Local Recording Service Requirements

**v.1.09**

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Author** | **Changes** |
| 1.00 | Oct. 20, 2014 | Giles | 1. 1st release |
| 1.01 | Nov.11, 2014 | Giles | 1. Revise response content for   2.2.1, 2.2.7, 2.2.12,  2.2.14,3.2.1, 3.2.2, 3.2.3   1. Revise content   APPENDIX E   1. Revise response error code for   2.2.2, 2.2.8, 2.2.9, 2.2.10, 2.2.12, 2.2.14, 2.2.15   1. Add   2.2.16 Set threshold  2.2.17 Query threshold   * + 1. Download event clip     2. Lock profile   3.2.5 Unlock profile |
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| 1.09 |  | Giles | 1. Attribute of all mydlink no are revised from Integer to string 2. Add 2.2.1 error code 3. Revise 2.2.20 response format 4. Revise 3.2.1 response format 5. Revise 3.2.2 parameters format 6. Revise 3.2.3 parameters format |

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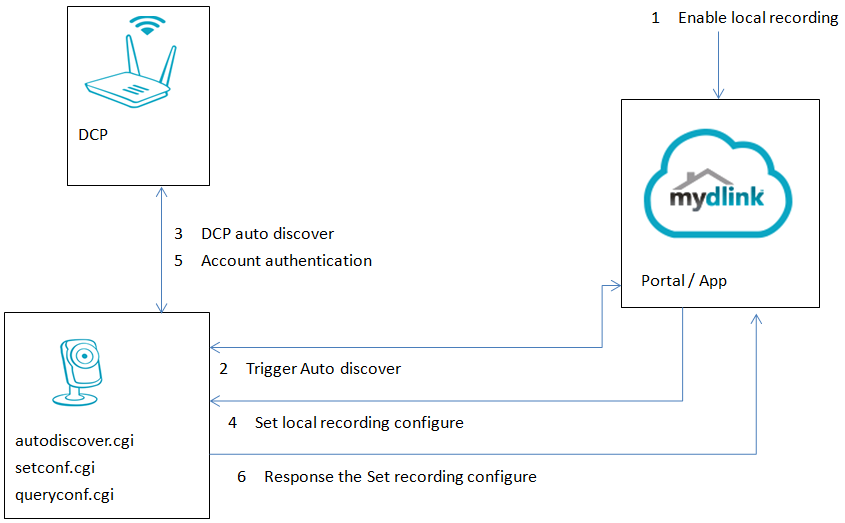
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**7**

1. **Local recording overview**

**Components of local recording function**

****

* 1. **Prerequisites of local recording integration**
     1. Device web server shall support HTTPS**.** All the CGIs shall be accessed via http or https.
     2. The additional CGIs for local recording functions go same http authentication approach and devices password.
     3. All http header for response about CGIs shall carry "<Access-Control-Allow-Origin:\*/>"
     4. The cross domain policy file "crossdomain.xml" shall be placed in root directory of web server. About content of this file, please refer to APPENDIX A.
     5. Execution hooks for local recording Web API refer to APPENDIX E.
  2. **Setup flow**

1. Enable local recording

User enables local recording feature via mydlink clients (portal or apps).

1. Trigger auto discover

If the selected camera is local recording enabled, client launches autodiscover.cgi of camera to search local recording enabled devices in LAN.

1. Device discovery

autodiscover.cgi will broadcast DCP request to all devices in LAN. Including the selected camera, mydlink enabled devices bound to same account will respond the discover request.

1. Configure local recording function

Client launches setconf.cgi to apply local recording settings to camera. For more details, refer to “3.3.2 Set local recording config” on **Local recording Web API (Camera).**

1. Account authentication
   * + 1. User decides to adopt router’s storage volume. setconf.cgi will launch init mapping of router (refer to 2.2.15 init mapping) and do account authentication.
       2. setconf.cgi should execute “localrec -f 25” (refer to 4.2.8 init mapping) when user’d like to adopt camera’s storage volume. Camera will ignore account authentication for all request from 127.0.0.1.

If everything’s ok, the setconf.cgi would create storage mapping relationship and stores all local recording configurations.

1. Response the set recording configure

Return the result of settings and account authentication.

1. **Router (Storage Manager)**
3. 1. **System Requirements**
4. Volumes listing of attached USB storage or micro SD card
   * 1. Mount point for external USB storage or micro SD card volume information shall be written in “/tmp/volume.conf”. For more details please APPENDIX B.
     2. Support “mount” command for providing all external storage volume information
5. Builtin sqlite lib and ffmpeg libs with h264 decoder and jpeg encoder functions, including the following in system lib.
   * 1. libsqlite3.so
     2. libavcodec.so
     3. libavformat.so
     4. libavutil.so
     5. libswscale.so

For more details refer the APPENDIX C.

1. Device web server shall support APIs defined in chapter 2.2.
2. Use NTP for time synchronization instead of modifying UTC time directly when user changes time zone.
3. Support “df” command with options -P/k/m/h.
4. Add mdb command “lrmapping”. Please refer APPENDIX G.
5. Implementation of local recording Web API.

