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Remote liveview and playback protocol for FUHO NVR

Revised list

v16, 2016-08-22

1. Add api to get record date string of all HDD
2. Add api to get channel record index of a day of all HDD

v15, 2016-01-02

1. Add `X-CamTime` flag for IPCam timestamp (microsecond).

v14, 2015-10-26

1. Add sub stream for liveview and playback.

v13, 2015-03-24

1. Adjust `vb.cgi` arrangement format with UI page.
2. Add camera setup page parameters:
 - GET: all type & IP & port parameters
 - SET: type & connect & IP & port & login & pass
3. Add camera stream page: main and sub resolution parameters.

v12, 2015-03-06

1. Adjust system information responses:
 - bootBank & uboot & kernel
2. Storage information:
 - model & sn & type & status & size
3. Record state parameters:
 - videoState & audioState
 - videoRec & audioRec & prevDur & postDur
 - sun & mon & tue & wed & thu & fri & sat
4. E-mail information:
 - server & port & from & login & pass & interval
5. Date information:
 - date & syncInterval
6. Network information:
 - Static & DHCP & PPPoE & DDNS & UPNP
7. Camera parameters:
 - add: connect & login & password
 - adjust: motion table

v11, 2014-11-25

1. Add `cameraNameAll` command to replace `cameraName` command.
2. add NVR resolution setting.

3. Channel color parameters: add sharpness.
4. Add NVR sync camera parameters & time settings.
5. NVR audio out parameter.

v10, 2014-09-17

1. Adjust `vg.cgi` description.
2. Add `channel.ci` and `model.cgi` response description.
3. PTZ: move & preset & speed.

v9, 2014-08-15

1. `model.cgi` .

v8, 2014-05-28

1. Audio parameters: `audioenable` & `audiosamplerate` & `audiooutvolume`.
2. system information.
3. `cameraName` .

v7, 2014-04-02

1. `mac.cgi` .
2. `channel.cgi` .
3. Get IPCam parameters.
4. Cloud and CMS parameters.

v6, 2014-02-27

1. NorthBound API:
 - o Values range
 - o IPCam lighting condition
 - o IPCam video stream
 - o IPCam motion parameters
 - o New DateTime

v5, 2013-09-11

1. Add remote liveview part.

v4, 2013-07-22

1. To avoid different timezone problem between NVR and CMS, replaced all `time_t` to `char[20]` (YYYY-MM-DD+hh:mm:ss).
2. `RECV_GET_RECORD_HOURS_T` **redefine as** `RECV_GET_RECORD_HOURS_T_REMOTE` .
3. `RECV_GET_CHANNEL_START_END_T` **redefine as** `RECV_GET_CHANNEL_START_END_T_REMOTE` .
4. `SEND_GET_MAIN_INDEX_BY_TIME_T` **redefine as** `SEND_GET_MAIN_INDEX_BY_TIME_T_REMOTE` .
5. GET `/playback.m4v?channel=ch&speed=s&time=d` , `d`: type `time_t` change to string.

v3, 2013-07-01

1. Add get stream

v2, 2013-06-04

1. SEND_GET_CHANNEL_SEGMENTS_T -> SEND_GET_CHANNEL_START_END_T .
2. RECV_GET_CHANNEL_SEGMENTS_T -> RECV_GET_CHANNEL_START_END_T .
3. Function added: Get RECORD HOUR.
4. Flow chart added.

v1, 2013-06-03

1. First version.

Playback

Define

Structures

Please refer to attached files (`query.h` and `storage.h`).

