconds)
input-fast-seek no-input-fast-seek	Fast seek (default disabled) Favor speed over precision while seeking
rate=	<float> Playback speed This defines the playback speed (nominal speed is 1.0)
input-list=	<string> Input list You can give a comma-separated list of inputs that will be concatenated together after the normal one
input-slave=	<string> Input slave (experimental) This allows you to play from several inputs at the same time. This feature is experimental, not all formats are supported. Use a '#' separated list of inputs

Using ONVIF clients to hear audio streams

ONVIF clients can be many different things, ranging from advanced custom surveillance systems to basic media players.

This provides examples of how to connect to MOBOTIX Open Network Bridge to stream audio.

There are two options for streaming audio:

- You can stream audio as a separate RTSP stream, that contains only audio.

  It uses the same pattern as for the video streams: `rtsp://[rtsp_server]:554/live/[mic_id]`, where <mic_id> is the unique microphone identifier in the MOBOTIX HUB VMS.

- You can stream audio as a complementary stream to the video stream of the camera that the microphone is related to.

  In this case you use the camera address: `rtsp://[rtsp_server]:554/live/[camera_id]`, and select the required streams via RTSP protocol (SETUP command). This works only when **Enable related microphones** is enabled in the MOBOTIX Open Network Bridge settings in Management Client.

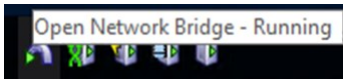
Similar to video streams, when detecting audio streams, the MOBOTIX Open Network Bridge attempts to detect the codec type from the device driver settings. If that fails, it attempts the audio codec as a part of the microphone name. Lastly, it uses the default setting in Management Client (directly following **Enable related microphones**).

Maintenance

Check the status of the MOBOTIX Open Network Bridge service

To view the status of the MOBOTIX Open Network Bridge service, follow these steps.

1. On the computer where the MOBOTIX Open Network Bridge server is installed, look in the notification area. The MOBOTIX Open Network Bridge Manager tray icon indicates the status of the MOBOTIX Open Network Bridge service. If the service is running, the icon is green.

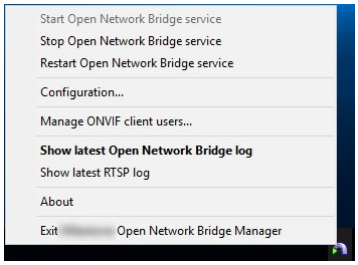


2. If it is not running, the icon is yellow or red. Right-click the icon and select **Start MOBOTIX Open Network Bridge service**.

View logs

The MOBOTIX Open Network Bridge Manager saves the log information about the MOBOTIX Open Network Bridge server and the RTSP streams.

1. In the notification area on the computer where the MOBOTIX Open Network Bridge server is installed, right-click the MOBOTIX Open Network Bridge Manager tray icon.



2. Select **Show latest MOBOTIX Open Network Bridge log** or **Show latest RTSP log**.

Change the level of information in your logs

The MOBOTIX Open Network Bridge Manager saves the log information about the MOBOTIX Open Network Bridge server and the RTSP streams.

To change the level of information, follow these steps:

1. Right-click the MOBOTIX Open Network Bridge Manager tray icon, and then stop the MOBOTIX Open Network Bridge service.
2. Right-click the MOBOTIX Open Network Bridge Manager tray icon again, and select **Configuration**.

3. In the **Log level for MOBOTIX Open Network Bridge** and **Log level for RTSP** fields, select the type of information that you want to save in your ONVIF and RTSP logs. The default value is **Information**.

   From top to bottom in the list, the options are ordered from lowest level to highest level. Each level includes the level above it in the list. For example, the **Warning** level includes the **Error** level. MOBOTIX recommends that you use only the **Error**, **Warning**, and **Information** levels. The **Trace** and **Message** levels capture more information and use more disk space, which can decrease performance.

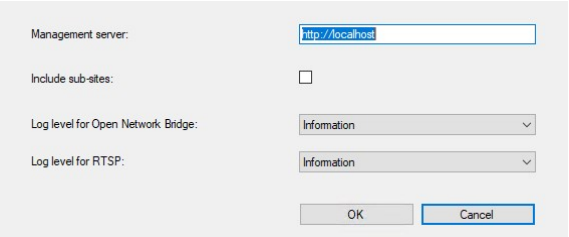
4. Click **OK**.
5. Right-click the MOBOTIX Open Network Bridge Manager tray icon, and then start the MOBOTIX Open Network Bridge service.

Change configuration settings for the MOBOTIX Open Network Bridge

If you change the IP address or host name of the management server, you must update this information for MOBOTIX Open Network Bridge.

