



Vimba

Vimba USB TL Features Manual

1.0.2

Legal Notice

Trademarks

Unless stated otherwise, all trademarks appearing in this document of Allied Vision Technologies are brands protected by law.

Warranty

The information provided by Allied Vision is supplied without any guarantees or warranty whatsoever, be it specific or implicit. Also excluded are all implicit warranties concerning the negotiability, the suitability for specific applications or the non-breaking of laws and patents. Even if we assume that the information supplied to us is accurate, errors and inaccuracy may still occur.

Copyright

All texts, pictures and graphics are protected by copyright and other laws protecting intellectual property. It is not permitted to copy or modify them for trade use or transfer, nor may they be used on websites.

Allied Vision Technologies GmbH 04/2017

All rights reserved.

Managing Director: Mr. Frank Grube

Tax ID: DE 184383113

Headquarters:

Taschenweg 2a

D-07646 Stadtroda, Germany

Tel.: +49 (0)36428 6770

Fax: +49 (0)36428 677-28

e-mail: info@alliedvision.com

Contents

1	Contacting Allied Vision	6
2	Document history and conventions	7
2.1	Document history	8
2.2	Conventions used in this manual	8
2.2.1	Styles	8
2.2.2	Symbols	8
3	VimbaUSBTL - Overview	10
4	VimbaUSBTL System Features	11
4.1	SystemInformation	12
4.1.1	TLVendorName	12
4.1.2	TLModelName	12
4.1.3	TLID	13
4.1.4	TLDisplayName	13
4.1.5	TLVersion	14
4.1.6	TLPath	14
4.1.7	TLType	14
4.1.8	GenTLVersionMajor	15
4.1.9	GenTLVersionMinor	15
4.1.10	GenTLSFNCVersionMajor	16
4.1.11	GenTLSFNCVersionMinor	16
4.1.12	GenTLSFNCVersionSubMinor	16
4.2	InterfaceEnumeration	17
4.2.1	InterfaceUpdateList	17
4.2.2	InterfaceCount [Allied Vision]	17
4.2.3	InterfaceSelector	18
4.2.4	InterfaceID	18
4.2.5	InterfaceDisplayName [Allied Vision]	18
5	VimbaUSBTL Interface Features	19
5.1	InterfaceInformation	20
5.1.1	InterfaceID	20
5.1.2	InterfaceType	20
5.1.3	InterfaceDisplayName	21
5.2	DeviceEnumeration	21
5.2.1	DeviceUpdateList	21
5.2.2	DeviceCount [Allied Vision]	22
5.2.3	DeviceSelector	22

5.2.4	DeviceID	22
5.2.5	DeviceDisplayName [Allied Vision]	23
5.2.6	DeviceVendorName	23
5.2.7	DeviceModelName	23
5.2.8	DeviceType [Allied Vision]	24
5.2.9	DeviceAccessStatus	24
6	VimbaUSBTL Device Features	25
6.1	DeviceInformation	26
6.1.1	DeviceID	26
6.1.2	DeviceVendorName	26
6.1.3	DeviceModelName	27
6.1.4	DeviceType	27
6.1.5	DeviceDisplayName	28
6.1.6	DriverPath	28
6.1.7	DeviceLocation	28
6.2	StreamEnumeration	29
6.2.1	StreamCount [Allied Vision]	29
6.2.2	StreamSelector	29
6.2.3	StreamID	30
7	VimbaUSBTL DataStream Features	31
7.1	StreamInformation	32
7.1.1	StreamID	32
7.1.2	StreamType	32
7.1.3	StreamIsGrabbing [Allied Vision]	33
7.2	BufferHandlingControl	33
7.2.1	StreamAnnouncedBufferCount	33
7.2.2	StreamBufferHandlingMode	34
7.2.3	StreamAnnounceBufferMinimum	34
7.2.4	MaxDriverBuffersCount [Allied Vision]	34
8	Vimba functional extensions to GenTL	36
8.1	Custom Transport Layer events	37
8.1.1	Additions to EVENT_TYPE_LIST	37
8.1.2	Additions to EVENT_DATA_INFO_CMD_LIST	37
8.1.3	Additional enumeration IFCHANGE_WHAT_LIST	37
8.2	Additional URL information	38
8.2.1	Additions to URL_INFO_CMD_LIST	38