Those Web APIs shall be implemented by execution hook. Web API shall parse and pass parameters to “localrec” program once received local recording APIs, and handle the response from “localrec” then returns the result to the clients. Please refer chapter 2, chapter 3 and APPENDIX E.

1. Execute “localrec -f 0” to initialize local recording volume mapping relationship when system boot up or user plug in USB disk and micro SD card.
2. Add symbolic link “videostorage” in root directory of device web server points to /tmp/device. “videostorage” can be accessed by request with auth cookie in header or access\_token attached by url.

2.1.10 Add mdb command “lrunmapping”

* 1. **Local recording Web API for router**

All response shall return with json header except the response description of Web API indicates that it should adopt other type of header. Refer to APPENDIX D for json header and APPENDIX E for execution hook. If router can’t find any configured volume and mydlink no, Web APIs will response “600”.

* + 1. **Get HLS playlist for video clip**

**Request**:

GET /localrecording/getplaylist.m3u8

**Description:**

getplaylist.m3u8 shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters**:

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| trigger | Integer | Timestamp of this request, in millisecond. |
| target | Integer | Timestamp of target time of video, in millisecond. If trigger-time is equal to target-time, live view mode will be enabled. |
| access\_token | String | Token string for auth. |

**Example**:

https://192.168.1.100/localrecording/getplaylist.m3u8?no=11111111&trigger=1407654400004&target=1407654400004&access\_token=Ux9i4mdi6

**Response**:

|  |  |
| --- | --- |
| Response example | Description |
| #EXTM3U  #EXT-X-TARGETDURATION:12  #EXT-X-MEDIA-SEQUENCE:0  #EXTINF:6, no desc  /videostorage/11111111/20141106/18/40/0931.ts? access\_token=Ux9i4mdi6  #EXTINF:6, no desc  /videostorage/11111111/20141007/14/30/0104.ts? access\_token=Ux9i4mdi6 | Success with mpeg header.  Follow m3u8 file format. |
| {  "result" : "Fail",  "error\_code" : 11000500  } | Fail  11000500 : Unavailable mydlink no.  11000501 : Timestamp format error  11000502 :  Expired start time  11000503 :  No data |

* + 1. **Query start time of HLS playlist**

**Request**:

GET /localrecording/querystarttime

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters**:

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| trigger | Integer | Timestamp in millisecond of this request |

**Example:**

https://192.168.1.100/localrecording/querystarttime?no=11111111&trigger=1407654400004

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "start\_time" : 1401966022000  } | Success |
| {  "result" : "Fail",  "error\_code" : 12000500  } | Fail  12000500 : Invalid mydlink no.  12000501 : Trigger time format error  12000502 : Expired start-time |

* + 1. **Query event list in specified range**

**Request**:

GET /localrecording/queryevent

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters**:

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| time-from | Integer | Unix Timestamp of start time of target range |
| time-to | Integer | Unix Timestamp of end time of target range |

**Example:**

https://192.168.1.100/localrecording/queryevent?no=11111111&time-from=1407654400&time-to=1407654900

**Response:**

Event list with JSON object. Unix timestamp as key and event type as value.

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "data" : [  {"1378438335": 256},  {"1378438345": 512},  {"1378438355": 512}  ]  } | Success  256 : Motion Event  512 : Sound Event |
| {  "result" : "Fail",  "error\_code" : 13000500  } | Fail  13000500 : Invaild mydlink no.  13000501 : Timestamp format error  13000502 : time-to less than time-from |

* + 1. **Query recorded time range data of playback video**

**Request**:

GET /localrecording/querytimerange

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters**:

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| time-from | Integer | Unix Timestamp of start time of target range |
| time-to | Integer | Unix Timestamp of end time of target range |

**Example:**

https://192.168.1.100/localrecording/querytimerange?no=11111111&time-from=1407654400&time-to=1407654900

**Response:**

Time range list with JSON object, Unix timestamp of start as key and Unix timestamp of end time as value.

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "data" : [  {  "time-from" : 1378438235,  "time-to" : 1378438435  },  {  "time-from" : 1378438277,  "time-to" : 1378438435  }  ]  } | Success |
| {  "result" : "Fail",  "error\_code" : 14000500  } | Fail  14000500 : Unavailable mydlink no.  14000501 : Timestamp format error  14000502 : time-to less than time-from |

* + 1. **Download preview image of recorded video of speciﬁed time**

**Request**:

GET /localrecording/preimage

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters:**

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| time | Integer | UNIX Timestamp of preview image. |

**Example:**

https://192.168.1.100/localrecording/preimage?no=11111111&time =1407654400

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| 302 redirect to image URL | Success with text header. |
| {  "result" : "Fail",  "error\_code" : 15000500  } | Fail  15000500 : Unavailable mydlink no.  15000501 : Timestamp format error  15000502 : Preview image not found |

* + 1. **Query list of video clip (cropped by user)**

**Request**:

GET /localrecording/querylist

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters:**

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |

**Example:**

https://192.168.1.100/localrecording/querylist?no=11111111

**Response:**

JSON array contains clip information as elements

**Index** **Type** **Description**

id: Integer Clip ID

startime: Integer Unix timestamp of start time

endtime: Integer Unix timestamp of end time

title: String Title

read: Boolean Already read ?