To change the VMS address, follow these steps:

1. On the computer where MOBOTIX Open Network Bridge server is installed, right-click the MOBOTIX Open Network Bridge Manager tray icon, and then stop the MOBOTIX Open Network Bridge service.
2. Right-click the MOBOTIX Open Network Bridge Manager tray icon again, and select **Configuration**.



3. Specify the new information, and then click **OK**.

   You must use the fully qualified domain name or the IP address of the server where the management server is installed.

4. Right-click the MOBOTIX Open Network Bridge Manager tray icon, and then start the MOBOTIX Open Network Bridge service.

The MOBOTIX Open Network Bridge service is now running and the tray icon turns green.

Include sub-sites

By default, the MOBOTIX Open Network Bridge is configured to exclude sub-sites. This means that ONVIF client users cannot access video from cameras that are installed on sub-sites.

You can change this to include sub-sites. However, MOBOTIX recommends that you do so only for systems where sub-sites do not contain large numbers of cameras. The MOBOTIX Open Network Bridge aggregates and displays all cameras, including those from sub-sites, in one list. For example, if the system and sub-sites have more than 50 cameras, the list will be difficult to use.

If you must include sub-sites, consider installing the MOBOTIX Open Network Bridge on each management server. You will have more than one list of cameras; however, the cameras will be easier to identify and navigate.

To include sub-sites:

1. Right-click the MOBOTIX Open Network Bridge Manager tray icon, and then stop the MOBOTIX Open Network Bridge service.
2. Right-click the MOBOTIX Open Network Bridge Manager tray icon again and click **Configuration**.
3. Select the **Include sub-sites** checkbox, and then click **OK**.
4. Right-click the MOBOTIX Open Network Bridge Manager tray icon, and then start the MOBOTIX Open Network Bridge service.

Tips and tricks

The MOBOTIX Open Network Bridge configuration file

The configuration created by MOBOTIX Open Network Bridge Manager is stored locally in a file at `ProgramData\MOBOTIX\MOBOTIX Open Network Bridge`. The name of the file is serverconfiguration.xml. If this file is deleted, you must update the configuration in the MOBOTIX Open Network Bridge Manager.

To update a configuration, follow the steps described in Change configuration settings for the MOBOTIX Open Network Bridge on page 27.

MOBOTIX Open Network Bridge and streaming codecs

The camera properties, including the codec, are determined by the manufacturer. While MOBOTIX Open Network Bridge reads the codec property from most camera models, it is possible that the codec from your device is not recognized and you cannot stream video.

If your cameras use different codecs for streaming, make sure that you have enabled the **Use configuration from devices** setting in the **General** tab for the selected **Open Network Bridge Server**.

To instruct MOBOTIX Open Network Bridge which codec to use:

1. In the **Site Navigation** pane, select **Devices** and then select **Cameras**.
2. Select the relevant camera in the **Overview** pane.
3. Open the **Streams** tab.
4. In the stream name field, add the codec name at the end. Example: Video Stream 1 - H264.

ONVIF specifications

Supported functions

To use an IP-based surveillance system as an ONVIF client and connect to the MOBOTIX Open Network Bridge, the system must support certain functions in ONVIF Profile G and Profile S. This section lists these functions, and organizes them according to the features they support.

The MOBOTIX Open Network Bridge does not support functions related to configuration, jobs, user maintenance, or functions defined as Media or Event.

Likewise, MOBOTIX Open Network Bridge supports Media2 network interface.

- ONVIF Profile G on page 30
- ONVIF Profile S on page 37
- ONVIF Media2 network interface on page 43

ONVIF Profile G

The following tables list the supported functions for ONVIF Profile G. The tables show whether these functions are mandatory, optional, or conditional, according to the specifications.

The Implemented column shows whether the function has been implemented in the MOBOTIX Open Network Bridge. The fields marked as Dummy means that server sends a valid response according to the standard, but it is not verified that data in it is correct.

For more information about Profile G, see the ONVIF Profile G Specification (https://www.onvif.org/profiles/profile-g/).

