



Tracking Hub Command Interface

Version 1.5



Viz Virtual Studio



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Contents

1	Communication with Tracking Hub	4
1.1	Command Syntax	4
1.2	Tokens	4
1.3	Answer	4
1.4	Long Pattern for Answer Handling	5
1.5	Short Pattern for Answer Handling	5
1.6	Failure Messages	5
1.6.1	Unknown Location	6
1.6.2	Unknown Property	6
1.6.3	Unknown Command	6
2	Commands	7
2.1	MAIN	7
2.2	CONFIG	7
2.3	STUDIO	8
2.4	TEMPLATES	8
2.5	TRACKING SYSTEMS	9
2.6	LATTICES	10
2.7	SERVICES	11
2.8	ROUTERS	12
2.8.1	List Available Router Models	12
2.8.2	Manage Routers	12
2.8.3	Configure Individual Routers	12
2.8.4	Configure Presets of Individual Routers	13
2.8.5	Delays per Router	14
2.9	GPIIO	14
2.10	POST	14
2.10.1	Set the Timecode Sources for Live and Post	14
2.10.2	Session Commands	15
2.10.3	Notifications	15
2.10.4	Recording and Replay Commands	15
2.11	LENSFILE	16

1 Communication With Tracking Hub

Tracking Hub provides a command interface similar to that offered by Viz Engine. The default port is 20000.

1.1 Command Syntax

```
<token> <location>[*<property>]* <command> [<parameter>]*
```

Where:

- **<token>**: The token tells the receiver how to interpret the message, if an answer is expected etc.
- **<location>**: Reference to an object or a collection of objects.
- **<property>**: Reference property or properties or member objects contained in the root object or collection.
- **<command>**: The command to be executed on the property or object.
- **<parameter>**: Command parameter or parameters.

1.2 Tokens

> 0	Client receives and answers carrying the same token.
-1	Client receives no answer.
-2	(only for message <i>from</i> Tracking Hub) Reserved for notifications.
-3	(only for message <i>from</i> Tracking Hub) Status message.

1.3 Answer

You always get a string as an answer. It starts with a status code followed by the actual content (e.g. XML) or an error message.

```
(0|1) [string|xml|message]
```

0	Failure	Followed by an optional error message.
1	Success	Followed by an optional status message or an answer in a prearranged format.

1.4 Long Pattern For Answer Handling

```
if (answer != null ) {
    // Handle error answer
    if (CommandMessage.IsFailure(answer)) {
        if (CommandMessage.IsErrorMessage(answer)) {
            Log.Error( "{0} returned an error: {1}" , command,
CommandMessage.ExtractMessage(answer));
            return ;
        }
    }

    // Handle success answer
    if (CommandMessage.IsSuccess(answer)) {
        // HANDLE VALID ANSWER HERE
        return ;
    }
    Log.Error( "{0} returned an invalid answer" , command);
} else {
    // No answer at all
    Log.Error( "{0} returned no answer" , command);
}
```

This pattern is implemented in: `CommandMessage.IsSuccess(string answer, string command)`

1.5 Short Pattern For Answer Handling

```
if (CommandMessage.IsFailure(answer)) {
    // REPORT ERROR HERE
    return ; // then bail out
}
```

1.6 Failure Messages

⚠ Note: Any command message may fail and return an error. It is because of the command interface having changed with a new version of Tracking Hub.

The most common generic error messages are:

1.6.1 Unknown Location

0 Unknown location: <location>

Returned if the top level location of the command message is unknown.

1.6.2 Unknown Property

0 Unknown property: <location>[*<property>]*

Returned if command message starts with a known location, but contains an unknown property in the following property path.

1.6.3 Unknown Command

0 Unknown command: <location>[*<property>]* <command>

Returned if command message starts with a known location and valid property path, but ends on an unknown command.