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "data" : [  {  "id" : 1378111223000,  "starttime" : 1378111220,  "endtime" : 1378111316,  "title" : "2013092\_164020",  "read" : "true"  },  {  "id" : 1378111226000,  "starttime" : 1378111300,  "endtime" : 1378111316,  "title" : "2013092\_164021",  "read" : "true"  }  ]  } | Success |
| {  "result" : "Fail",  "error\_code" : 16000500  } | Fail  16000500 : Unavailable mydlink no. |

* + 1. **Query used time of video clip**

**Request:**

GET /localrecording/queryusedtime

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters:**

|  |  |  |
| --- | --- | --- |
| Name | Value | Description |
| no | String | Mydlink no. |

**Example**:

https://192.168.1.100/localrecording/queryusedtime?no=11111111

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "used" : 58542,  "free" : 985421  } | Success  Response the target volume about used and free space size in KB. |
| {  "result" : "Fail",  "error\_code" : 17000500  } | Fail  17000500 : Unavailable mydlink no. |

* + 1. **Create video clip of specified time range**

**Request**:

POST /localrecording/createclip

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** (Url-encoded POST Form Data):

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| time-from | Integer | Unix Timestamp of start time of target range |
| time-to | Integer | Unix Timestamp of end time of target range |
| name | String | Specified name  Maximum length is 256. |

**Example**:

no=11111111&time-from=1400000000&time-to=1401000000&name= mydlink%2B

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 18000500  } | Fail  18000500 : Unavailable mydlink no.  18000501 : Timestamp format error  18000502 : time-to less than time-from  18000503 : empty name |

* + 1. **Delete a video clip**

**Request**:

POST /localrecording/deleteclip

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** (Url-encoded POST Form Data) :

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| clip-id | Integer | Video clip ID number |

**Example:**

no=11111111&clip-id=1378111223000

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 19000500  } | Fail  19000500 : Unavailable mydlink no.  19000501 : Unavailable clip-id |

* + 1. **Rename a video clip**

**Request**:

POST /localrecording/renameclip

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** (Url-encoded POST Form Data):

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| clip-id | Integer | Video clip ID number. |
| new-name | String | New name about the video clip in http body |

**Example:**

no=11111111&clip-id=1378111223000&new-name=mydlink%2B

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 20000500  } | Fail  20000500 : Unavailable mydlink no.  20000501 : Unavailable clip-id  20000502 : Empty new name |

* + 1. **Update read status of a video clip**

**Request**:

GET /localrecording/clipstatus

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters**:

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| clip-id | String | Clip-id |
| status | Integer | 1 : read  0 : unread |

**Example:**

https://192.168.1.100/localrecording/clipstatus?no=11111111&clip-id=1401000000&status=1

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 21000500  } | Fail  21000500 : Unavailable mydlink no.  21000501 : Unavailable clip-id |

* + 1. **Query list of story boarding**

**Request:**

GET /localrecording/qsboarding

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters**:

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| time-from | Integer | Unix Timestamp of start time of target range |
| time-to | Integer | Unix Timestamp of end time of target range |
| gap | Integer | The time gap between each preview image in second. |

**Example:**

https://192.168.1.100/localrecording/qsboarding?no=11111111&time-from=1401230000&time-to=1401240000&gap=6

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "data" :  [  {  "timestamp": 1411111111,  "value":"YXNkZmFkZmFkZmFzZGZhc1Q="  }  ,  {  "timestamp": 1411111117,  "value":"YXNkZmFkZmFkZmFzZGZhc2Q=”  }  ]  } | Success.  Entry format  {Timestamp},{preview-image in based-64 format}  Entries are separated with new line. |
| {  “result” : “Fail”,  “error\_code” : 22000500  } | Fail  22000500 : Unavailable mydlink no  22000501 : Invalid gap value  22000502 : Timestamp error  22000503 : time-to less than time-from |

* + 1. **Upload clip**

**Request**:

POST /localrecording/uploadclip

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

Upload clip in a form using multipart/form-data. The form should contain below Content-Dispositions.

**Content-Disposition**

|  |  |  |
| --- | --- | --- |
| Name | Value | Description |
| no | String | Mydlink no |
| timestamp | Integer | Unix Timestamp of this file |
| file-name | String | File name of clip |
| duration | Integer | Clip’s length in seconds |

**Remake:**

1. Refer APPENDIX F for more details.

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 23000500  } | Fail  23000500 : Unavailable mydlink no.  23000501 : Timestamp format error.  23000502 : Null para value.  23000503 : File I/O error.  23000504 : Volume full.  23000505 : Fil move error.  23000506 : DB error. |

* + 1. **Event notify**

**Request:**

POST /localrecording/eventnotify

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** (Url-encoded POST Form Data):

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| event-type | Integer | Event type.  256 : Motion  512 : Sound |
| timestamp | Integer | Unix Timestamp of end time of target range |

**Example:**

no=11111111&event-type=512&timestamp=1401240000

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 24000500  } | Fail  24000500 : Unavailable mydlink no  24000501 : Timestamp format error  24000502 : Event format error  24000503 : File I/O error |

* + 1. **Initialize mapping**

**Request:**

POST /localrecording/initmapping

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** (Url-encoded POST Form Data):

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| volume-path | String | Volume’s full path |
| overwrite | Integer | Recording overwrite number. Refer to 3.3.2 |

**Example:**

no=11111111&volume-path=%2Ftmp%2Fstorage%2FUFD\_Silicon\_02780& overwrite=0

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 25000500  } | Fail  25000500 : Unavailable mydlink no.  25000501 : Invalid volume.  25000502 : Fulfill mapping quota. |

* + 1. **Set threshold**

**Request:**

GET /localrecording/setthreshold

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E. The threshold value should be stored in mdb key “lrthreshold”. The mdb command can refer to APPENDIX I.