ONVIF 7.2.3 Function list for Capabilities

Function	Service	Device	Implemented
GetServices	Device	Mandatory	Yes
GetServiceCapabilities	Device	Mandatory	Yes
GetWsdlUrl	Device	Mandatory	Yes
GetServiceCapabilities	Recording Control	Mandatory	Yes (Dummy)

Function	Service	Device	Implemented
GetServiceCapabilities	Replay	Mandatory	Yes
GetServiceCapabilities	Search	Mandatory	Yes
GetServiceCapabilities	Receiver	Conditional	No
GetServiceCapabilities	Event	Mandatory	No
GetServiceCapabilities	Media	Conditional	Yes

ONVIF 7.3.3 Function list for Recording Search

Function	Service	Device	Implemented
GetRecordingSummary	Search	Mandatory	Yes
GetRecordingInformation	Search	Mandatory	Yes
GetMediaAttributes	Search	Mandatory	Yes
FindRecordings	Search	Mandatory	Yes
GetRecordingSearchResults	Search	Mandatory	Yes
FindEvents	Search	Mandatory	No
GetEventSearchResults	Search	Mandatory	No
EndSearch	Search	Mandatory	Yes
tns1:RecordingHistory/Recording/State	Event	Mandatory	No
tns1:RecordingHistory/Track/State	Event	Mandatory	No
XPath dialect	Search	Mandatory	Yes

ONVIF 7.4.3 Function list for Reply Control

Function	Service	Device	Implemented
GetReplayUri	Replay	Mandatory	Yes
SetReplayConfiguration	Replay	Mandatory	Yes (Dummy)
GetReplayConfiguration	Replay	Mandatory	Yes (Dummy)

ONVIF 9.1.4.3 Function list for Recording Control – Using an on-board media source (if supported)

*If the device has any on-board media sources

**If the device has any on-board audio sources

Configuration	Function	Service	Device	Imple-mented
Media Profile Configuration	CreateProfile	Media	Mandatory*	No
	DeleteProfile	Media	Mandatory*	No
	GetProfiles	Media	Mandatory*	Yes
	GetProfile	Media	Mandatory*	Yes

Configuration	Function	Service	Device	Imple-mented
Video Source Configuration	GetVideoSources	Media	Mandatory*	Yes
	GetVideoSourceConfiguration	Media	Mandatory*	Yes
	GetVideoSourceConfigurations	Media	Mandatory*	Yes
	AddVideoSourceConfiguration	Media	Mandatory*	No
	RemoveVideoSourceConfiguration	Media	Mandatory*	No
	SetVideoSourceConfiguration	Media	Mandatory*	No
	GetCompatibleVideoSourcConfig urations	Media	Mandatory*	No
	GetVideoSourceConfiguration Options	Media	Mandatory*	No
Video Encoder Configuration	GetVideoEncoderConfiguration	Media	Mandatory*	No
	GetVideoEncoderConfigurations	Media	Mandatory*	Yes
	AddVideoEncoderConfiguration	Media	Mandatory*	No
	RemoveVideoEncoderConfig uration	Media	Mandatory*	No
	SetVideoEncoderConfiguration	Media	Mandatory*	No
	GetCompatibleVideoEncoder Configurations	Media	Mandatory*	No
	GetVideoEncoderConfiguration Options	Media	Mandatory*	Yes (Dummy)
	GetGuaranteedNumberOf VideoEncoderInstances	Media	Mandatory*	No

Configuration	Function	Service	Device	Imple-mented
Metadata Configuration	GetMetadataConfiguration	Media	Mandatory*	No
	GetMetadataConfigurations	Media	Mandatory*	No
	AddMetadataConfiguration	Media	Mandatory*	No
	RemoveMetadataConfiguration	Media	Mandatory*	No
	SetMetadataConfiguration	Media	Mandatory*	No
	GetCompatibleMetadata Configurations	Media	Mandatory*	No
	GetMetadataConfigurationOptions	Media	Mandatory*	No
Audio Source Configuration	GetAudioSources	Media	Mandatory**	No
	GetAudioSourceConfiguration	Media	Mandatory**	No
	GetAudioSourceConfigurations	Media	Mandatory**	No
	AddAudioSourceConfiguration	Media	Mandatory**	No
	RemoveAudioSourceConfiguration	Media	Mandatory**	No
	SetAudioSourceConfiguration	Media	Mandatory**	No
	GetCompatibleAudioSource Configurations	Media	Mandatory**	No
	GetAudioSourceConfiguration Options	Media	Mandatory**	No

Configuration	Function	Service	Device	Imple-mented
Audio Encoder Configuration	GetAudioEncoderConfiguration	Media	Mandatory**	No
	GetAudioEncoderConfigurations	Media	Mandatory**	No
	AddAudioEncoderConfiguration	Media	Mandatory**	No
	RemoveAudioEncoder Configuration	Media	Mandatory**	No
	SetAudioEncoderConfiguration	Media	Mandatory**	No
	GetCompatibleAudioEncoder Configurations	Media	Mandatory**	No
	GetAudioEncoderConfiguration Options	Media	Mandatory**	No