Resolution

Size	Value
QCIF (176 * 144)	1
CIF (352 * 288)	2
HalfD1 (720 * 288)	3
D1 (720 * 576)	4
720P (1280 * 720)	5
1080P (1920 * 1080)	6
704 * 480	7
176 * 120	8
QVGA (320 * 240)	32
VGA (640 * 480)	33
XGA (1024 * 768)	34
SXGA (1280 * 1024)	35
UXGA (1600 * 1200)	36

Get stream data (video/audio)

Protocol: HTTP (TCP)

- Port:
 - 80 for live stream
 - 80 for playback stream

Send

Liveview

- Main stream, `video[n].m4v` for channel $n + 1$

```
GET /video[0].m4v
```

- Sub stream, `videocif[n].m4v` for channel $n + 1$

```
GET /videocif[0].m4v
```

Example:

```
http://192.168.1.200/video0.m4v
http://192.168.1.200/videocif9.m4v
```

Playback

```
GET /playback.m4v?channel=[ch]&speed=[s]&stime=[d]&ismain=[1]
```

Attributes	Type	Description
channel	integer	0 ~ n-1
speed	integer	-32 ... -4, -2, 1, 2, 4 ... 32
stime	string	YYYY-MM-DD+hh:mm:ss
ismain	integer	main: 1, sub: 0

Example:

```
http://192.168.1.200/playback.m4v?channel=9&speed=1&stime=2012-12-31+23:59:59&ismain=0
```

Recv

Header

```
HTTP/1.1 200 OK
Server: 00:16:55:05:36:76
Connection: Close
Pragma: no-cache
Cache-Control: no-store
Content-Type: multipart/x-mixed-replace;boundary=boundarymediastream
```

Boundary

- video

```
boundarymediastream
Content-Type: image/mpeg4
Content-Length: 102411
X-Status: 0
X-Tag: 1
X-Flags: 0
X-Alarm: 0
X-Framerate: 30
X-Resolution: 1280*1024
X-Audio: 1
X-Time: 1353894284
X-PTS: 487541
X-CamTime: 12764517699904602112
```

- audio

```
Content-Type: audio/x-wav
Content-Length: 320
X-Codec: U-LAW
X-Bitrate: 8000
X-Time: 1353894284
X-PTS: 287154
X-Tag: 1
```

- data

```
00 00 00 01 67 42 | e0 20 da 01 40 08 11 00 .....gB ....@...
00 00 01 68 ce 30 a4 80 | 00 00 00 01 65 b8 00 00 ...h.0.. ....e...
b4 f6 09 14 2b 87 c2 1f | 85 a2 40 00 40 23 fd 78
```

Northbound API

Audio

- [Get audio parameters](#)
- [Set audio parameters](#)

Get audio parameters

```
GET /vb.cgi?audioOutEnable&audioOutVolume&audioOutDevice
```

Example response:

```
OK audioOutEnable=1 OK audioOutVolume=0 OK audioOutDevice=1
```

Set audio parameters

```
GET /vb.cgi
```

Attributes	Type	Description
audioOutEnable	integer	enable: 1, disable: 0
audioOutVolume	integer	HISL: -81 ~ 6, TI: 0 ~ 10
audioOutDevice	integer	AIC: 0, HDMI: 1

Example:

```
http://192.168.1.200/vb.cgi?audioOutEnable=1&audioOutVolume=1&audioOutDevice=1
```

response:

```
OK audioOutEnable OK audioOutVolume OK audioOutDevice
```

Camera

- [Get all camera names](#)
- [Get all camera type](#)
- [Get all camera model](#)
- [Get all camera connection settings](#)
- [Get all camera connection state](#)
- [Get all camera IP](#)
- [Get all camera port](#)
- [Get all camera login names](#)
- [Get all camera password](#)
- [Set camera connection parameters](#)
- [Get all main stream resolution](#)
- [Get all sub stream resolution](#)
- [Set channel resolution](#)
- [Get channel main stream parameters](#)
- [Get channel sub stream parameters](#)
- [Set channel main stream parameters](#)
- [Set channel sub stream parameters](#)
- [Get channel color](#)
- [Set channel color](#)
- [Get channel audio](#)
- [Set channel audio](#)
- [Set channel PTZ](#)

Get all camera names

```
GET /vb.cgi?cameraNameAll
```

Example response:

```
IPNC1,IPNC2,IPNC3,IPNC4,IPNC5,IPNC6,IPNC7,IPNC8
```

Get all camera type

```
GET /vb.cgi?cameraTypeAll
```

Example response:

```
3,4,0,0,1,1,8,0,6,8,6,2,8,1,0,0
```

Type	Value
TI	0
HISI	1
GM	2
AXIS video server	3
HISI video server	4
ONVIF	6
XM	8

Get all camera model

```
GET /model.cgi
```

Example response:

[channel]=[value]

```
0=1 1=1 2=1 3=1 4=1 5=1 6=1 7=1 8=1 9=1 10=1 11=1 12=0 13=0 14=2 15=1
```

Type	Value
No use	0
IPCAM	1
Speed dome	2

Get all camera connection settings

```
GET /vb.cgi?cameraConnectAll
```

Example response:

```
1,1,1,1,1,1,0,0,0,0,0,0,1,1,1,0,0
```

Type	Value
Connection enable	1
Connection disable	0

Get all camera connection state

```
GET /channel.cgi
```

Example response:

[channel]=[value]

```
0=-1 1=-1 2=1 3=1 4=1 5=0 6=0 7=0 8=0 9=0 10=0 11=0 12=0 13=0 14=0 15=0
```

Type	Value
Video loss	-1
No use	0
Connect	1

Get all camera IP

```
GET /vb.cgi?cameraIpAll
```

Example response:

```
192.168.22.152,192.168.22.139,192.168.22.152,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0,0.0.0.0
```

Get all camera port

```
GET /vb.cgi?cameraPortAll
```

Example response:

```
554,5566,80,80,80,80,34567,80,80,34567,80,80,34567,80,80,80
```

Get all camera login names

```
GET /vb.cgi?cameraLoginAll
```

Example response:

```
root,admin,user1,admin,admin,admin,admin,admin
```

Get all camera password

```
GET /vb.cgi?cameraPassAll
```

Example response:

```
root,admin,12345,admin,admin,admin,admin,admin
```

Set camera connection parameters

```
GET /vb.cgi?setCamera=ippport&ch=[n]
```

Attributes	Type	Description
ch	integer	0 ~ n-1
type	integer	camera type
connect	integer	enable: 1, disable: 0
ip	string	IP address
port	integer	1 to 65535
login	string	login name
pass	string	login password

Example:

```
http://192.168.1.200/vb.cgi?setCamera=ipport&ch=0&type=0&connect=1
http://192.168.1.200/vb.cgi?setCamera=ipport&ch=0&ip=192.168.22.77&port=80
http://192.168.1.200/vb.cgi?setCamera=ipport&ch=0&login=admin&pass=admin
```

response:

```
done
```

Get all main stream resolution

```
GET /vb.cgi?cameraMainResolutionAll
```

Example response:

```
D1,D1,1080P,1080P,SXGA,720P,720P,1080P,1080P,720P,1080P,1080P,720P,720P,1080P,1080P
```

Get all sub stream resolution

```
GET /vb.cgi?cameraSubResolutionAll
```

Example response:

```
D1,CIF,VGA,VGA,VGA,VGA,VGA,VGA,VGA,VGA,VGA,VGA,VGA,VGA,VGA,VGA
```

Set channel resolution

VIT IPCam

```
GET /vb.cgi?channel=[n]&videocodecres=[n]
```

Attributes	Type	Description
channel	integer	0 ~ n-1
videocodecres	integer	0, 1, 2, 3, 4, 5

- videocodecres value:
 - 720P + VGA: 0

- o 720P + CIF: 1
- o 1080P + QVGA: 2
- o 1080P + CIF: 3
- o 1080P + VGA: 4
- o 720P + VGA: 5

Example:

```
http://192.168.1.200/vb.cgi?channel=0&videocodecres=5
```

VIH and VIG IPCam

```
GET /vb.cgi?channel=[n]&VideoResolution1=[s]&VideoResolution2=[s]
```

Attributes	Type	Description
channel	integer	0 ~ n-1
VideoResolution1	String	5MP, 3MP, 1080P, SXGA, 720P, VGA, HDV, SXVGA
VideoResolution2	String	VGA, 270P, SIF, CIF

Example:

```
http://192.168.1.200/vb.cgi?channel=0&VideoResolution1=1080P&VideoResolution2=VGA
```