2 Commands

2.1 MAIN

Tracking Hub matching, available ports, IPs, etc. (MAIN*):

```

MAIN*COMPORTS GET = <portname>[,<portname>]*
MAIN*PARAMETERLIST GET = <parametername>[,<parametername>]*
MAIN*PROTOCOLS GET = <protocolname>[,<protocolname>]*

MAIN*LOCAL_IPS GET = <ip>[,<ip>]*
MAIN*VIZ_IP SET <ip> or <adaptername>
      GET = <adaptername>
MAIN*TRACKING_IP SET <ip> or <adaptername>
      GET = <adaptername>

MAIN*CONFIGURATIONS GET = [<name>[,<name>]]*?

//MAIN START not used
//MAIN STOP not used
//MAIN*RUNNING GET = <bool> not used

MAIN*WRITE_LOG_FILE SET <bool>
      GET = <bool>
MAIN*FORWARD_LOG SET <bool>
      GET = <bool>

MAIN*LICENSE SET <key>
      GET = <name>,<number of cameras>,<days left> (name is either
Cameras or Dongle, - 1 means unlimited cameras/days)

MAIN*DEBUGLEVEL SET < int > (range is 1 ... 10 , 1 only emergency,
10 all)
      GET = < int >

MAIN*DEBUGLEVEL++
MAIN*DEBUGLEVEL--

```

2.2 CONFIG

Store configuration on the Tracking Hub machine:

```

CONFIG EXISTS = 0 | 1
CONFIG SAVE

```

```

CONFIG LOAD
CONFIG SET = <name>
CONFIG GET = <name>

CONFIG RESET

CONFIG*BASE SAVE
CONFIG*BASE DISMISS

```

2.3 STUDIO

Base studio configuration (STUDIO*):

```

STUDIO GET = <xml>

STUDIO*MODE SET FREE|AV|VIZ
          GET = SET
STUDIO*FREQUENCY SET 50 | 60 | 59.94
          GET = SET
STUDIO*SHAPE SET LSHAPE_LEFT|LSHAPE_RIGHT|USHAPE|WALL|HOLE
          GET = SET
STUDIO*CYC SET <xml>
          GET = SET
STUDIO*TIMING GET = <bool>
STUDIO*SENDDelay GET = < int > [in ms]
          SET < int > [in ms]
STUDIO*BUSYLOOP GET = < int > [type]
          SET < int > [type]

```

2.4 TEMPLATES

Templates stored on the Tracking Hub machine (TEMPLATES*):

```

TEMPLATES*COUNT GET = <amount of templates>
TEMPLATES LIST = <name1, name2, . . .>
TEMPLATES*<name> GET = <xml>
TEMPLATES*<name> SET <xml>
TEMPLATES*<name> DELETE
TEMPLATES*<name> LOAD = <xml>
TEMPLATES*<name> USE <name>
TEMPLATES*<name> SAVE <ts_name1 ts_name2 . . . rig_name1 rig_name2 . . . 1
2 >