ONVIF 9.3.3 Function list for Discovery

Function	Service	Device	Implemented
WS-Discovery	Core	Mandatory	Yes
GetDiscoveryMode	Device	Mandatory	No
SetDiscoveryMode	Device	Mandatory	No
GetScopes	Device	Mandatory	Yes
SetScopes	Device	Mandatory	No
AddScopes	Device	Mandatory	No
RemoveScopes	Device	Mandatory	No

ONVIF 9.4.3 Function list for Network Configuration

Function	Service	Device	Implemented
GetHostname	Device	Mandatory	No
SetHostname	Device	Mandatory	No
GetDNS	Device	Mandatory	Yes (Dummy)
SetDNS	Device	Mandatory	No
GetNetworkInterfaces	Device	Mandatory	Yes
SetNetworkInterfaces	Device	Mandatory	No
GetNetworkProtocols	Device	Mandatory	No
SetNetworkProtocols	Device	Mandatory	No
GetNetworkDefaultGateway	Device	Mandatory	No
SetNetworkDefaultGateway	Device	Mandatory	No

ONVIF 9.5.3 Function list for System

Function	Service	Device	Implemented
GetDeviceInformation	Device	Mandatory	Yes
GetSystemDateAndTime	Device	Mandatory	Yes
SetSystemDateAndTime	Device	Mandatory	No
SetSystemFactoryDefault	Device	Mandatory	No
Reboot	Device	Mandatory	No

ONVIF functions that MOBOTIX Open Network Bridge does not support:

- ONVIF 8.1.3 Function list for Recording Control – Dynamic Recording
- ONVIF 8.1.4 Function list for Recording Control – Dynamic Tracks
- ONVIF 9.1.3 Function list for Recording Control
- ONVIF 9.1.5.3 Function list for Recording Control – Using a Receiver as Source
- ONVIF 9.2.3 Function list for Recording Source Configuration
- ONVIF 9.6.3 Function list for User Handling
- ONVIF 9.7.4 Function list for Event Handling

ONVIF Profile S

The following tables list the supported functions for ONVIF Profile S. The tables show whether these functions are mandatory, optional, or conditional, according to the specifications.

The Implemented column shows whether the function has been implemented in the MOBOTIX Open Network Bridge. The fields marked as Dummy means that server sends a valid response according to the standard, but it is not verified that data in it is correct.

For more information about Profile S, see the ONVIF Profile S Specification (https://www.onvif.org/profiles/profile-s/).

ONVIF 7.2.3 Capabilities Function List for Devices

Function	Service	Device	Implemented
GetCapabilities	Device	Mandatory	Yes
GetWsdlUrl	Device	Mandatory	Yes (Dummy)

ONVIF 7.3.3 Discovery Function List for Devices

Function	Service	Device	Implemented
WS-Discovery	Core	Mandatory	Yes
GetDiscoveryMode	Device	Optional	No

Function	Service	Device	Implemented
SetDiscoveryMode	Device	Optional	No
GetScopes	Device	Optional	Yes
SetScopes	Device	Optional	No
AddScopes	Device	Optional	No
RemoveScopes	Device	Optional	No

ONVIF 7.4.3 Network Configuration Function List for Devices

Function	Service	Device	Implemented
GetHostname	Device	Mandatory	No
SetHostname	Device	Mandatory	No
GetDNS	Device	Mandatory	Yes (Dummy)
SetDNS	Device	Mandatory	No
GetNetworkInterfaces	Device	Mandatory	Yes
SetNetworkInterfaces	Device	Mandatory	No
GetNetworkProtocols	Device	Mandatory	No
SetNetworkProtocols	Device	Mandatory	No
GetNetworkDefaultGateway	Device	Mandatory	No
SetNetworkDefaultGateway	Device	Mandatory	No

ONVIF 7.5.3 System Function List for Devices

Function	Service	Device	Implemented
GetDeviceInformation	Device	Mandatory	Yes
GetSystemDateAndTime	Device	Mandatory	Yes
SetSystemDateAndTime	Device	Mandatory	No
SetSystemFactoryDefault	Device	Mandatory	No
Reboot	Device	Mandatory	No

ONVIF 7.8.3 Video Streaming Function List for Devices

Function	Service	Device	Implemented
GetProfiles	Media	Mandatory	Yes
GetStreamUri	Media	Mandatory	Yes
Media Streaming using RTSP	Streaming	Mandatory	Yes