**Parameters** :

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| threshold | Integer | Free space in KB |

**Example:**

https://192.168.1.100/localrecording/setthreshold?no=11111111&threshold=540000

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success. |
| {  "result" : "Fail",  "error\_code" : 26000500  } | Fail  26000500 : Unavailable mydlink no.  26000501 : Free space is less than threshold value. |

2. 2. 17. **Query threshold**

**Request:**

GET /localrecording/querythreshold

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E and I.

**Parameters** :

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |

**Example:**

https://192.168.1.100/localrecording/querythreshold?no=11111111

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "threshold" : 540000  } | Success and response the threshold is 540000 KB. |
| {  "result" : "Fail",  "error\_code" : 27000500  } | Fail  27000500 : Unavailable mydlink no. |

2. 2. 18. **Download event clip**

**Request:**

GET /localrecording/downloadeventclip

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** :

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| timestamp | Integer | Event’s timestamp |

**Example:**

https://192.168.1.100/localrecording/downloadeventclip?no=11111111&timestamp=1415236500

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "data" :  {  "timestamp": 1415236498,  "clip":"YXNkZmFkZmFkZmFzZGZhc1Q= "  }  } | Success |
| {  "result" : "Fail",  "error\_code" : 28000500  } | Fail  28000500 : Unavailable mydlink no.  28000501 : No event clip. |

* + 1. **Unbind mapping**

**Request:**

POST /localrecording/unbindmapping

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** (Url-encoded POST Form Data):

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |
| volume-path | String | Volume’s full path |

**Example:**

no=11111111&volume-path=%2Ftmp%2Fstorage%2FUFD\_Silicon\_02780

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 29000500  } | Fail  29000500 : Unavailable mydlink no.  29000501 : Invalid volume. |

* + 1. **Get unbind mapping**

**Request:**

GET /localrecording/getunbindmapping

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters :** None

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "data" : [  {  "no" : "44445681",  "UID" : "JetFlash\_TS2GJF150\_01"  },  {  "no" : "44445682",  "UID" : "Seagate\_Expansion\_05"  }  ]  } | Success |
| {  "result" : "Fail",  "error\_code" : 30000500  } | Fail  30000500 : mdb command fail |

* + 1. **Query record range**

**Request:**

GET /localrecording/getrecordrange

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** :

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no. |

**Example:**

https://192.168.1.100/localrecording/getrecordrange?no=11111111

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "data" : [  {  "clip-begin" : 1420000000,  "clip-end" : 1420001000  },  {  "event-begin" : 1420000000,  "event-end" : 1420001000  }  ]  } | Success |
| {  "result" : "Fail",  "error\_code" : 31000500  } | Fail  Unavailable mydlink no. |

1. **Camera (Video Streamer)**
   1. **System Requirement**
2. Device web server shall support all APIs defined in 3.2.
3. Use NTP for time synchronization instead of modifying UTC time directly when user changes time zone.
4. Support new mdb command to lock/unlock and enable/disable NTP settings. For more details refer to APPENDIX H.
5. Support arp command with option -a/n.

-a

Use alternate BSD style output format (with no fixed columns).

-n, --numeric

Shows numerical addresses instead of trying to determine symbolic host, port or user names.

arp output refer to APPENDIX J.

* 1. **Local recording Web API for camera**
     1. **Auto discover**

**Request**:

POST/localrecording/autodiscover.cgi

**Description:**

The API shall be implemented by execution hook. Refer to APPENDIX E for more details.

**Parameters** (Url-encoded POST Form Data):

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| mode | Integer in 0, 1 and 2 | 0= Both mode (Default)  For both mode, response content will include all found volumes in Camera’s SD card and Router’s external USB disk  1= Camera mode.  For this mode, the response content only reports the volumes on Camera’s SD card.  2= Router mode.  For Router mode, response content only report the volumes on Router’s external USB disk. |

**Response:**

Response the storage information of router resides in LAN.