Get channel main stream parameters

```
GET /vb.cgi?channel=[n]&ratecontrol1&bitrate1&framerate1
```

Attributes	Type	Description
channel	integer	0 ~ n-1

Example response:

```
OK ratecontrol1=2 OK bitrate1=2048 OK framerate1=15
```

Get channel sub stream parameters

```
GET /vb.cgi?channel=[n]&ratecontrol2&bitrate2&framerate2
```

Example response:

```
OK ratecontrol2=2 OK bitrate2=512 OK framerate2=15
```

Set channel main stream parameters

```
GET /vb.cgi?channel=[n]&ratecontrol1=[n]&bitrate1=[n]&framerate1=[n]
```

Attributes	Type	Description
channel	integer	0 ~ n-1
ratecontrol1	integer	VBR: 1, CBR: 2
bitrate1	integer	0 ~ 8192 (Kbps)
framerate1	integer	5 ~ 30

Example:

```
http://192.168.1.200/vb.cgi?channel=2&ratecontrol1=2&bitrate1=4096&framerate1=23
```

response:

```
OK ratecontrol1 OK bitrate1 OK framerate1
```

Set channel sub stream parameters

```
GET /vb.cgi?channel=[n]&ratecontrol2=[n]&bitrate2=[n]&framerate2=[n]
```

Example:

```
http://192.168.1.200/vb.cgi?channel=2&ratecontrol2=2&bitrate2=4096&framerate2=23
```

response:

```
OK ratecontrol2 OK bitrate2 OK framerate2
```

Get channel color

```
GET /vb.cgi?channel=[n]&brightness&contrast&saturation
```

Attributes	Type	Description
channel	integer	0 ~ n-1

Example response:

```
OK brightness=128 OK contrast=128 OK saturation=128
```

Set channel color

```
GET /vb.cgi?channel=[n]&brightness=[n]&contrast=[n]&saturation=[n]
```



```
http://host/vb.cgi?setCamera=motion&ch=2&motionOn=1&sensitivity=0
http://host/vb.cgi?setCamera=motion&ch=2&alarmInput=1&alarmOutput=1
http://host/vb.cgi?setCamera=motion&ch=2
&largeTable=ffff,ffff,ffff,ffff,ffff,ffff,ffff,ffff,ffff,ffff,ffff
```

Get channel audio

```
GET /vb.cgi?channel=[n]&audioenable&audiosamplerate&audiooutvolume
```

Attributes	Type	Description
channel	integer	0 ~ n-1

response:

```
OK audioenable=0 OK audiosamplerate=8000 OK audiooutvolume=50
```

Set channel audio

```
GET /vb.cgi?channel=[n]&audioenable=[n]&audiosamplerate=[n]&audiooutvolume=[n]
```

Attributes	Type	Description
channel	integer	0 ~ n-1
audioenable	integer	enable: 1, disable: 0
audiosamplerate	integer	8 KHz: 0, 16 KHz: 1
audiooutvolume	integer	0 ~ 100

Example:

```
http://192.168.1.200/vb.cgi?channel=0&audioenable=1&audiosamplerate=0&audiooutvolume=50
```

response:

```
OK audioenable OK audiosamplerate OK audiooutvolume
```

Set channel PTZ (TI chip)

Set PTZ move

```
GET /vb.cgi?channel=[n]&ipncptz=[n]
```

Attributes	Type	Description
channel	integer	0 ~ n-1
ipncptz	integer	ipncptz's value

- ipncptz value
 - STOP: 0
 - LEFT: 1
 - RIGHT: 2

- UP: 3
- DOWN: 4
- IRISDEG: 5
- IRISINC: 6
- ZOOMDEG: 7
- ZOOMING: 8
- FOCUSDEC: 9
- FOCUSING: 10
- LEFT UP: 21
- LEFT DOWN: 22
- RIGHT UP: 23
- RIGHT DOWN: 24
- OSD menu show/hidden: 41
- OSD menu left: 42
- OSD menu right: 43
- OSD menu up: 44
- OSD menu down: 45
- Auto Focus: 46
- Focus plus: 47
- Focus minus: 48
- Focus stop: 49