ONVIF 7.10.3 Video Encoder Configuration Function List for Devices

Function	Service	Device	Implemented
GetVideoEncoderConfiguration	Media	Mandatory	No
GetVideoEncoderConfigurations	Media	Mandatory	Yes
AddVideoEncoderConfiguration	Media	Mandatory	No
RemoveVideoEncoderConfiguration	Media	Mandatory	No

Function	Service	Device	Implemented
SetVideoEncoderConfiguration	Media	Mandatory	No
GetCompatibleVideoEncoderConfigurations	Media	Mandatory	No
GetVideoEncoderConfigurationOptions	Media	Mandatory	Yes (Dummy)
GetGuaranteedNumberOfVideoEncoderInstances	Media	Mandatory	No

ONVIF 7.11.3 Media Profile Configuration Function List for Devices

Function	Service	Device	Implemented
GetProfiles	Media	Mandatory	Yes
GetProfile	Media	Mandatory	Yes
CreateProfile	Media	Mandatory	No
DeleteProfile	Media	Mandatory	No

ONVIF 7.12.3 Video Source Configuration Function List for Devices

Function	Service	Device	Implemented
GetVideoSources	Media	Mandatory	Yes
GetVideoSourceConfiguration	Media	Mandatory	Yes
GetVideoSourceConfigurations	Media	Mandatory	Yes
AddVideoSourceConfiguration	Media	Mandatory	No
RemoveVideoSourceConfiguration	Media	Mandatory	No

Function	Service	Device	Implemented
SetVideoSourceConfiguration	Media	Mandatory	No
GetCompatibleVideoSourceConfigurations	Media	Mandatory	No
GetVideoSourceConfigurationOptions	Media	Mandatory	No

ONVIF 8.3.3 PTZ Function List for Devices

Function	Service	Device	Implemented
AddPTZConfiguration	Media	Mandatory	No
RemovePTZConfiguration	Media	Mandatory	No
GetNodes	PTZ	Mandatory	Yes
GetNode	PTZ	Mandatory	Yes
GetConfigurations	PTZ	Mandatory	No
GetConfiguration	PTZ	Mandatory	No
GetConfigurationOptions	PTZ	Mandatory	No
SetConfiguration	PTZ	Mandatory	No
ContinuousMove	PTZ	Mandatory	Yes
Stop	PTZ	Mandatory	Yes
GetStatus	PTZ	Mandatory	Yes

ONVIF 8.4.3 PTZ – Absolute Positioning Function List for Devices

Function	Service	Device	Implemented
AbsoluteMove	PTZ	Mandatory	Yes

ONVIF 8.5.3 PTZ – Relative Positioning Function List for Devices

Function	Service	Device	Implemented
RelativeMove	PTZ	Mandatory	Yes

ONVIF 8.6.3 PTZ – Presets Function List for Devices

Function	Service	Device	Implemented
SetPreset	PTZ	Mandatory	Yes
GetPresets	PTZ	Mandatory	Yes
GotoPreset	PTZ	Mandatory	Yes
RemovePreset	PTZ	Mandatory	No

ONVIF 8.7.3 PTZ – Home Position Function List for Devices

Function	Service	Device	Implemented
GotoHomePosition	PTZ	Mandatory	Yes
SetHomePosition	PTZ	Conditional	No

ONVIF 8.8.3 PTZ – Auxiliary Command Function List for Devices

Function	Service	Device	Implemented
SendAuxiliaryCommand	PTZ	Mandatory	Yes

ONVIF functions that MOBOTIX Open Network Bridge does not support:

- 7.6.3 User Handling Function List for Devices
- 7.7.3 Event Handling Function List for Devices
- 7.13.3 Metadata Configuration Function List for Devices
- 8.1.3 Video Streaming – MPEG4 Function List for Devices
- 8.2.3 Video Streaming – H264 Function List for Devices
- 8.9.3 Audio Streaming Function List for Devices
- 8.12.3 Multicast Streaming Function List for Devices
- 8.13.3 Relay Outputs Function List for Devices
- 8.14.3 NTP Function List for Devices
- 8.15.3 Dynamic DNS Function List for Devices
- 8.16.3 Zero Configuration Function List for Devices
- 8.17.3 Relay Outputs Function List for Devices

ONVIF Media2 network interface

The following lists the supported functions for ONVIF Media2 network interface.

See the entire Media2 service specification here: https://www.onvif.org/profiles/specifications/.

Supported profiles functions:

- GetNetworkProtocols
- GetAudioSources
- GetAudioSourceConfigurations
- GetAudioEncoderConfigurations
- GetVideoEncoderConfiguration
- GetAudioSourceConfiguration

- GetAudioEncoderConfiguration
- GetAudioEncoderConfigurationOptions
- RemovePreset

MOBOTIX

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