Listings

1	Event types	37
2	Change Events	37
3	Change Event options	38
4	URL information	38

1 Contacting Allied Vision

Connect with Allied Vision by function

<https://www.alliedvision.com/en/meta-header/contact>

Find an Allied Vision office or distributor

<https://www.alliedvision.com/en/about-us/where-we-are>

Email

info@alliedvision.com
support@alliedvision.com

Telephone

EMEA: +49 36428-677-0
The Americas: +1 978-225-2030
Asia-Pacific: +65 6634-9027
China: +86 (21) 64861133

Headquarters

Allied Vision Technologies GmbH
Taschenweg 2a
07646 Stadtroda
Germany

Tel: +49 (0)36428 677-0
Fax: +49 (0)36428 677-28
President/CEO: Frank Grube
Registration Office: AG Jena HRB 208962

2 Document history and conventions



This chapter includes:

2.1	Document history	8
2.2	Conventions used in this manual	8
2.2.1	Styles	8
2.2.2	Symbols	8

2.1 Document history

Version	Date	Changes
1.0.1	2015-11-09	Initial release version
1.0.2	2017-Apr-28	New document layout

2.2 Conventions used in this manual

To give this manual an easily understood layout and to emphasize important information, the following typographical styles and symbols are used:

2.2.1 Styles

Style	Function	Example
Emphasis	Programs, or highlighting important things	Emphasis
Publication title	Publication titles	<i>Title</i>
Web reference	Links to web pages	Link
Document reference	Links to other documents	Document
Output	Outputs from software GUI	Output
Input	Input commands, modes	<i>Input</i>
Feature	Feature names	Feature

2.2.2 Symbols



Practical Tip

**Safety-related instructions to avoid malfunctions**

Instructions to avoid malfunctions

**Further information available online**

3 VimbaUSBTL - Overview

The VimbaUSBTL (Vimba USB Transport Layer) transports the data from the USB interface card to an application. It complies with GenICam and thus can serve as a GenTL (GenICam transport layer) producer for applications providing a GenTL consumer interface. The VimbaUSBTL is included in the Vimba installation since version 1.4 and supports USB cameras from Allied Vision.



Under Windows, the USB device driver is mandatory and has to be installed separately. See Vimba Manual, chapter Vimba Driver Installer. If you install the device driver manually, install it on the USB3 Vision device. Do not install it on the composite device.



Under Linux, run the Install.sh script located in the USB TL folder. See Vimba Manual, chapter Installing Vimba.

The VimbaUSBTL consists of several parts: the functional interface, the feature maps and a configuration file.

The **functional interface** is needed for dynamically controlling USB cameras. It covers the functionality described in [GenTL specification 1.3](#). There is extra functionality, which is described in chapter Vimba functional extensions to GenTL.

The **features** exposed by XML files are GenAPI-conforming features described in the following locations:

- Features of the GenTL **System module** in chapter VimbaUSBTL System Features. The System is a module for handling multiple GenTL Interfaces in one transport layer. The VimbaUSBTL only provides one Interface.
- Features of the GenTL **Interface module** in chapter VimbaUSBTL Interface Features. The Interface is a module for handling multiple GenTL Devices. In this case, all the devices are attached to the same Interface.
- Features of the GenTL **Device module** in chapter VimbaUSBTL Device Features. The Device module is a host-side representation of the Camera also known as **Remote Device**.
- Features of the GenTL **Data Stream module** in chapter VimbaUSBTL DataStream Features. The Data Stream module allows handling all streaming-related operations.
- Camera (**Remote Device**) features in [USB_Features_Reference.pdf](#).

The **configuration file**, which is named VimbaUSBTL.xml (according to the name of the VimbaUSBTL.cti), must be in the same directory as the Transport Layer file. The configuration options are described in the comments of the file itself.

4 VimbaUSBTL System Features



This chapter includes:

4.1	SystemInformation	12
4.1.1	TLVendorName	12
4.1.2	TLModelName	12
4.1.3	TLID	13
4.1.4	TLDisplayName	13
4.1.5	TLVersion	14
4.1.6	TLPath	14
4.1.7	TLType	14
4.1.8	GenTLVersionMajor	15
4.1.9	GenTLVersionMinor	15
4.1.10	GenTLFNCVersionMajor	16
4.1.11	GenTLFNCVersionMinor	16
4.1.12	GenTLFNCVersionSubMinor	16
4.2	InterfaceEnumeration	17
4.2.1	InterfaceUpdateList	17
4.2.2	InterfaceCount [Allied Vision]	17
4.2.3	InterfaceSelector	18
4.2.4	InterfaceID	18
4.2.5	InterfaceDisplayName [Allied Vision]	18

This chapter lists features that are potentially available in this module. Some features are only available under certain circumstances.

The following categories can be found below the Root category:

- SystemInformation
- InterfaceEnumeration

4.1 SystemInformation

Category that contains all System Information features of the System module.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.1 TLVendorName

Name	TL Vendor Name
Interface	IString
Access	Read
Visibility	Beginner

Name of the GenTL Producer vendor.

Corresponds to the TL_INFO_VENDOR command of TLGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.2 TLModelName

Name	TL Model Name
Interface	IString
Access	Read
Visibility	Beginner

Name of the GenTL Producer to distinguish different kinds of GenTL Producer implementations from one vendor.

Corresponds to the TL_INFO_MODEL command of TLGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.3 TLID

Name	TL ID
Interface	IString
Access	Read
Visibility	Expert

Unique identifier of the GenTL Producer like a GUID.

Corresponds to the TL_INFO_ID command of TLGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.4 TLDisplayName

Name	TL Display Name
Interface	IString
Access	Read
Visibility	Expert

User readable name of the GenTL Producer.

Corresponds to the TL_INFO_DISPLAYNAME command of TLGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.5 TLVersion

Name	TL Version
Interface	IString
Access	Read
Visibility	Beginner

Vendor specific version string.

Corresponds to the TL_INFO_VERSION command of TLGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.6 TLPath

Name	TL Path
Interface	IString
Access	Read
Visibility	Expert

Full path to the GenTL Producer driver including name and extension.

Corresponds to the TL_INFO_PATHNAME command of TLGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.7 TLType

Name	TL Type
Interface	IEnumeration
Access	Read
Visibility	Expert
Values	USB3

Transport layer type of the GenTL Producer implementation.
Corresponds to the TL_INFO_TLTYPE command of TLGetInfo function.
See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.8 GenTLVersionMajor

Name	GenTL Version Major
Interface	Integer
Access	Read
Visibility	Expert

Major version number of the GenTL specification the GenTL Producer implementation complies with.
See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.9 GenTLVersionMinor

Name	GenTL Version Minor
Interface	Integer
Access	Read
Visibility	Expert

Minor version number of the GenTL specification the GenTL Producer implementation complies with.
See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.10 GenTL_SFNC_Version_Major

Name	GenTL_SFNC_Version_Major
Interface	Integer
Access	Read
Visibility	Expert

Major version number of the GenTL Standard Features Naming Convention that was used to create the GenTL Producer's XML.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.11 GenTL_SFNC_Version_Minor

Name	GenTL_SFNC_Version_Minor
Interface	Integer
Access	Read
Visibility	Expert

Minor version number of the GenTL Standard Features Naming Convention that was used to create the GenTL Producer's XML.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.1.12 GenTL_SFNC_Version_SubMinor

Name	GenTL_SFNC_Version_Sub_Minor
Interface	Integer
Access	Read
Visibility	Expert

Sub minor version number of the GenTL Standard Features Naming Convention that was used to create the GenTL Producer's XML.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.2 InterfaceEnumeration

Category that contains all Interface Enumeration features of the System module.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.2.1 InterfaceUpdateList

Name	Interface Update List
Interface	ICommand
Access	Read/Write
Visibility	Expert

Update the interface list on this GenTL Producer.

See [GenTL specification 1.3 chapter 7](#) for more details.

4.2.2 InterfaceCount [Allied Vision]

Name	Interface Count
Interface	Integer
Access	Read
Visibility	Expert

Number of interfaces on this GenTL Producer.

4.2.3 InterfaceSelector

Name	Interface Selector
Interface	Integer
Access	Read/Write
Visibility	Expert
Values	0..

Selector for the different GenTL Producer interfaces.
See [GenTL specification 1.3 chapter 7](#) for more details.

4.2.4 InterfaceID

Name	Interface ID
Interface	String
Access	Read
Visibility	Expert

GenTL Producer wide unique identifier of the selected interface.
See [GenTL specification 1.3 chapter 7](#) for more details.

4.2.5 InterfaceDisplayName [Allied Vision]

Name	Interface Display Name
Interface	String
Access	Read
Visibility	Expert

User readable name of the selected interface.

5 VimbaUSBTL Interface Features



This chapter includes:

5.1	InterfaceInformation	20
5.1.1	InterfaceID	20
5.1.2	InterfaceType	20
5.1.3	InterfaceDisplayName	21
5.2	DeviceEnumeration	21
5.2.1	DeviceUpdateList	21
5.2.2	DeviceCount [Allied Vision]	22
5.2.3	DeviceSelector	22
5.2.4	DeviceID	22
5.2.5	DeviceDisplayName [Allied Vision]	23
5.2.6	DeviceVendorName	23
5.2.7	DeviceModelName	23
5.2.8	DeviceType [Allied Vision]	24
5.2.9	DeviceAccessStatus	24

This chapter lists features that are potentially available in this module. Some features are only available under certain circumstances.

The following categories can be found below the Root category:

- InterfaceInformation
- DeviceEnumeration

5.1 InterfaceInformation

Category that contains all Interface Information features of the Interface module.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.1.1 InterfaceID

Name	Interface ID
Interface	IString
Access	Read
Visibility	Expert

GenTL Producer wide unique identifier of the selected interface.
Corresponds to the INTERFACE_INFO_ID command of IFGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.1.2 InterfaceType

Name	Interface Type
Interface	IEnumeration
Access	Read
Visibility	Expert
Values	USB3

Transport layer type of the interface.

Corresponds to the `INTERFACE_INFO_TLTYPE` command of `IFGetInfo` function.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.1.3 InterfaceDisplayName

Name	Interface Display Name
Interface	IString
Access	Read
Visibility	Expert

User readable name of the selected interface.

Corresponds to the `INTERFACE_INFO_DISPLAYNAME` command of `IFGetInfo` function.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.2 DeviceEnumeration

Category that contains all Device Enumeration features of the Interface module.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.2.1 DeviceUpdateList

Name	Device Update List
Interface	ICommand
Access	Read/Write
Visibility	Expert

Updates the internal device list.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.2.2 DeviceCount [Allied Vision]

Name	Device Count
Interface	Integer
Access	Read
Visibility	Expert

Number of found devices.

5.2.3 DeviceSelector

Name	Device Selector
Interface	Integer
Access	Read/Write
Visibility	Expert
Values	0..

Selector for the different devices on this interface.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.2.4 DeviceID

Name	Device ID
Interface	String
Access	Read
Visibility	Expert

Interface wide unique identifier of the selected device.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.2.5 DeviceDisplayName [Allied Vision]

Name	Device Display Name
Interface	IString
Access	Read
Visibility	Expert

User readable name of the selected device.

5.2.6 DeviceVendorName

Name	Device Vendor Name
Interface	IString
Access	Read
Visibility	Expert

Name of the device vendor.

Corresponds to the "DeviceVendorName" feature of the remote device.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.2.7 DeviceModelName

Name	Device Model Name
Interface	IString
Access	Read
Visibility	Expert

Name of the device model.

Corresponds to the "DeviceModelName" feature of the remote device.

See [GenTL specification 1.3 chapter 7](#) for more details.

5.2.8 DeviceType [Allied Vision]

Name	Device Type
Interface	IEnumeration
Access	Read
Visibility	Expert
Values	USB3

Identifies the transport layer technology of the device.
Possible values:

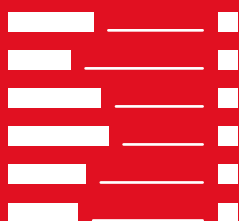
- USB3: USB3 Vision

5.2.9 DeviceAccessStatus

Name	Device Access Status
Interface	IEnumeration
Access	Read
Visibility	Expert
Values	ReadWrite, ReadOnly, NoAccess

Gives the device's access status at the moment of the last execution of “DeviceUpdateList”.
See [GenTL specification 1.3 chapter 7](#) for more details.

6 VimbaUSBTL Device Features



This chapter includes:

6.1	DeviceInformation	26
6.1.1	DeviceID	26
6.1.2	DeviceVendorName	26
6.1.3	DeviceModelName	27
6.1.4	DeviceType	27
6.1.5	DeviceDisplayName	28
6.1.6	DriverPath	28
6.1.7	DeviceLocation	28
6.2	StreamEnumeration	29
6.2.1	StreamCount [Allied Vision]	29
6.2.2	StreamSelector	29
6.2.3	StreamID	30

This chapter lists features that are potentially available in this module. Some features are only available under certain circumstances.

The following categories can be found below the Root category:

- DeviceInformation
- StreamEnumeration

6.1 DeviceInformation

Category that contains all Device Information features of the Device module.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.1.1 DeviceID

Name	Device ID
Interface	IString
Access	Read
Visibility	Expert

Interface-wide unique identifier of this device.

Corresponds to the DEVICE_INFO_ID command of DevGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.1.2 DeviceVendorName

Name	Device Vendor Name
Interface	IString
Access	Read
Visibility	Beginner

Name of the device vendor.

Corresponds to the `DEVICE_INFO_VENDOR` command of `DevGetInfo` function.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.1.3 DeviceModelName

Name	Device Model Name
Interface	IString
Access	Read
Visibility	Beginner

Name of the device model.

Corresponds to the `DEVICE_INFO_MODEL` command of `DevGetInfo` function.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.1.4 DeviceType

Name	Device Type
Interface	IEnumeration
Access	Read
Visibility	Expert
Values	USB3

Transport layer type of the device.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.1.5 DeviceDisplayName

Name	Device Display Name
Interface	QString
Access	Read
Visibility	Expert

User readable name of the device.

Corresponds to the `DEVICE_INFO_DISPLAYNAME` command of `DevGetInfo` function.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.1.6 DriverPath

Name	Driver Path
Interface	QString
Access	Read
Visibility	Beginner

System driver path that can also be used for opening the device.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.1.7 DeviceLocation

Name	Device Location
Interface	QString
Access	Read
Visibility	Beginner

Location path of device in USB tree that can also be used for opening the device.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.2 StreamEnumeration

Category that contains all Stream Enumeration features of the Device module.

See [GenTL specification 1.3 chapter 7](#) for more details.

6.2.1 StreamCount [Allied Vision]

Name	Stream Count
Interface	Integer
Access	Read
Visibility	Beginner

Number of available streams.

6.2.2 StreamSelector

Name	Stream Selector
Interface	Integer
Access	Read/Write
Visibility	Beginner
Values	0..

Selector for the different stream channels.

See [GenTL specification 1.3 chapter 7](#) for more details.

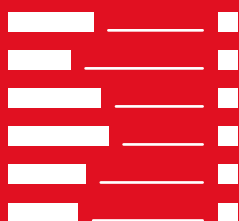
6.2.3 StreamID

Name	Stream ID
Interface	IString
Access	Read
Visibility	Beginner

Device unique ID for the stream, for instance a GUID.

See [GenTL specification 1.3 chapter 7](#) for more details.

7 VimbaUSBTL DataStream Features



This chapter includes:

7.1	StreamInformation	32
7.1.1	StreamID	32
7.1.2	StreamType	32
7.1.3	StreamIsGrabbing [Allied Vision]	33
7.2	BufferHandlingControl	33
7.2.1	StreamAnnouncedBufferCount	33
7.2.2	StreamBufferHandlingMode	34
7.2.3	StreamAnnounceBufferMinimum	34
7.2.4	MaxDriverBuffersCount [Allied Vision]	34

This chapter lists features that are potentially available in this module. Some features are only available under certain circumstances.

The following categories can be found below the Root category:

- StreamInformation
- BufferHandlingControl

7.1 StreamInformation

Category that contains all Stream Information features of the Data Stream module.

See [GenTL specification 1.3 chapter 7](#) for more details.

7.1.1 StreamID

Name	Stream ID
Interface	IString
Access	Read
Visibility	Expert

Device unique ID for the data stream, for instance a GUID.

Corresponds to the STREAM_INFO_ID command of DSGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

7.1.2 StreamType

Name	Stream Type
Interface	IEnumeration
Access	Read
Visibility	Expert
Values	USB3

Transport layer type of the Data Stream.

See [GenTL specification 1.3 chapter 7](#) for more details.

7.1.3 StreamIsGrabbing [Allied Vision]

Name	Stream Is Grabbing
Interface	IBoolean
Access	Read/Write
Visibility	Beginner

Flag indicating whether the acquisition engine is started or not.

7.2 BufferHandlingControl

Contains all features of the Data Stream module that control the used buffers.

See [GenTL specification 1.3 chapter 7](#) for more details.

7.2.1 StreamAnnouncedBufferCount

Name	Stream Announced Buffer Count
Interface	Integer
Access	Read
Visibility	Expert

Number of announced (known) buffers on this stream.

Corresponds to the STREAM_INFO_NUM_ANNOUNCED command of DSGetInfo function.

See [GenTL specification 1.3 chapter 7](#) for more details.

7.2.2 StreamBufferHandlingMode

Name	Stream Buffer Handling Mode
Interface	IEnumeration
Access	Read
Visibility	Beginner
Values	Default

Available acquisition modes of this stream.

See [GenTL specification 1.3 chapter 7](#) for more details.

7.2.3 StreamAnnounceBufferMinimum

Name	Stream Announce Buffer Minimum
Interface	Integer
Access	Read
Visibility	Expert

Minimal number of buffers to announce to enable selected buffer handling mode.

Corresponds to the STREAM_INFO_BUF_ANNOUNCE_MIN command of DSGetInfo function.

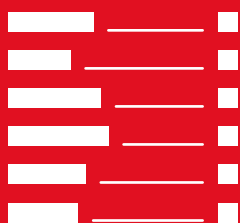
See [GenTL specification 1.3 chapter 7](#) for more details.

7.2.4 MaxDriverBuffersCount [Allied Vision]

Name	Max Driver Buffers Count
Interface	Integer
Access	Read/Write
Visibility	Guru
Values	1..4096

Maximum number of driver buffers used by the acquisition engine.

8 Vimba functional extensions to GenTL



This chapter includes:

8.1	Custom Transport Layer events	37
8.1.1	Additions to EVENT_TYPE_LIST	37
8.1.2	Additions to EVENT_DATA_INFO_CMD_LIST	37
8.1.3	Additional enumeration IFCHANGE_WHAT_LIST	37
8.2	Additional URL information	38
8.2.1	Additions to URL_INFO_CMD_LIST	38

Vimba transport layers provide additional functionality to the general GenTL interface. The provided extensions to Transport Layer Events allow monitoring system changes. Other extensions allow comfortable access to additional URL information.

8.1 Custom Transport Layer events

Custom additions to the following Enumerations are available:

- EVENT_TYPE_LIST (used in GCRegisterEvent and GCUnregisterEvent)
- EVENT_DATA_INFO_CMD_LIST (used in EventGetDataInfo)

Additionally, an enumeration for determining the type of a change is provided: IFCHANGE_WHAT_LIST

These extensions allow the users of Vimba transport layers to get informed about changes to either the interface list or the camera list.

8.1.1 Additions to EVENT_TYPE_LIST

Listing 1: Event types

```
enum EVENT_TYPE_LIST_VIMBA
{
    EVENT_SYSTEM_CHANGE          = 1000, // System detected some change
    EVENT_INTERFACE_CHANGE       = 1001  // Interface detected some change
}
```

8.1.2 Additions to EVENT_DATA_INFO_CMD_LIST

Listing 2: Change Events

```
enum EVENT_DATA_INFO_CMD_LIST_VIMBA
{
    // for event type EVENT_SYSTEM_CHANGE
    EVENT_DATA_SYSTEM_IFCOUNT = 1000, // UINT32    Number of detected interfaces

    // for event type EVENT_INTERFACE_CHANGE
    EVENT_DATA_IFCHANGE_DUID    = 1001, // STRING    Device UID
    EVENT_DATA_IFCHANGE_WHAT    = 1002, // UINT32    Bitfield of what has changed
                                   // (IFCHANGE_WHAT_LIST)
    EVENT_DATA_IFCHANGE_DATA    = 1003  // UINT32    Bitfield of current state of
                                   // the device (IFCHANGE_WHAT_LIST)
};
```

8.1.3 Additional enumeration IFCHANGE_WHAT_LIST

Listing 3: Change Event options

```
enum IFCHANGE_WHAT_LIST
{
    IFCHANGE_WHAT_VISIBILITY    = 1,    // Device visibility has changed
    IFCHANGE_WHAT_REACHABILITY  = 2    // Device reachability has changed
};
```

8.2 Additional URL information

For the following Enumeration, extensions are available:

- URL_INFO_CMD_LIST (used in GCGetPortURLInfo)

The extensions allow the user of the Vimba transport layers to access URL information without having to parse the URL string.

8.2.1 Additions to URL_INFO_CMD_LIST

Listing 4: URL information

```
enum URL_INFO_CMD_LIST_VIMBA
{
    URL_INFO_FILENAME           = 1000, // STRING    Filename of the port XML file
    URL_INFO_ADDRESS            = 1001, // UINT64    Start address of the XML file
    URL_INFO_LENGTH              = 1002, // SIZET     XML file length (in bytes)
    URL_INFO_ZIPPED              = 1003  // BOOL8     Is the XML file zipped
};
```