```


2.5 TRACKING SYSTEMS

Tracking Systems set up on the Tracking Hub machine (TRACKING_SYSTEMS*)

```
TRACKING_SYSTEMS*COUNT GET = <number of tracking systems>
```

```
TRACKING_SYSTEMS CREATE <name>
```

```
TRACKING_SYSTEMS DELETE <name>
```

```
TRACKING_SYSTEMS XMLFILES GET = <string>
```

```
TRACKING_SYSTEMS*<idx/name> GET = <xml>
```

```
TRACKING_SYSTEMS*<idx/name> CONNECT
```

```
TRACKING_SYSTEMS*<idx/name> DISCONNECT
```

```
TRACKING_SYSTEMS*<idx/name>*INDEX GET = <index>
```

```
TRACKING_SYSTEMS*<idx/name>*NAME SET <name>
```

```
GET = <name>
```

```
TRACKING_SYSTEMS*<idx/name>*SLOTINDEX SET <slotindex>
```

```
GET = <slotindex>
```

```
TRACKING_SYSTEMS*<idx/name>*PROTOCOL SET <protocolname>
```

```
GET = <protocolname>
```

```
TRACKING_SYSTEMS*<idx/name>*NETUSE SET <netuse>
```

```
GET = <netuse>
```

```
TRACKING_SYSTEMS*<idx/name>*COMPORT SET <name>
```

```
GET = <name>
```

```
TRACKING_SYSTEMS*<idx/name>*BAUDRATE SET <baud>
```

```
GET = <baud>
```

```
TRACKING_SYSTEMS*<idx/name>*PARITY SET <baud>
```

```
GET = <baud>
```

```
TRACKING_SYSTEMS*<idx/name>*STOPBITS SET <baud>
```

```
GET = <baud>
```

```
TRACKING_SYSTEMS*<idx/name>*DATASIZE SET <baud>
```

```
GET = <baud>
```

```
TRACKING_SYSTEMS*<idx/name>*HOST SET <ip>
```

```
GET = <ip>
```

```
TRACKING_SYSTEMS*<idx/name>*PORT SET <port>
```

```
GET = <port>
```

```
TRACKING_SYSTEMS*<idx/name>*XMLFILE SET <string>
```

```
GET = <string>
```

```
TRACKING_SYSTEMS*<idx/name>*STATUS GET = DISCONNECTED|NOT_RECEIVING|
BAD_TIMING|GOOD_TIMING
```

```
//only in running mode
```

```
TRACKING_SYSTEMS*<idx/name>*PARAMETERS GET =
<parametername>[,<parametername>]*
```

```
TRACKING_SYSTEMS*<idx/name>*SENDRAWDATA SET <bool>
```

```
TRACKING_SYSTEMS*<idx/name>*RAWDATA_OFFSET <parametername> ACT
```

```

TRACKING_SYSTEMS*<idx/name>*RAWDATA_OFFSET <parametername> SET < int >

// not in use any longer
//TRACKING_SYSTEMS*<idx/name>*SENDDDELAY GET = <ms>
//                               SET <ms>

//this command switches hexdump logging
TRACKING_SYSTEMS*<idx/name>*HEXLOG SET <bool>
                                GET = <bool>

TRACKING_SYSTEMS*<idx/name>*TICKCOUNT SET <parametername,
value>[,<parametername, value>]
                                GET = <parametername,
value>[,<parametername, value>]

TRACKING_SYSTEMS*<idx/name>*RCVTIMECORR SET <bool>
                                GET = <bool>

```

2.6 LATTICES

Lattices set up on the Tracking Hub machine (LATTICES*):

```

LATTICES*COUNT GET = <zero-based index>
LATTICES CREATE <name>
LATTICES DELETE <name>
LATTICES LENSFILES GET = <string>
LATTICES LENSFILES RELOAD
LATTICES*<idx/name> CREATE PARENT|CHILD <childname>
LATTICES*<idx/name> GET = <xml>

LATTICES*<idx/name>*INDEX GET = <index>
LATTICES*<idx/name>*NAME SET <string>
                                GET = <string>
LATTICES*<idx/name>*FILTER_ZOOM SET <bool>
                                GET = <bool>

LATTICES*<idx/name>*TYPE SET SIMPLE_CAM|OBJECT|LATTICE
                                GET = SIMPLE_CAM|OBJECT|LATTICE

LATTICES*<idx/name>*SLOTINDEX SET <slotindex>
                                GET = <slotindex>

LATTICES*<idx/name>*<parameter>*NAME SET <string>
                                GET = <string>
                                *OFFSET SET < float >
                                GET = < float >
                                *INVERT SET <bool>
                                GET <bool>

```

```

*DELAY SET < float >
      GET < float >
LATTICES*<idx/name>*TRACKINGDELAY SET <frames( float )>
LATTICES*<idx/name>*VISUAL_XML SET <xml>
      GET = <xml>
LATTICES*<idx/name>*CALIBRATION SET <bool>
      GET = <bool>
LATTICES*<idx/name>*CALIBRATIONDONE GET = <bool>
LATTICES*<idx/name>*CALIBRATION_RANGE GET = <zoom_min> <zoom_max> <zoom>
<focus_min> <focus_max> <focus>
LATTICES*<idx/name>*LENSRANGE SET <lensrange_min> <lensrange_max>
      GET = <lensrange_min> <lensrange_max>

LATTICES*<idx/name>*SCALEVAUES SET <ScXNear, ScXWide, ScYNear, ScYWide>
      GET = <ScXNear, ScXWide, ScYNear, ScYWide>

LATTICES*<idx/name>* LENSFILE SET <string>
      GET = <string>

LATTICES*<idx/name>* LENSFILE_LENSEXT SET <string>
      GET = <string>

```

2.7 SERVICES

Services set up on the Tracking Hub machine (SERVICES*):

```

SERVICES*COUNT GET = <zero-based index>
SERVICES*BY_INDEX*<idx> GET = <xml>
      START
      STOP
SERVICES*BY_INDEX*<idx>*SLOTINDEX GET = <slotindex>
      SET <slotindex>
SERVICES*BY_INDEX*<idx>*RUNNING GET = <bool>

SERVICES*BY_ID*<service_id> GET = <xml>
      START
      STOP
SERVICES*BY_ID*<service_id>*SLOTINDEX GET = <slotindex>
      SET <slotindex>
SERVICES*BY_ID*<service_id>*RUNNING GET = <bool>

SERVICES ADD PARAMETER ALL <ip> <port> =
<service_id>
SERVICES ADD PARAMETER <lattice_name> <ip> <port> =
<service_id>
SERVICES ADD TRACKING_TIMING <ts_name> <ip> <port> =
<service_id>
SERVICES ADD COMMUNICATION_TIMING <service_id> <ip> <port> =
<service_id>

```

```

SERVICES ADD CAMERA <lattice_name> <ip> <port>
<cameranumber> = <service_id>
SERVICES ADD OBJECT <lattice_name> <ip> <port> =
<service_id>
SERVICES ADD TIMECODE <timcode> <ip> <port> =
<service_id>

SERVICES REPLACE <service_id> (TRACKING_TIMING|COMMUNICATION_TIMING)
(<ts_name>|<service_id>) <ip> <port> = <service_id>
SERVICES REPLACE <service_id> (PARAMETER|OBJECT|TIMCODE)
(<lattice_name>|<timcode>) <ip> <port> = <service_id>
SERVICES REPLACE <service_id> CAMERA
<lattice_name> <ip> <port> <cameranumber> = <service_id>
SERVICES REMOVE <service_id>
SERVICES REMOVE_ADDR <ip>
SERVICES REMOVE_ALL

```

2.8 ROUTERS

Configure routers controlled by Tracking Hub (ROUTERS*):

2.8.1 List Available Router Models

```
ROUTERS*MODEL_LIST GET = <model>[,<model>]*
```

2.8.2 Manage Routers

```

ROUTERS ADD <model> <name> = <index>
ROUTERS REMOVE <name> | <index>
ROUTERS*COUNT GET = <count>

```

2.8.3 Configure Individual Routers

```

ROUTERS*<idx/name> GET = <xml>
ROUTERS*<idx/name>*INDEX GET = <index>
ROUTERS*<idx/name>*NAME SET <string>
GET = <string>
ROUTERS*<idx/name>*MODEL SET <model>
GET = <model>
ROUTERS*<idx/name>*AB_MODE SET <mode>
GET = <mode>
ROUTERS*<idx/name>*NETUSE SET <netuse>