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success",  "data" : [  {  "no": "11111111",  "UID": "Verbatim\_110E6",  "free":1475,  "total":145252,  "mac":"11:22:33:44:55:66",  "ip" : "192.168.0.1"  },  {  "no": "11111111",  "UID": "Verbatim\_220F7",  "free":14750,  "total":1452520,  "mac":"11:22:33:44:55:77",  "ip" : "192.168.0.1"  },  {  "no": "44444297",  "UID": "UDF\_MMC\_22087",  "free":1750,  "total":111520,  "mac":"AA:22:BB:44:CC:66",  "ip" : "192.168.0.78"  }  ]  } | Success for both mode.  Found three volumes,  volume 1:  Verbatim\_110E6 at 192.168.0.1 with 1475KB free space/145252KB total space volume 2:  Verbatim\_220F7 at 192.168.0.1 with 14750KB free space/1452520KB total space.  Volume 3:  UDF\_MMC\_22087 at 192.168.0.78 with 1750KB free space/111520 KB total space. |
| {  "result" : "Success",  "data" : [  {  "no": "44444297",  "UID": "MMC",  "free":1750,  "total":111520,  "mac":"AA:22:BB:44:CC:66",  "ip" : "192.168.0.78"  }  ]  } | Success for Camera mode.  Found a volume,  Volume MMC at 192.168.0.78 with 1750KB free space /111520KB total space. |
| {  "result" : "Success",  "data" : [  {  "no": "11111111",  "UID": "Verbatim\_110E6",  "free":1475,  "total":145252,  "mac":"11:22:33:44:55:66",  "ip" : "192.168.0.1"  },  {  "no": "11111111",  "UID": "Verbatim\_220F7",  "free":14750,  "total":1452520,  "mac":"11:22:33:44:55:77",  "ip" : "192.168.0.1"  }  ]  } | Success for router mode.  Found two volumes,  volume 1:  Verbatim\_110E6 at 192.168.0.1 with 1475KB free space/145252KB total space volume 2:  Verbatim\_220F7 at 192.168.0.1 with 14750KB free space/1452520KB total space. |
| {  "result" : "Fail",  "error\_code" : 500  } | Fail  500 : Internal Error |

* + 1. **Set local recording config**

**Request**:

POST /localrecording/setconf.cgi

**Description**:

setconf.cgi is implemented by camera vendor and store all setting values in system. Besides, it will launch initmapping to router (refer to 2.2.15 init mapping) for account authentication or camera (refer to 4.2.2 init mapping) for volume mapping.

**Parameters** (Url-encoded POST Form Data):

M = Mandatory

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| enable | Integer in 0 , 1 | 0= Disable (Default)  1= Enable |
| policy | Integer in 0,1 or 2 | 0 = Always (Default)  1 = Schedule recording  2 = Event triggered |
| day | String  Max length: 7 | Day of the week for schedule recording. Represent day of week in bit string start with Monday. For example, 0101010 represent Tuesday, Thursday, Saturday. Default value is "". |
| period | String  Max length: 8 | Period for schedule recording. For example, 14301730 represent the period from 14:30 to 17:30. Default value is “”. |
| UID | String (M)  Max length: 128 | Storage volume description. It might be volume name or HW description. Default value is “”. |
| overwrite | Integer in 0 and 1 | 0 = Overwrite the oldest part (Default)  1 = Stop the recording when storage device is full. |
| account | String (M)  Max length: 32 | Account of storage device. Default value is "". |
| password | String (M)  Max length: 32 | Password of storage device. Default value is "". |
| no | String (M) | Mydlink no of storage device. Default value is "". |
| mac | String (M)  Max length:17 | Mac address of storage device. Default value is "". |

**Example:**

enable=1&policy=1&day=0101010&period=14301730&UID= Verbatim\_220F7& overwrite=1&account=admin&password=mydlink%2B&no=11111111&mac=11:22:33:44:55:66

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 500  } | Fail  500 : Format error  505 : Auth failed  Init mapping fail  25000500 : Unavailable mydlink no.  25000501 : Invalid volume.  25000502 : Fulfill mapping quota. |

1. * 3. **Query local recording config**

**Request**:

GET /localrecording/queryconf.cgi

**Description**:

queryconf.cgi is implemented by camera vendor and can return all setting values.

**Parameters:** none

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "enable": 1,  "policy": 1,  "day": "0101010",  "period" : "14301730",  "UID" : "Verbatim\_220F7",  "overwrite" : 1,  "account" : "admin",  "password" : "mydlink+",  "no" : "11111111",  "mac" : "11:22:33:44:55:66"  } | The local recording setting is  Schedule recording, recording from 14:30 to 17:30 at Tuesday, Thursday and Saturday, target storage device is “Verbatim\_220F7” with the policy to overwrite the oldest part when space is full. The target storage device account/password is admin/mydlink+ at 11:22:33:44:55:66. |
| {  "result" : "Fail",  "error\_code" : 500  } | Fail  500 : Internal error |

* + 1. **Lock profile**

**Request**:

POST /localrecording/lockprofile.cgi

**Description**:

lockprofile.cgi is implemented by camera vendor and can lock the specified profile. The related profile setting in web service will be grayed out. It means user can’t change the profile setting until launch the unlockprofile.cgi ( refer to 3.2.5)

**Parameters** :

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| vprofile | Integer | Profile id, the number from 1 to the count of profiles |

**Example:**

vprofile=1

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 500  } | Fail  500 : lock error |

1. * 5. **Unlock profile**

**Request**

POST /localrecording/unlockprofile.cgi

**Description**:

This CGI is implemented by camera vendor and can un-lock the specified profile.