Example:

```
http://192.168.1.200/vb.cgi?channel=2&ipncptz=3
```

response:

```
OK ipncptz
```

Set PTZ preset location

```
GET /vb.cgi?channel=[n]&ptzpreset=[n]&ipncptz=[n]
```

Attributes	Type	Description
channel	integer	0 ~ n-1
ptzpreset	integer	location: 1 ~ 10
ipncptz	integer	SET: 14, CLEAR: 15, GOTO: 17

Example:

```
http://192.168.1.200/vb.cgi?channel=2&ptzpreset=1&ipncptz=17
```

response:

```
OK ptzpreset OK ipncptz
```

Set PTZ speed

```
GET /vb.cgi?channel=[n]&ptzspeed=[n]
```

Attributes	Type	Description
channel	integer	0 ~ n-1
ptzspeed	integer	0 ~ 23

Example:

```
http://192.168.22.81/vb.cgi?channel=2&ptzspeed=16
```

response:

```
OK ptzspeed
```

Display

- [Get resolution](#)
- [Set resolution](#)

Get resolution

```
GET /vb.cgi?resolution
```

Example response:

```
7
```

Resolution	Value
1080P	4
SXGA	5
1440*900	6
720P	7
XGA	8

Set resolution

```
GET /vb.cgi?resolution=[n]
```

Attributes	Type	Description
resolution	integer	resolution value: 4, 5, 6, 7, 8

No response. The system will automatically reboot after changing the resolution.

Events

- [Get email parameters](#)
- [Set email parameters](#)

Get email parameters

```
GET /vb.cgi?emailInfo
```

Example response:

```
{
  "enable": "0",
  "server": "smtp.gmail.com",
  "port": "465",
  "from": "",
  "login": "",
  "pass": "",
  "to": "",
  "interval": "60"
}
```

Set email parameters

```
GET /vb.cgi?setGlobal=email
```

Attributes	Type	Description
enable	integer	enable: 1, disable: 0
server from	string	length limit: 50
to	string	length limit: 50
login	string	length limit: 64
pass	string	length limit: 64
port	integer	1 ~ 65535
interval	integer	10 ~ 60 (second)

Example:

```
http://192.168.1.200/vb.cgi?setGlobal=email&enable=1&server=smtp.google.com&port=456
http://192.168.1.200/vb.cgi?setGlobal=email&from=x&login=x&pass=x&to=x&interval=60
```

response:

```
done
```

Record

- [Get video record state](#)
- [Get audio record state](#)
- [Get record parameters](#)
- [Set record parameters](#)
- [Get record schedule](#)
- [Set record schedule](#)
- [Get record date string of all HDD](#)
- [Get channel record index of a day of all HDD](#)

Get video record state

```
GET /vb.cgi?recVideoAll
```

Example response:

```
0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
```

Get Audio record state

```
GET /vb.cgi?recAudioAll
```

Example response:

```
1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0
```

Get record parameters

```
GET /vb.cgi?getRecord=state&ch=[n]
```

Attributes	Type	Description
ch	integer	0 ~ n-1

Example response:

```
{
  "videoRec":1,
  "audioRec":0,
  "prevDur":0,
  "postDur":3
}
```

Set record parameters

```
GET /vb.cgi?setRecord=state&ch=[n]
```

Attributes	Type	Description
ch	integer	0 ~ n-1
videoRec	integer	enable: 1, disable: 0
audioRec	integer	enable: 1, disable: 0
prevDur	integer	0 ~ 3 (second)
postDur	integer	1 ~ 60 (minute)

Example:

```
http://192.168.1.200/vb.cgi?setRecord=state&ch=0&videoRec=1&audioRec=1
http://192.168.1.200/vb.cgi?setRecord=state&ch=0&prevDur=2&postDur=3
```

response:

```
done
```

Get record schedule

```
GET /vb.cgi?getRecord=schedule&ch=[n]
```

Attributes	Type	Description
ch	integer	0 ~ n-1

Example response:

```
0000000...
```

Type	Value
continous record	0
record by motion	1
record by sensor	2
record by video loss	3
no record	4

Set record schedule

```
GET /vb.cgi?setRecord=schedule&ch=[n]&[days of the week]=[s]
```

Attributes	Type	Description
days of the week	string	length is 24

Example:

```

http://192.168.1.200/vb.cgi?setRecord=schedule&ch=0&sun=0000000000000000000000
http://192.168.1.200/vb.cgi?setRecord=schedule&ch=0&mon=111111111111111111111111111111111111
http://192.168.1.200/vb.cgi?setRecord=schedule&ch=0&tue=222222222222222222222222222222222222
http://192.168.1.200/vb.cgi?setRecord=schedule&ch=0&wed=333333333333333333333333333333333333
http://192.168.1.200/vb.cgi?setRecord=schedule&ch=0&thu=444444444444444444444444444444444444
http://192.168.1.200/vb.cgi?setRecord=schedule&ch=0&fri=000000000000000000000000000000000000
http://192.168.1.200/vb.cgi?setRecord=schedule&ch=0&sat=111111111111111111111111111111111111
    
```

response:

```
done
```

Get record date string of all HDD

```
GET /vb.cgi?recDate
```

Example response:

```
{
  "date": [
    20160813,
    20160814,
    20160815,
    20160817,
    20160818
  ]
}
```

Get channel record index of a day of all HDD

```
GET /vb.cgi?getRecord=index&ch=[n]&date=[s]
```

Attributes	Type	Description
ch	integer	0 ~ n-1
date	string	YYYYMMDD

Example:

```
http://192.168.1.200/vb.cgi?getRecord=index&ch=0&date=20160815
```

response:

1440 (60*24) minutes in a day.

```
{"data": "111111111111..."} 
```

Storage

- [Get storage information](#)

Get storage information

```
GET /vb.cgi?storageInfo
```

Example response:

```
[
  {
    "model": "WDCWD20EURX-63T0FY0",
    "sn": "WD-WMC4M1144436",
    "type": "ext4",
    "status": "GOOD",
    "size": "1906.64"
  }
]
```

System

- [Get system infomation](#)
- [Get date and time](#)
- [Set date and time](#)
- [Set sync camera time interval](#)
- [Get sync camera parameters interval](#)
- [Set sync camera parameters interval](#)
- [Get network parameters](#)
- [Set network parameters](#)
- [Get cloud parameters](#)
- [Set cloud parameters](#)
- [Get CMS parameters](#)
- [Set CMS parameters](#)

Get system infomation

```
GET /vb.cgi?systemInfo
```

Example response:

```
{
  "hostname_1": "NK-380",
  "firmwareVersion": "3.2000.5",
  "buildDateTime": "Aug 17 2016, 17:00:07",
  "bootBank": "0",
  "uboot": "ver=U-Boot 2010.06-00005-gf370f4c (Nov 13 2015 - 09:25:09)",
  "kernel": "3 SMP Wed Sep 3 14:35:02 CST 2014 armv7l"
}
```

Get date and time

```
GET /vb.cgi?dateInfo
```

Example response:

```
{
  "date": "2015/03/06 13:12:33",
  "syncInterval": "1440"
}
```

Set date and time

```
GET /vb.cgi?newdate=[s]&newtime=[s]
```

Attributes	Type	Description
newdate	string	YYYY/MM/DD
newtime	string	hh:mm:ss

Example:

```
http://192.168.1.200/vb.cgi?newdate=2014/02/27&newtime=17:25:30
```

response:

```
OK, Reset Nvr Time
```

Set sync camera time interval

```
GET /vb.cgi?syncCameraTime=[n]
```

Attributes	Type	Description
syncCameraTime	integer	5, 10, 30, 60, 120, 240, 480, 720, 1440 (minute)

Example:

```
http://192.168.1.200/vb.cgi?syncCameraTime=720
```

response:

```
OK syncCameraTime
```

Get sync camera parameters interval

```
GET /vb.cgi
```

Example response:

```
OK syncCameraPara=0
```

Set sync camera parameters interval

```
GET /vb.cgi?syncCameraPara=[n]
```

Attributes	Type	Description
syncCameraPara	integer	5, 10, 15, 20, 30 (minute)

