

Event handling via HTTP

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DOCUMENT HISTORY

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1. OVERVIEW

In the new generation of Axis video products it will be possible to add and configure events via HTTP. I.e. it is possible to configure the product to perform a specific action or several actions such as FTP upload images, send TCP notifications, go to a preset Pan Tilt Zoom position etc., on a certain event, for example, when video is lost, on motion detection, when an input connector goes high etc. It is also possible to schedule the actions, i.e. to for example, let the camera or video server upload images to an FTP server or HTTP server regularly or in a specified time span.

IMPORTANT NOTICES!

Axis Communications AB provides **no** guarantee that any of the examples shown in this document will work for any particular application.

Axis Communications AB **cannot** and **will not** be held liable for any damage inflicted to any device as a result of the examples or instructions mentioned in this document.

Axis Communications AB reserves the right to make changes to this document without prior notice.

Please bear in mind that the flash chip manufacturer estimates the number of writes to the flash chips to about 100,000. Writing a lot of temporary files to the flash memory should thus be avoided. Use the ram disk mounted on /tmp instead.

2 EVENT HANDLING

The event configurations are stored as dynamic parameter groups, i.e. the parameters are created at run-time. The Event configuration consists of these parts:

- Event servers – Configuration for the servers used by the Events' Actions, i.e. FTP servers, TCP servers and HTTP servers. Mail server configuration is handled different, please see below.
- Event – Configuration for the Event's properties, e.g. triggered or scheduled, hardware trigger or software trigger, duration, time span, pre- and post-buffers etc.
- Event Actions – Configuration for the action or actions to take when an Event occur, e.g. FTP upload, TCP notification, go to a PTZ preset position, which Event servers to use etc.

2.1 Dynamic parameters

Dynamic parameters are parameters that can be created in run-time using the param.cgi?action=add according to [Axis' HTTP API](#). Each dynamic parameter group have a template file containing a set of parameters all set to a default value. Which template file to use for each dynamic parameter group can be found in the [parameter specification](#). Available templates are product dependent and specified in the product's firmware Release notes file.

Note: All parameters have a specified security level and thus require different security levels to operate on them. The Event and EventServers parameters have the security level "operator", but the SMTP parameter group has the security level "admin", for simplicity the admin level will be used in the syntax and all examples in this document.

Syntax for adding groups:

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=<parent group>&template=<template>[<parameter>=<value> [&<parameter>=<value>...]]
```

with the following parameters and values

<parameter>=<value>	Description
template=<template>	Use the specified <template> when creating the new group. The template is a file, which describes all parameters for this group. Depending on the product, different templates are available; please check the Release notes of the firmware version.
group=<parent group name>	Specifies the parent group. The parent group defines where in the parameter structure the new group will be created. For example, if adding an event (template=event) and specify group=Event the new group will be available as Event.E<number>. Where <number> is the unique number for the group. The character before <number> is generated from the last section of the group name.
nosync=yes	Specifies that there should be no sync (write) of the corresponding configuration file on flash. If this parameter is omitted, sync will occur.
<parameter name>=<value>	Set a parameter in the newly created group. As the group number is not known before the group is created, the id-number is simply left out, see the examples below. The new group number is created dynamically and can be any number. This is why all parameters are specified to set without any group number, The base path to the parameter is specified as <group>.<uppercase first letter of group>.<parameter name>.

The parameters values can be modified at the same time as they are created (see explanation in the table above <parameter name>=<value>) or afterwards using param.cgi?action=update.

Syntax for updating groups:

```
http://<servername>/axis-cgi/admin/param.cgi?action=update&<parameter>=<value> [&<parameter>=<value>...]
```

with the following parameters and values

<parameter>=<value>	Description
<parameter name>=<value>	Assigns <value> to the parameter <parameter name>. The <value> must be URL-encoded when it contains non-alphanumeric characters.
	The camera parameters must be entered exactly as named in the camera or the video server.
nosync=yes	Specifies that there should be no sync (write) of the corresponding configuration file on flash. If this parameter is omitted, sync will occur.

The parameters can also be listed and removed using param.cgi?action=list and param.cgi?action=remove. For more information, please check [Axis' HTTP API](#).

2.2 Create Event servers

The event servers are configured independently of the Events and several Event Actions can use the same server. The servers can be of these types:

- FTP – EventServers.FTP parameter group.
- HTTP – EventServers.HTTP parameter group.
- TCP/IP – EventServers.TCP parameter group.
- E-mail – SMTP parameter group.

The FTP, HTTP and TCP/IP servers are added and configured using the EventServers dynamic parameter group, while the e-mail server parameters are static parameters and configured using the SMTP parameter group. Please check the [parameter document](#) for available parameters, descriptions and valid values. Note however that available parameters and valid values may be product and firmware version dependent.

Example: Configure e-mail settings

```
http://<servername>/axis-cgi/admin/param.cgi?action=update
&SMTP.FromEmail=MyCamera@axis.com&SMTP.MailServer1=10.13.0.5
&SMTP.MailServer2=10.13.0.6
```

Example: Add an FTP server. Parent group is EventServers.FTP and template is ftp_config

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=EventServers.FTP
&template=ftp_config
```

This request will create a parameter group like this:

```
EventServers.FTP.F#.Name="FTP Sample"
EventServers.FTP.F#.Address="192.168.254.10"
EventServers.FTP.F#.Login=""
EventServers.FTP.F#.Password=""
EventServers.FTP.F#.UploadPath=""
EventServers.FTP.F#.Port="21"
EventServers.FTP.F#.Passive="no"
```

The # represents a number dynamically added by the system, e.g. EventServers.FTP.F0.Name. The character F comes from the first character in the parent group's last part, in this case FTP. All parameters got their default value.

The parameters can however be configured at the same time as they are created. The number of the parameter group is then omitted, since this is added by the system we do at this stage not know which it will be.

Example: Add an HTTP server and configure some of the parameters in the same request. Parent group is EventServers.HTTP and template is http_config

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=EventServers.HTTP
&template=http config&EventServers.HTTP.H.Name=MyHTTPServer
&EventServers.HTTP.H.Address=http://192.168.254.10/cgi-bin/upload.cgi
&EventServers.HTTP.H.Login=user&&EventServers.HTTP.H.Password=pass
```

Example: Add a TCP server and configure some of the parameters in the same request. Parent group is EventServers.TCP and template is tcp_config

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=EventServers.TCP
&template=tcp config&EventServers.TCP.T.Name=MyTCPServer
&EventServers.TCP.T.Address=192.168.254.20
```

The parameters created can at any time be modified using param.cgi?action=update according to [Axis' HTTP API](#).

Example: Configure the FTP Event server, F2

```
http://<servername>/axis-cgi/admin/param.cgi?action=update
&EventServers.FTP.F2.Name=MyFTPServer&EventServers.FTP.F2.Address=192.168.254.30
&EventServers.FTP.F2.Login=user&EventServers.FTP.F2.Password=pass
&EventServers.FTP.F2.UploadPath=upload&EventServers.FTP.F2.Passive=yes
```

2.3 Create Events

Events are created using the dynamic parameter group Event.

Example: Add an Event with all parameters set to their default value. Parent group is Event and template is event

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=Event&template=event
```

This request will create an Event group, e.g. Event.E0, containing a set of parameters. Please read the **parameter specification** for available parameters, descriptions and default values, note however that the parameters available and their default values may be product and firmware version dependent.

The created Event parameters can be modified at any time using param.cgi?action=update, according to [Axis' HTTP API](#).

Example: Configure the Event E0, name it IOEvent, trigger when digital input connector 1 is high, react on triggers 24 hour per day, use 3 pre-trigger images and 3 post-trigger images, set the time interval between the pre-trigger images to 1 second (1000 ms) and the same interval between the post-trigger images

```
http://<servername>/axis-cgi/admin/param.cgi?action=update&Event.E0.Name=IOEvent
&Event.E0.HWInputs=1xxx&Event.E0.Duration=24:00&Event.E0.IncludePreTrigger=yes
&Event.E0.PreTriggerSize=3&Event.E0.IncludePostTrigger=yes&Event.E0.PostTriggerSize=3
&Event.E0.PreTriggerInterval=1000&Event.E0.PostTriggerInterval=1000
```

It is possible to create and set the value of the parameters at the same time. Omit the number of the Event when specifying the parameters, e.g. Event.E.Name=MyEvent.

Example: Create an Event, name it VideoLossEvent, trigger when video is lost on camera 1, react on triggers 24 hour per day, use 10 pre-trigger images, set the time interval between the pre-trigger images to 1 second (1000 ms)

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=Event&template=event
&Event.E.Name=VideoLossEvent&Event.E.SWInput=V0:\&Event.E.Duration=24:00
&Event.E.IncludePreTrigger=yes&Event.E.PreTriggerSize=10
&Event.E.PreTriggerInterval=1000
```

2.3 Add Actions to an Event

Each Event can have one or more Actions. The Actions parameters are a dynamic parameter group, created as a subgroup to an Event, e.g. Event.E1.Actions.A0, Event.E1.Actions.A1 ..., and can be of different types:

- FTP upload (template ftpaction)
- HTTP upload/notification (template httpaction)
- E-mail upload/notification (template smtpaction)
- TCP/IP notification (template tcpaction)
- Digital output control (template hwaction)
- Go to a preset Pan Tilt Zoom position (template ptzaction)

The Event.E#.Actions.A# parameter group contains for example information about the type of Action (upload or notification), the protocol to use and which Event server/servers to use. An Action can be connected to one or more Event servers and several Actions can also use the same Event server. It is also possible to set the execution order if an Event has multiple Actions. The Actions with Order=0 will be executed in parallel (asynchronously) and will also run for as long as the Event is active. This can for example be useful when uploading images for as long as an input connector is active. Actions with Order > 0 will be executed synchronously, i.e. one action must finish before next action is executed.

Example: Add an Action of the type FTP upload to the Event E3

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=Event.E3.Actions&template=ftpaction
```

The new set of parameters will be added to the Event E3, e.g. Event.E3.Actions.A0. The parameters can either be modified at the same time as they are created or using param.cgi?action=update according to [Axis' HTTP API](#).

Example: Update the parameters for the group Event.E3.Actions.A0. Connect the Action to the Event server F0 and F1 (i.e. EventServers.FTP.F0 and EventServers.FTP.F1).

```
http://<servername>/axis-cgi/admin/param.cgi?action=update&Event.E3.Actions.A0.Server=F0&Event.E3.Actions.A0.Server2=F1
```

Example: Add an Action of the type HTTP upload to the Event E2. Connect this Action to the Event server H0 (i.e. EventServers.HTTP.H0)

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=Event.E2.Actions&template=httpaction&Event.E2.Actions.A.Type=U&Event.E2.Actions.A.Server=H0
```

Example: Add an Action of the type TCP notification to the Event E2. Connect this Action to the Event server T1 (i.e. EventServers.TCP.T1), send the message "Alarm on 10.13.17.110"

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=Event.E2.Actions&template=tcpaction&Event.E2.Actions.A.Server=T1&Event.E2.Actions.A.Message=Alarm%20on%20camera%2010.13.17.110
```

Example: Add an Action of the type Digital output control to the Event E1. Trigger digital output connector 1

```
http://<servername>/axis-cgi/admin/param.cgi?action=add&group=Event.E1.Actions&template=hwaction&Event.E1.Actions.A.Output=1
```

2.4 Editing the Event Script

All Events are handled by one central BASH shell script, /etc/event/event. Since the script is located in the writeable area (/etc) it can be modified. This can be done using the built-in editor; http://<servername>/admin-bin/editcgi.cgi?file=/etc/event/event. Note however, that Axis strongly recommends that you do not use this function unless you fully understand the consequences. If editing of a script does cause problems, the only recourse then will be to reset the product to its factory default settings.

BASH documentation:

BASH Programming Introduction: <http://www.tldp.org/HOWTO/Bash-Prog-Intro-HOWTO.html>
Advanced Bash-Scripting Guide: <http://www.tldp.org/LDP/abs/html/>