**Parameters** :

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| vprofile | Integer | Profile id, the number from 1 to the count of profiles |

**Example:**

vprofile=1

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 500  } | Fail  500 : lock error |

* + 1. **Unbind Setting**

**Request**

POST/localrecording/unbindsetting.cgi

**Description**:

unbindsetting.cgi is implemented by camera vendor. It will launch router or camera’s API “unbind mapping” (refer to 2.2.19 or 4.2.3) and then clean up all values set by setconf .cgi (refer to 3.2.2)

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success to clean up all values by 3.2.2 setconf.cgi |
| {  "result" : "Fail",  "error\_code" : 500  } | Fail  500 : unbind fail  501: clean up value fail  Unbind mapping fail  29000500 : Unavailable mydlink no.  29000501 : Invalid volume. |

1. **Camera (Storage Manager)**
3. 1. **System Requirements**

Please refer to 2.1 and implement accordingly except 2.1.2.

Camera only comes with built-in libsqlite3.so in system lib.

* 1. **Local recording Web API for camera**
     1. **Necessary APIs**

The following list all necessary APIs for camera and how to implement.

|  |  |
| --- | --- |
| **Web APIs** | **Refer** |
| **Get HLS playlist for video clip** | 2.2.1 |
| **Query start time of HLS playlist** | 2.2.2 |
| **Query event list in specified range** | 2.2.3 |
| **Query recorded time range data of playback video** | 2.2.4 |
| **Download preview image of recorded video of speciﬁed time** | 2.2.5 |
| **Query used time of video clip** | 2.2.7 |
| **Query list of story boarding** | 2.2.12 |
| **Set threshold** | 2.2.16 |
| **Query threshold** | 2.2.17 |
| **Get unbind mapping** | 2.2.20 |
| **Query record range** | 2.2.21 |

* + 1. **Initialize mapping**

**Request:**

“localrec -f 25”

**Description:**

The API shall be implemented by execution hook and no API export.

**Parameters**: those values are set by setconf.cgi. Please refer 3.2.2

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no of storage device. Refer to 3.2.2 |
| UID | String | Storage volume description. Refer to 3.2.2 |
| overwrite | Integer | Recording overwrite number. Refer to 3.3.2 |

**Example:**

“localrec -f 25 -n 11111111 -v UFD\_Silicon\_02780 -o 1”

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 25000500  } | Fail  25000500 : Unavailable mydlink no.  25000501 : Invalid volume.  25000502 : Fulfill mapping quota. |

2. 2. 3. **Unbind mapping**

**Request:**

“localrec -f 29”

**Description:**

The API shall be implemented by execution hook and no API export.

**Parameters**: those values are set by setconf.cgi. Please refer 3.2.2

|  |  |  |
| --- | --- | --- |
| Key Name | Value | Description |
| no | String | Mydlink no of storage device. Refer to 3.2.2 |
| UID | String | Storage volume description. Refer to 3.2.2 |

**Example:**

“localrec -f 29 -n 11111111 -v UFD\_Silicon\_02780”

**Response:**

|  |  |
| --- | --- |
| Response example | Description |
| {  "result" : "Success"  } | Success |
| {  "result" : "Fail",  "error\_code" : 29000500  } | Fail  29000500 : Unavailable mydlink no.  29000501 : Invalid volume. |

* + 1. ***Get Image (TBD)***

***Request:***

***GET /localrecording/getimage***

***Description:***

***The API shall be implemented by vendor.***

***Parameters :***

|  |  |  |
| --- | --- | --- |
| ***Key Name*** | ***Value*** | ***Description*** |
| ***resolution*** | ***string*** | ***Resolution of image. It should support 2 resolutions as the following***  ***100x100***  ***320x240*** |

***Example:***

***https://127.0.0.1/localrecording/getimage?resolution=100x100***

***Response:***

|  |  |
| --- | --- |
| ***Response example*** | ***Description*** |
| ***HTTP/1.0 200 OK\r\n***  ***Content-Type: image/jpeg\r\n***  ***Content-Length:<image size>\r\n***  ***\r\n***  ***<JPEG image data>\r\n*** |  |

# APPENDIX A CROSSDOMAIN.XML

The content of crossdomain.xml

<?xml version="1.0"?>

<!DOCTYPE cross-domain-policy SYSTEM "<http://www.adobe.com/xml/dtds/cross-domain-policy.dtd>">

<cross-domain-policy>

<allow-access-from domain="\*" secure="true" />

</cross-domain-policy>

# APPENDIX B VOLUME INFORMATION

System shall maintain volumes information attached to system in /tmp/volume.conf, information below.

</path/to/the/mount-point>

For example:

1.

/var/tmp/storage/volume-name

2.