Example:

```
http://192.168.1.200/vb.cgi?syncCameraPara=720
```

response:

```
OK syncCameraPara
```

Get network parameters

```
GET /vb.cgi?networkInfo
```

Example response:

```
{
  "netType":0,
  "ip":"192.168.22.80",
  "netmask":"255.255.255.0",
  "gateway":"192.168.22.1",
  "dns0":"8.8.8.8",
  "dns1":"168.95.1.1",
  "pppoeAccount":"","",
  "pppoePwd":"","",
  "pppoeWanIp":"","",
  "ddnsEnable":0,
  "ddnsType":114,
  "ddnsServer":"onddns",
  "ddnsLogin":"","",
  "ddnsPwd":"","",
  "upnpEnable":0,
  "upnpIntIp":"192.168.22.80",
  "upnpIntPort":80,
  "upnpExtIp":"0.0.0.0",
  "upnpExtPort":0
}
```

Set network parameters

```
GET /vb.cgi?setSystem=network
```

Attributes	Type	Description
netType	integer	STATIC: 0, DHCP: 1, PPPoE: 2
ip	string	length limit: 16
netmask	string	length limit: 16
gateway	string	length limit: 16
dns0	string	length limit: 16
dns1	string	length limit: 16
pppoeAccount	string	length limit: 128
pppoePwd	string	length limit: 32
ddnsEnable	integer	enable: 1, disable: 0
ddnsType	integer	CCTVDVR: 0, No-IP: 1, Myonlineportal: 2
ddnslogin	string	length limit: 32
ddnspass	string	length limit: 32
ddnsServer	string	length limit: 48
upnpEnable	integer	enable: 1, disable: 0
intPort	integer	1 ~ 65535
intIp	string	length limit: 16

Example:

```
http://192.168.1.200/vb.cgi?setSystem=network&nettype=0&ip=192.168.1.99
http://192.168.1.200/vb.cgi?setSystem=network&nettype=1
http://192.168.1.200/vb.cgi?setSystem=network&nettype=2&pppoeAccount=admin@hinet.net&pppoePwd=admin
http://192.168.1.200/vb.cgi?setSystem=network&ddnsEnable=1&ddnslogin=fuho&ddnspass=fuho
http://192.168.1.200/vb.cgi?setSystem=network&upnpEnable=1
```

response:

```
done
```

Get cloud parameters

```
GET /vb.cgi?cloudConnect&cloudIp&cloudPort
```

Example response:

```
OK cloudConnect=0 OK cloudIp=54.250.189.127 OK cloudPort=80
```

Set cloud parameters

```
GET /vb.cgi?cloudConnect=[n]&cloudIp=[s]&cloudPort=[n]
```

Attributes	Type	Description
cloudConnect	integer	enable: 1, disable: 0
cloudIp	string	length limit: 16
cloudPort	integer	1 ~ 65535

Example:

```
http://192.168.1.200/vb.cgi?cloudConnect=1&cloudIp=192.168.1.100&cloudPort=8080
```

response:

```
OK cloudConnect OK cloudIp OK cloudPort
```

Get CMS parameters

```
GET /vb.cgi?cmsConnect&cmsIp&cmsPort
```

Example response:

```
OK cmsConnect=0 OK cmsIp=0.0.0.0 OK cmsPort=8080
```

Set CMS parameters

```
GET /vb.cgi?cmsConnect=[n]&cmsIp=[s]&cmsPort=[n]
```

Attributes	Type	Description
cmsConnect	integer	enable: 1, disable: 0
cmsIp	string	length limit: 16
cmsPort	integer	1 ~ 65535

Example:

```
http://192.168.1.200/vb.cgi?cloudConnect=1&cloudIp=192.168.1.100&cloudPort=8080
```

response:

```
OK cmsConnect OK cmsIp OK cmsPort
```

Get MAC address

```
GET /mac.cgi
```

Example response:

```
[
  {
    "address": "00:11:22:33:44:55"
  },
  {
    "address": "00:00:00:00:00:00"
  }
]
```