```

```

                                GET = <netuse>
ROUTERS*<idx/name>*COMPORT SET <name>
                                GET = <name>
ROUTERS*<idx/name>*BAUDRATE SET <baud>
                                GET = <baud>
ROUTERS*<idx/name>*PARITY SET <baud>
                                GET = <baud>
ROUTERS*<idx/name>*STOPBITS SET <baud>
                                GET = <baud>
ROUTERS*<idx/name>*DATASIZE SET <baud>
                                GET = <baud>
ROUTERS*<idx/name>*HOST SET <ip>
                                GET = <ip>
ROUTERS*<idx/name>*PORT SET <port>
                                GET = <port>
ROUTERS*<idx/name> CONNECT
ROUTERS*<idx/name> DISCONNECT
ROUTERS*<idx/name>*CONNECTED GET = < boolean >
ROUTERS*<idx/name>*INPUTS*<idx>*NAME SET <string>
                                GET = <string>
ROUTERS*<idx/name>*OUTPUTS*<idx>*NAME SET <string>
                                GET = <string>
ROUTERS*<idx/name>*CURRENT_PRESET SET <string>
                                GET = <string>

```

2.8.4 Configure Presets of Individual Routers

```

ROUTERS*<idx/name>*PRESETS CREATE <name> = <index>
ROUTERS*<idx/name>*PRESETS DELETE <name>|<index>
ROUTERS*<idx/name>*PRESETS*COUNT GET = <count>
ROUTERS*<idx/name>*PRESETS*<idx/name> GET = <xml>
ROUTERS*<idx/name>*PRESETS*<idx/name>*NAME SET <string>
                                GET = <string>
ROUTERS*<idx/name>*PRESETS*<idx/name> CONNECT <input-index> <output-index>
ROUTERS*<idx/name>*PRESETS*<idx/name> DISCONNECT <input-index> <output-
index>
ROUTERS*<idx/name>*PRESETS*<idx/name>*CAMERAS ADD <ip> <port> <cameraindex>
= <index>
ROUTERS*<idx/name>*PRESETS*<idx/name>*CAMERAS REMOVE <index>
ROUTERS*<idx/name>*PRESETS*<idx/name>*CAMERAS*COUNT GET = < int >
ROUTERS*<idx/name>*PRESETS*<idx/name>*CAMERAS*<idx> GET = <xml>
ROUTERS*<idx/name>*PRESETS*<idx/name>*GPIIO ADD <devicename> <port> <pin>
<pressed>
                                GET = <devicename> <port> <pin>
<pressed>
ROUTERS*<idx/name>*PRESETS*<idx/name>*GPIIO REMOVE
ROUTERS*<idx/name>*MANUAL_CONTROL GET = <xml>

ROUTERS*<idx/name>*MANUAL_CONTROL*ENABLED SET < boolean >

```

```
GET = < boolean >
```

```
ROUTERS*<idx/name>*MANUAL_CONTROL CONNECT <input> <output>
ROUTERS*<idx/name>*MANUAL_CONTROL DISCONNECT <input> <output>
```

2.8.5 Delays per Router

```
ROUTERS*<idx/name>*PRESET_DELAY SET < double >
GET = < double >
```

```
ROUTERS*<idx/name>*ENGINE_DELAY SET < double >
GET = < double >
```

2.9 GPIIO

GPIIO used on the Tracking Hub machine (gpiio).

```
GPIIO*COUNT GET = <count>
```

```
GPIIO*MONITOR START
GPIIO*MONITOR STOP
GPIIO*MONITOR GET = < boolean >
```

```
GPIIO*<idx/name> GET = <devicename> <count inputports> <count outputports>
```

```
GPIIO*<idx/name>*INDEX GET = <index>
GPIIO*<idx/<name>*NAME GET = <string>
```

Notifications (only sent from Tracking Hub) **if** gpi triggered when monitoring is on

```
GPIIO*MONITOR PRESSED <devicename> <port> <pin>
GPIIO*MONITOR RELEASED <devicename> <port> <pin>
```

2.10 POST

Setup of the Tracking Hub post system.