/var/tmp/storage/volume-name0

/var/tmp/storage/volume-name1

# APPENDIX C FFMEPG LIBRARY

How to generate libavformat.so libavcodec.so, libavutil.so and libswscale.so

1. Download ffmpeg 0.10.10

2. Configure ffmpeg with suitable parameters. For example

./configure --enable-cross-compile --cross-prefix=/opt/hndtools-arm-linux-2.6.36-uclibc-4.5.3/bin/arm-brcm-linux-uclibcgnueabi- --target-os=linux --cc=/opt/hndtools-arm-linux-2.6.36-uclibc-4.5.3/bin/arm-brcm-linux-uclibcgnueabi-gcc --host-cc=/opt/hndtools-arm-linux-2.6.36-uclibc-4.5.3/bin/arm-brcm-linux-uclibcgnueabi-gcc --cpu=armv5te --arch=arm --enable-shared --disable-asm --enable-armv5te --enable-gpl --disable-everything --prefix=/home/giles/armstuff --disable-network --disable-demuxers --enable-demuxer=mpegts --enable-decoder=h264 --enable-encoder=mjpeg --disable-yasm --disable-protocols --enable-protocol=file --enable-small --disable-safe-bitstream-reader --disable-debug --disable-bsfs

# APPENDIX D HTTP HEADER

mpeg header:

"Content-Type: application/vnd.apple.mpegurl”

Access-Control-Allow-Origin: \*

Cache-Control: no-cache

Pragma: no-cache

json header:

Content-Type: application/json

Access-Control-Allow-Origin: \*

Cache-Control: no-cache

Pragma: no-cache

text header:

Content-Type: text/plain; charset=utf-8

# APPENDIX E EXECUTION HOOK COMMAND MAPPING

1. All the parameter value must be URL-encoded.

For example:

no=11111111&time-from=1400000000&time-to=1401000000&name=mydlink%2B

mydlink%2B is the url-encoded format of mydlink+.

1. “localrec” will return result in json format as the response body defined in each API.

|  |  |
| --- | --- |
| Web APIs | Execution hook command example |
| 2.2.1 Get HLS playlist for video clip | **Input**  getplaylist.m3u8?no=11111111&trigger=1407654400004&target=1407654400004&access\_token=Ux9i4mdi6  **Execute**  localrec -f 11 -n 11111111 -t 1407654400004 -r 1407654400004 -k Ux9i4mdi6 |
| 2.2.2 Query start time of HLS playlist | **Input**  querystarttime?no=11111111&trigger=1407654400004  **Execute**  localrec -f 12 -n 11111111 -t 1407654400004 |
| 2.2.3 Query event list in specified range | **Input**  queryevent?no=11111111&time-from=1407654400&time-to=1407654900  **Execute**  localrec -f 13 -n 11111111 -r 1407654400 -t 1407654900 |
| 2.2.4 Query recorded time range data of playback video | **Input**  querytimerange?no=11111111&time-from=1407654400&time-to=1407654900  **Execute**  localrec -f 14 -n 11111111 -r 1407654400 -t 1407654900 |
| 2.2.5 Download preview image of recorded video of speciﬁed time | **Input**  preimage?no=11111111&time=1407654400  **Execute**  localrec -f 15 -n 11111111 -t 1407654400 |
| 2.2.6 Query list of video clip | **Input**  querylist?no=11111111  **Execute**  localrec -f 16 -n 11111111 |
| 2.2.7 Query used time of video clip | **Input**  queryusedtime?no=11111111  **Execute**  localrec -f 17 -n 11111111 |
| 2.2.8 Create video clip of specified time range | **Input**  no=11111111&time-from=1400000000&time-to=1401000000& name= mydlink%2B  **Execute**  localrec -f 18 -n 11111111 -r 1400000000 -t 1401000000 -m mydlink%2B |
| 2.2.9 Delete a video clip | **Input**  no=11111111&clip-id=1378111223000  **Execute**  localrec -f 19 -n 11111111 -i 1378111223000 |
| 2.2.10 Rename a video clip | **Input**  no=11111111&clip-id=1378111223000&new-name=mydlink%2B  **Execute**  localrec -f 20 -n 11111111 -i 1378111223000 -e mydlink%2B |
| 2.2.11 Update read status of a video clip | **Input**  clipstatus?no=11111111&clip-id=1401000000&status=1  **Execute**  localrec -f 21 -n 11111111 -i 1401000000 -s 1 |
| 2.2.12 Query list of story boarding | **Input**  qsboarding?no=11111111&time-from=1401230000&time-to=1401240000&gap=6  **Execute**  localrec -f 22 -n 11111111 -r 1401230000 -t 1401240000 -g 6 |
| 2.2.13 Upload clip | **Input**  no=11111111&timestamp=1411110223&file-name=1411110223.ts  **Execute**  localrec -f 23 -n 11111111 -t 1411110223 -a 1411110223.ts -p *file-path*.  **Remark**  This CGI shall launch “localrec” with the parameter “-p” about full path of the uploaded file. |
| 2.2.14  Event notify | **Input**  eventnotify?no=11111111&event-type=512&timestamp=1401240000  **Execute**  localrec -f 24 -n 11111111 -e 512 -t 1401240000 |
| 2.2.15  Initialize mapping | **Input**  no=11111111&volume-path=%2Ftmp%2Fstorage%2FUFD\_Silicon\_02780&overwrite=0  **Execute**  localrec -f 25 -n 11111111 -v /tmp/storage/UFD\_Silicon\_02780 -o 0 |
| 2.2.16  Set threshold | **Input**  no=11111111&threshold=30000  **Execute**  localrec -f 26 -n 11111111 -h 30000 |
| 2.2.17  Query threshold | **Input**  no=11111111  **Execute**  localrec -f 27 -n 11111111 |
| 2.2.18  Download event clip | **Input**  no=11111111&timestamp=1412230000  **Execute**  localrec -f 28 -n 11111111 -t 1412230000 |
| 2.2.19  Unbind mapping | **Input**  no=11111111&volume-path=%2Ftmp%2Fstorage%2FUFD\_Silicon\_02780  **Execute**  localrec -f 29 -n 11111111 -v /tmp/storage/UFD\_Silicon\_02780 |
| 2.2.20  Get unbind mapping | **Input**  getunbindmapping  **Execute**  localrec -f 30 |
| 2.2.21  Query record range | **Input**  no=11111111  **Execute**  localrec -f 31 -n 11111111 |
| 3.2.1  Auto discover | **Input**  mode=1  **Execute**  /path\_of\_agent/dcp -a 1 |

