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Nuremberg  
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Technical Information

**How to integrate the Bosch iTracker*****Table of Contents***

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## 1 Scope

This documentation describes how to make use of the Bosch metadata stream in conjunction with a device that is capable of using the 'iTracker' functionality.

The usage and the principle of the iTracker features are explained in the course of this paper. A basic understanding of the utilized protocol (RCP+ or RCP+ over CGI) is seen as a prerequisite for the understanding of the following chapters.

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## 2 iTracker feature overview

The iTracker feature allows the device to follow and focus on an object that has been identified by the intelligent video analytics (IVA) algorithm. Two basic modes of operation are available. The iTracker is capable to operate autonomously in **'auto' mode** but it can also be driven by the operator in the **'click' mode**. The 'click' mode though only makes sense in a scenario where the client (operator) has some knowledge about the identified objects in a scene and the corresponding 'Object IDs'.

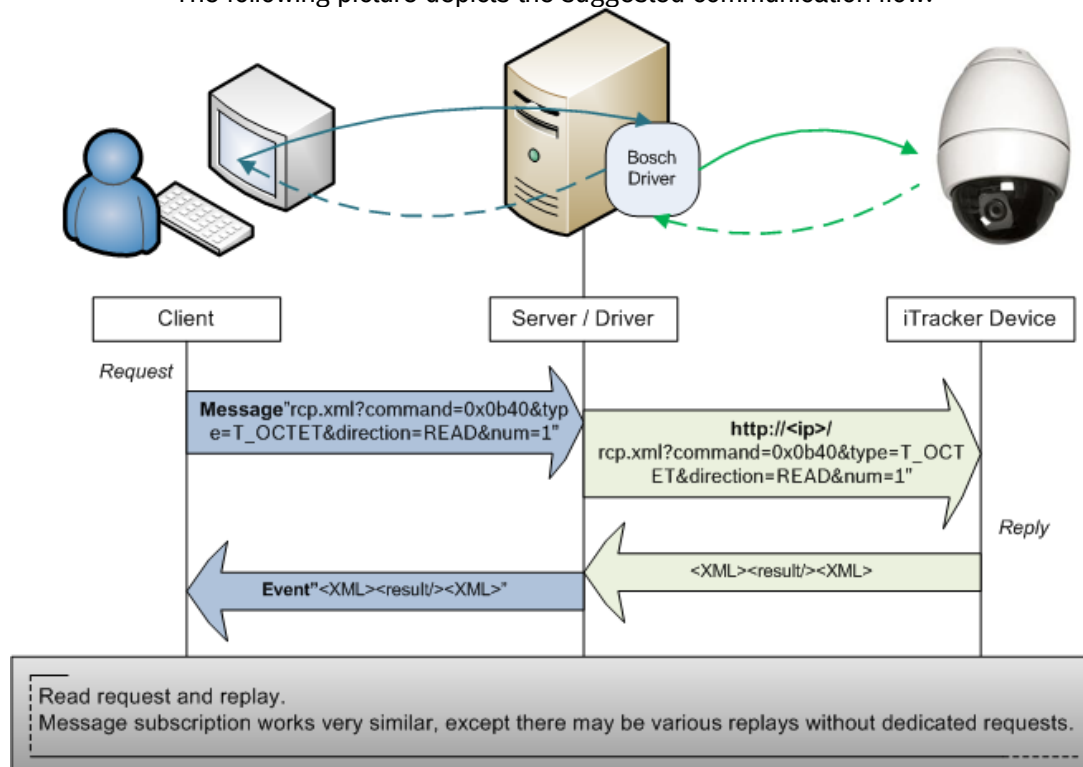
The following section describes the way how to interact with the iTracker feature. For simplicity the examples are using the RCP+ over CGI syntax, which allows for copy and paste to play around with the functionality.

### 2.1 Client side integration

The iTracker feature is usually an 'Operator'-feature since it helps to follow certain objects of interest automatically in PTZ environments. Therefore a communication channel between the client and the camera needs to be established, which is 'in an ideal word' integrated in the existing system architecture.

The ideal world implies that a system's communication channel can be used from the client to the device driver and back and the 'RCP+' commands and replies are unwrapped and wrapped in the driver layer.

The following picture depicts the suggested communication flow:



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## 3 iTracker API calls

### 3.1 iTracker availability

The iTracker capability of a device is represented in the **CONF\_DEVICE\_CAPABILITIES** RCP+ command (0x0b60). *This command is read-only and is a standard command that should be used to check the Bosch device capabilities in general.*

	Tag code	NumDes	Message	SNMP Support
	0x0b60	no	no	no
	Datatype	Access Level	Description	
Read	p_octet	noprot	returns device capabilities in tagged format	
Write	p_octet	l_user	not supported	

The reply-payload is structured in the following way:

<b>num Entries</b> [4 Bytes]	
<b>tag1</b> [2 Byte]	length1 [2 Byte]
<b>payload1</b> [length1 bytes]	
...	
<b>tagN</b> [2 Byte]	lengthN [2 Byte]
<b>payloadN</b> [lengthN bytes]	

- **numEntries:** the total number of tagged entries
- **tag:** various tags for device capabilities are defined. The tag-code for the iTracker capability is: "4" (yes = 1 / no = 0)
- **length:** the length of the payload

**Example:** "Retrieve the device capabilities"

[http://<ip>/rcp.xml?command=0x0b60&type=P\\_OCTET&direction=READ](http://<ip>/rcp.xml?command=0x0b60&type=P_OCTET&direction=READ)

### 3.2 iTracker mode of operation

As previously explained the iTracker can work in 2 different modes. A third mode is of course also available, which is the 'off' mode. The command that is to be used to read and write the mode of operation is the **CONF\_MODE\_AUTO\_TRACKER** RCP+ command (0x0b40).

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	Tag code	NumDes	Message	SNMP Support
	0x0b40	video line	yes	no
	Datatype	Access Level	Description	
Read	t_octet	noprot	get the autotracker mode (Modi: OFF=0, AUTO=1, CLICK=2)	
Write	t_octet	l_user	sets the autotracker mode:  OFF=0; AUTO=1; CLICK=2 (the CLICK mode has to be rewritten after 10sec; otherwise, the mode shall switch back to AUTO)	

**Example:** “Retrieve iTracker mode of operation”

[http://<ip>/rcp.xml?command=0x0b40&type=T\\_OCTET&direction=READ&num=1](http://<ip>/rcp.xml?command=0x0b40&type=T_OCTET&direction=READ&num=1)

**Example:** “Set iTracker mode of operation to AUTO”

[http://<ip>/rcp.xml?command=0x0b40&type=T\\_OCTET&direction=WRITE&num=1&payload=1](http://<ip>/rcp.xml?command=0x0b40&type=T_OCTET&direction=WRITE&num=1&payload=1)

The response of the request is sent back in XML format and needs to be evaluated and / or sent back to the caller.

*Note that a message subscription is available for this command which means that a notification is sent out to the subscribed instances every time the iTracker mode of operation changed. Ideally the content of the message subscription (XML format) is sent to the (client) instances that are registered to the event.*

### 3.3 iTracker tracked object

The **CONF\_AUTO\_TRACKER\_TRACK\_OBJECT** RCP+ command (0x0b2d) can be used to set the object ID that is to be tracked in case the iTracker’s mode of operation is set to ‘Auto’. It is also possible to retrieve the currently tracked object’s ID with the command in ‘read’ mode.

	Tag code	NumDes	Message	SNMP Support
	0x0b2d	video line	yes	no
	Datatype	Access Level	Description	
Read	t_dword	noprot	get the object ID of the currently tracked object. ‘0’ is returned if no object is tracked.	
Write	t_dword	l_user	send the object ID to start tracking	

**Example:** “Retrieve currently tracked object id”

[http://<ip>/rcp.xml?command=0x0b2d&type=T\\_DWORD&direction=READ&num=1](http://<ip>/rcp.xml?command=0x0b2d&type=T_DWORD&direction=READ&num=1)

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**Example:** “Set the object ID 100 to be tracked by the iTracker”

[http://<ip>/rcp.xml?command=0x0b2d&type=T\\_DWORD&direction=WRITE&num=1&payload=0x64](http://<ip>/rcp.xml?command=0x0b2d&type=T_DWORD&direction=WRITE&num=1&payload=0x64)

The response of the request is sent back in XML format and needs to be evaluated and / or sent back to the caller.

*Note that a message subscription is available for this command which means that a notification is sent out to the subscribed instances every time the tracked object ID changes. Ideally the content of the message subscription (XML format) is sent to the (client) instances that are registered to the event.*

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### 3.4 iTracker status

The current state of the iTracker is accessible through the **CONF\_STATUS\_AUTO\_TRACKER** command (0x0b86). This command is only available in read direction and as a message subscription.

	Tag code	NumDes	Message	SNMP Support
	0x0b86	no	yes	no
	Datatype	Access Level	Description	
Read	t_octet	noprot	gets current mode of auto tracker: 0=off; 1=idle; 2=seeking; 3=tracking active; 4=tracking passive	
Write	t_octet	l_user	not supported	

**Example:** “Retrieve the current state of the iTracker”

[http://<ip>/rcp.xml?command=0x0b86&type=T\\_OCTET&direction=READ](http://<ip>/rcp.xml?command=0x0b86&type=T_OCTET&direction=READ)

The response of the request is sent back in XML format and needs to be evaluated and / or sent back to the caller.

*Note that a message subscription is available for this command which means that a notification is sent out to the subscribed instances every time the status of the iTracker changes. Ideally the content of the message subscription (XML format) is sent to the (client) instances that are registered to the event.*

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