2.10.1 Set the Timecode Sources for Live and Post

```
POST*LIVE_SOURCE SET <string>
GET = <string>
```

```

POST*POST_SOURCE SET <string>
                GET = <string>
POST*TIMECODE_SOURCES GET <string>[,<string>]*

```

2.10.2 Session Commands

```

POST*SESSION CREATE <string>(create a new session)
                START (starts recording)
                STOP (stops recording)
                GET_LIST = <string>[,<string>]
                LOAD <string>
                DELETE <string>
                INFO_GET = <string>;[,<string>]*

```

2.10.3 Notifications

Loading saved session file progress as a percentage `FILE_PROGRESS <float>`. Loading of saved session file is complete `FILE_FINISH`.

2.10.4 Recording and Replay Commands

```

POST*PARAMETER_RECORDING GET <Parameter Name> = 1 (recording on) | 0
(recording off)
                SET <Parameter Name> < 0 | 1 >
POST*PARAMETER_REPLAY GET <Parameter Name> = 1 (replay on) | 0 (replay
off)
                SET <Parameter Name> < 0 | 1 >
                GET_DELAY <Parameter Name> = < float >
                SET_DELAY < float >

TRACKING_SYSTEMS*<name>*RECORDING GET = 1 (recording on) | 0 (recording
off)
                SET < 0 | 1 >
TRACKING_SYSTEMS*<name>*REPLAY GET = 1 (replay on) | 0 (replay off)
                SET < 0 | 1 >
TRACKING_SYSTEMS*<index>*RECORDING GET = 1 (recording on) | 0 (recording
off)
                SET < 0 | 1 >
TRACKING_SYSTEMS*<index>*REPLAY GET = 1 (replay on) | 0 (replay off)
                SET < 0 | 1 >
TRACKING_SYSTEMS*<name>*REPLAY GET_DELAY = < float >
                SET_DELAY < float >
TRACKING_SYSTEMS*<index>*REPLAY GET_DELAY = < float >
                SET_DELAY < float >

```

```

SERVICES*RECORDING GET <service id> = 1 (recording on) | 0 (recording off)
                        SET <service id> < 0 | 1 >
SERVICES*REPLAY GET <service id> = 1 (replay on) | 0 (replay off)
                        SET <service id> < 0 | 1 >
SERVICES*REPLAY GET_DELAY <service id> = < float >
SERVICES*REPLAY SET_DELAY <service id> <delay>

```

2.11 LENSFILE

Lensfile, load, save and change on the Tracking Hub machine (LENSFILE*).

```

LENSFILE*LOGIN <pwd> = <xml_lensfile> ??? correct error handling ???
LENSFILE*NEW
LENSFILE*LOCK <service id> = <LockID>
LENSFILE*UNLOCK <LockID >
LENSFILE*XML GET <LockID > = <xml_lensfile>
LENSFILE*SELECT <lensfilename> = lenfile (binary) loaded for edit
LENSFILE*SAVE <LockID,>
LENSFILE*SAVEAS <LockID, name>

LENSFILE*GROUP SELECT <LockID parameter>
LENSFILE*GROUP NEW <LockID parameter>
LENSFILE*GROUP ADD < LockID , parameter >
LENSFILE*GROUP DELETE < LockID , parameter>
LENSFILE*GROUP PARAMETERMOVE <LockID , parameter groupID >
LENSFILE*GROUP PARAMETERMOVE <LockID , parameter > //move into a new group

LENSFILE*PARAMETER<parameter>VALUEADD< LockID , zoom,focus >
LENSFILE*PARAMETER<parameter>VALUEDEL< LockID , zoom,focus >
LENSFILE*PARAMETER<parameter>VALUECHANGE< LockID , zoom,focus,newvalue>

LENSFILE*ACTIVE GET = all active services

LENSFILE*PROXY SEND<LockID,string>
LENSFILE*PROXY REQ < LockID string> = <answer>

```