# APPENDIX F HTTP MULTIPART POST

POST /camera\_upload.php HTTP/1.1

Host: 192.168.0.1

Content-Length: 25035

Authorization: Basic QWxhZGRpbjpvcGVuIHNlc2FtZQ==

**Content-Type: multipart/form-data; boundary=----WebKitFormBoundaryfYeskH534ISMqbtp**

------WebKitFormBoundaryfYeskH534ISMqbtp

Content-Disposition: form-data; name="no"

88888888

------WebKitFormBoundaryfYeskH534ISMqbtp

Content-Disposition: form-data; name="timestamp"

1413275553

------WebKitFormBoundaryfYeskH534ISMqbtp

Content-Disposition: form-data; name="file-name"; filename="0856.ts"

Content-Type: video/vnd.dlna.mpeg-tts

*<File content>*

------WebKitFormBoundaryfYeskH534ISMqbtp--

# APPENDIX G MDB COMMAND

mdb set lrmapping command format:

mydlink\_no:volume\_path&mydlink\_no:volume\_path&……..

All the value of each entry must be “URL encoded”

If there is no parameter for “mdb set lrmapping”, it means clean up the lrmapping space

.

For example:

1.

mdb set lrmapping 11111111%3A%2Ftmp%2Fstorage%2FUFD\_Silicon\_02780%2622222222%3A%2Ftmp%2Fstorage%2FUFD\_Silicon\_02781

2.

mdb get lrmapping

Response:

11111111%3A%2Ftmp%2Fstorage%2FUFD\_Silicon\_02780%2622222222%3A%2Ftmp%2Fstorage%2FUFD\_Silicon\_02781

3.

mdb set lrmapping

4.

mdb get lrmapping

Response:

# APPENDIX H MDB COMMAND

mdb command “ntpsetting” can set time zone and NTP related configure just like user set those configure in camera web service.

mdb set ntpsetting command format:

EN:TZ:SERVER:LK

- EN: Enable value, 0 or 1, 0 is disable and 1 is enable ntpetting. When enable ntpsetting, it means camera will enable automatically synchronizing NTP server like “EN” in Figure 1.

- TZ: Time zone offset such -8 or 12. Refer the “TZ” in Figure 1.

- SERVER: NTP server address such as “ntp.dlink.com.tw”. Refer the “SERVER” in Figure 1.

- LK: Lock value, 0 or 1, 0 is unlock and 1 is lock. When lock is 1, camera will gray out related setting in Figure 1.



**SERVER**

**EN**

**TZ**

**Figure 1**

For example:

1.

mdb set ntpsetting 1:8:ntp.dlink.com.tw:1

2.

mdb get ntpsetting

Response:

1:8:ntp.dlink.com.tw:1

# APPENDIX I MDB COMMAND

mdb set lrthreshold command format:

VALUE

- VALUE: threshold value in KB

For example:

1.

mdb set lrthreshold 512

2.

mdb get lrthreshold

Response:

512

# APPENDIX J ARP OUTPUT FORMAT

arp

? (192.168.100.228) at 90:c1:15:ba:47:55 [ether] on eth0

dlinkrouter (192.168.100.1) at 3c:1e:04:16:ef:38 [ether] on eth0

arp -a

? (192.168.100.228) at 90:c1:15:ba:47:55 [ether] on eth0

dlinkrouter (192.168.100.1) at 3c:1e:04:16:ef:38 [ether] on eth0

arp -n

? (192.168.100.228) at 90:c1:15:ba:47:55 [ether] on eth0

? (192.168.100.1) at 3c:1e:04:16:ef:38 [ether] on eth0

# APPENDIX K MDB COMMAND

mdb set lrunmapping command format:

mydlink\_no:volume\_path&mydlink\_no:volume\_path&……..

All the value of each entry must be “URL encoded”.

If there is no parameter for “mdb set lrunmapping”, it means clean up the lrunmapping space.

For example:

1.

mdb set lrunmapping 11111111%3A%2Ftmp%2Fstorage%2FUFD\_Silicon\_02780%2622222222%3A%2Ftmp%2Fstorage%2FUFD\_Silicon\_02781

2.

mdb get lrunmapping

Response:

11111111%3A%2Ftmp%2Fstorage%2FUFD\_Silicon\_02780%2622222222%3A%2Ftmp%2Fstorage%2FUFD\_Silicon\_02781

3.

mdb set lrunmapping

4.

mdb get lrunmapping

Response: