Voyager Application Server Protocol

1. Introduction

VOYAGER have an internal Application Server that allow external application to interact with it :

- receiving events

  - setup events
  - action events
  - error events

- send commands

  - setup cmd
  - action run
  - profile management

2. Connection

Clients connect to Voyager on TCP-IP port 5950. When multiple Voyager instances are running, each instance listens on successive port numbers (5951, 5952, …). Max instance in the same PC is 3. Firewall must be opened to allow communications in the O.S.

VOYAGER allows multiple clients to establish connections simultaneously.

When a client establishes a connection, VOYAGER sends a version event messages to the client (see the events section). Notification messages are sent to all connected clients, answer to command only to relate client.

3. Events

Event Notification messages are formatted as JSON objects. Each message is a single line of text terminated by CR LF.

Common attributes

All messages contain the following attributes in common:

Attribute	Type	Description
Event	string	the name of the event
Timestamp	number	the timesamp of the event in seconds from the epoch, including fractional seconds
Host	string	the hostname of the machine running VOYAGER
Inst	number	the VOYAGER instance number (1-based)

a) Version

Contains info about Voyager version

Attribute	Type	Description
VOYVersion	string	the version of Voyager
VOYSubver	string	the subversion of Voyager if present
MsgVersion	number	The numeric version of protocol implemented in this version of Voyager

Example:

```
{"Event":"Version","Timestamp":1550018143.66187,"Host":"hal9000","Inst":1,"VOYVe
rsion":"Release 2.0.14f - Built 2019-02-11","VOYSubver":"","MsgVersion":1}
```

b) Polling

Protocol Heartbeat. Server send each 5 seconds a polling event. Client must send each 5 seconds polling events. If a time period of 15s passes without polling from client , server close the connection for inactivity .

Example:

```
{"Event":"Polling","Timestamp":1548806904.00159,"Host":"hal9000","Inst":1}
```

c) Signal

Used from server to send signal about something happen in Voyager, status changed, action started, error raised etc etc. Signals are sended in realtime.

Attribute	Type	Description
Code	number	The numeric index of Signal happen. See table below.

Code	Description
1	Autofocus Error
2	Remote Action RUN - Running Queue is empty
3	Remote Action RUN - SC ARRAY Autofocus all nodes
4	Remote Action RUN - Precise Pointing
5	Remote Action RUN - Autofocus
6	Remote Action RUN - SC ARRAY AutoFlat single node
7	Remote Action RUN - SC ARRAY Autofocus single node
8	Remote Action RUN - SC ARRAY Connect Setup all nodes
9	Remote Action RUN - SC ARRAY Disconnect Setup all nodes
10	Remote Action RUN - SC ARRAY Filter Change single node
11	Remote Action RUN - SC ARRAY Get Actual Filter single node
12	Remote Action RUN - SC ARRAY Focuser Move To single node
13	Remote Action RUN - SC ARRAY Focuser Offset single node
14	Remote Action RUN - SC ARRAY Rotator Move single node
15	Remote Action RUN - Setup Connect
16	Remote Action RUN - Setup Disconnect
18	Remote Action RUN - Camera Shot

19	Remote Action RUN - CCD Cooling
20	Remote Action RUN - Focuser Move To
21	Remote Action RUN - Focuser OffSet
22	Remote Action RUN - Rotator Goto
23	Remote Action RUN - AutoFlat
24	Remote Action RUN - Filter Change To
25	Remote Action RUN - Plate Solving Actual Location
26	Remote Action RUN - SC ARRAY Sequence
27	Remote Action RUN – SC ARRAY Create Directory on FileSystem single node
28	Remote Action RUN – SC ARRAY CCD Cooling single node
29	Remote Action RUN - SC ARRAY Get CCD Temperature single node
30	Remote Action RUN - SC ARRAY Camera Shot single node
31	Remote Action RUN - Telescope Goto
32	Remote Action RUN - Run External Script/Application
33	Remote Action RUN - SC ARRAY AutoFocus all node with LocalField method
34	Remote Action RUN - SC ARRAY AutoFocus single node with LocalField method
…	
500	VOYAGER General STATUS - Error (some error from action or thread raised)
501	VOYAGER General STATUS - Idle (nothing to do ready to work)
502	VOYAGER General STATUS - Action Running
503	VOYAGER General STATUS - Action Stopped
504	VOYAGER General STATUS - Undefined (just started Voyager … nothing defined)
505	VOYAGER General STATUS - Warning (some minor error from action or thread raised)
506	VOYAGER General STATUS - Unknow (Internal Automa cannot understand what asked to Voyager)

Example:

{"Event":"Signal","Timestamp":1550018150.45152,"Host":"hal9000","Inst":1,"Code":
18}

d) NewFITReady

New FIT file just saved from Voyager to the O.S. filesystem.

Attribute	Type	Description
File	string	Path and name with extension of the file saved (usually referred to the server local disc if start with a drive letter unit, or to a network sharing if start with \\. For network sharing be sure to have permission to read file
Type	number	the number represent the kind of image. See table below.

Type	Description
0	LIGHT
1	BIAS
2	DARK
3	FLAT

Example:

{"Event":"NewFITReady","Timestamp":1550018163.09996,"Host":"hal9000","Inst":1,"F
ile":"C:\\Users\\leonardo\\Documents\\Voyager\\FIT\\TestShot_20190213_003550.fit
","Type":0}

e) Shutdown

Voyager Application Server will be closed due to a users request of application closing (user click on Voyager close button) or process was killed by O.S. . You must close client because connection is not avalaible.

Example:

{"Event":"ShutDown","Timestamp":1548806904.00159,"Host":"hal9000","Inst":1}

4. Commands

… coming soon !

5. Workflow

- Open connection to the server
- Read Socket Loop Start in a Thread
- You'll receive ones at beginning the Version Event FROM server
- You'll receive each 5s the Polling Event FROM server
- Read and process the event received
- Send command if needed and wait response to command
- You'll receive Shutdown Event if Voyager will be closed during your connection
- When finished close the socket, nothing to say just close.

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