IEC 62676-2-31

Edition 1.0 2019-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Video surveillance systems for use in security applications – Part 2-31: Live streaming and control based on web services

Systèmes de vidéosurveillance destinés à être utilisés dans les applications de sécurité – Partie 2-31: Transmission en continu en direct et contrôle basé sur les services web

IEC 62676-2-31:2019-06(en-fr)

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VIDEO SURVEILLANCE SYSTEMS FOR USE IN SECURITY APPLICATIONS –

Part 2-31: Live streaming and control based on web services

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62676-2-31 has been prepared by IEC technical committee 79: Alarm and electronic security systems.

This first edition, together with IEC 60839-11-31 and IEC 62676-2-32, cancels and replaces IEC 62676-2-3:2013.

This edition includes the following significant technical changes with respect to IEC 62676-2-3:2013:

a) addition of the Media2 service;
b) additional methods for the imaging service;
c) method duplicates from the device IO service have been removed;
d) both the display and analytics device service are no more included.

This publication contains attached schema files. These files are intended to be used as a complement and do not form an integral part of the standard

The text of this International Standard is based on the following documents:

FDIS	Report on voting
79/620/FDIS	79/622/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 62676 series, published under the general title *Video surveillance systems for use in security applications*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The goal of this document is to provide a fully interoperable network video implementation comprised of products from different network video vendors. This document describes the network video model, interfaces, data types and data exchange patterns. The document reuses existing relevant standards where available and introduces new specifications only where necessary to support the specific requirements for network video surveillance.

VIDEO SURVEILLANCE SYSTEMS FOR USE IN SECURITY APPLICATIONS –

Part 2-31: Live streaming and control based on web services

1 Scope

This document defines procedures for communication between network video clients and video transmitter devices. This new set of specifications makes it possible to build network video systems with devices and receivers from different manufacturers using common and well-defined interfaces. These interfaces cover functions such as media and imaging configuration, real-time streaming of audio and video, pan, tilt and zoom (PTZ) control as well as analytics.

The management and control interfaces defined in this document are described as web services. Annex F contains XML schema and Web Service Description Language (WSDL) definitions for the introduced network services.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60839-11-31, *Alarm and electronic security systems – Part 11-31: Electronic access control systems – Core interoperability protocol based on Web services*

ISO 12639, *Graphic technology – Prepress digital data exchange – Tag image file format for image technology (TIFF/IT)*

INTERNET ENGINEERING TASK FORCE (IETF). RFC 1952: *GZIP file format specification version 4.3* [online]. Edited by P. Deutsch. May 1996 [viewed 2019-01-08]. Available at http://tools.ietf.org/html/rfc1952

INTERNET ENGINEERING TASK FORCE (IETF). RFC 2326: *Real Time Streaming Protocol (RTSP)* [online]. Edited by H. Schulzrinne et al. April 1998 [viewed 2019-01-08]. Available at http://www.ietf.org/rfc/rfc2326.txt

INTERNET ENGINEERING TASK FORCE (IETF). RFC 2435: *RTP Payload Format for JPEG-compressed Video* [online]. Edited by L. Berc et al. October 1998 [viewed 2019-01-08]. Available at http://www.ietf.org/rfc/rfc2435.txt

INTERNET ENGINEERING TASK FORCE (IETF), RFC 2818: *HTTP over TLS* [online]. Edited by E. Rescorla. May 2000 [viewed 2019-01-08]. Available at http://www.ietf.org/rfc/rfc2818.txt

INTERNET ENGINEERING TASK FORCE (IETF), RFC 3016: *RTP Payload Format for MPEG-4 Audio/Visual Streams* [online]. Edited by Y. Kikuchi et al. November 2000 [viewed 2019-01-08]. Available at http://www.ietf.org/rfc/rfc3016.txt

INTERNET ENGINEERING TASK FORCE (IETF), RFC 3550: *RTP: A Transport Protocol for Real-Time Applications* [online]. Edited by H. Schulzrinne et al. July 2003 [viewed 2019-01-08]. Available at
http://www.ietf.org/rfc/rfc3550.txt

INTERNET ENGINEERING TASK FORCE (IETF), RFC 3551: *RTP Profile for Audio and Video Conferences with Minimal Control* [online]. Edited by H. Schulzrinne et al. July 2003 [viewed 2019-01-08]. Available at
http://www.ietf.org/rfc/rfc3551.txt

INTERNET ENGINEERING TASK FORCE (IETF), RFC 3640: *RTP Payload Format for Transport of MPEG-4 Elementary Streams* [online]. Edited by J. van der Meer et al. November 2003 [viewed 2019-01-08]. Available at
http://www.ietf.org/rfc/rfc3640.txt

INTERNET ENGINEERING TASK FORCE (IETF), RFC 3984: *RTP Payload Format for H.264 Video* [online]. Edited by T. Stockhammer et al. February 2005 [viewed 2019-01-08]. Available at
http://www.ietf.org/rfc/rfc3984

INTERNET ENGINEERING TASK FORCE (IETF), RFC 4566: *SDP: Session Description Protocol* [online]. Edited by M. Handley et al. July 2006 [viewed 2019-01-08]. Available at
http://www.ietf.org/rfc/rfc4566.txt

INTERNET ENGINEERING TASK FORCE (IETF), RFC 6455: *The WebSocket Protocol* [online]. Edited by I. Fette et al. December 2011 [viewed 2019-01-08]. Available at
http://www.ietf.org/rfc/rfc6455.txt

INTERNET ENGINEERING TASK FORCE (IETF), RFC 7798: *RTP Payload Format for High Efficiency Video Coding (HEVC)* [online]. Edited by Y.-K. Wang et al. March 2016 [viewed 2019-01-08]. Available at
http://www.ietf.org/rfc/rfc7798.txt

Apple, *Tunneling QuickTime RTSP and RTP over HTTP*
Available at
http://www.opensource.apple.com/source/QuickTimeStreamingServer/QuickTimeStreamingServer-412.42/Documentation/RTSP_Over_HTTP.pdf[1]

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
media profile
profile that maps a video or an audio source or an audio output to a video or an audio encoder, an audio decoder configuration and PTZ and analytics configurations

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[1] QuickTime is the trademark of a product supplied by Apple Inc. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

3.2
metadata
all streaming data except video and audio, including video analytics results, PTZ position data and other metadata (such as textual data from POS applications)

3.3
PTZ node
low-level PTZ entity that maps to the PTZ device and its capabilities

3.4
analytics
algorithms or programs used to analyze video and audio data to generate a high-level data description

4 Overview

4.1 General

This specification defines a standardized interface for video surveillance cameras and encoders based on the basic web service communication mechanism defined in IEC 60839-11-31. The services in this specification define the technical interface details for devices and clients in order to be compliant to ONVIF Profile S and ONVIF Profile T.

4.2 Device IO

This specification extends the Device IO definitions from IEC 60839-11-31 by adding interfaces to retrieve the following entities:

- VideoOutputs
- VideoSources
- AudioOutputs
- AudioSources

4.3 Imaging configuration

The imaging service provides configuration and control data for imaging-specific properties. WSDL is part of the framework and provided in the imaging WSDL file.

The service includes the following operations:

- Get and set imaging configurations such as exposure time, gain and white balance.
- Get imaging configuration options that include valid ranges for imaging parameters.
- Move a focus lens.
- Get current position and move status of a focus lens.
- Retrieve and configure imaging presets.

4.4 Media configuration

4.4.1 Media profiles

Media configurations are handled through the media service. Media configurations are used to determine the streaming properties of requested media streams as defined in this specification. Sets of media configurations are called media profiles. See Figure 1 for an abstract example.

Real-time video and audio streaming configurations are controlled using media profiles. A media profile maps a video and/or audio source to a video and/or an audio encoder, PTZ and