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Protocol Reference

(internal use Only)

Streamax Technology Co.,Ltd.

Streamax-N9M Network communication protocol

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CONTENT

1 Device type description

1.1 Device type

The Devices can be classified into DVR,IPC, NVR and CLIENT by the services the device served. The following is to abstract the service that device hosted.

The description for the device capability set will abstract out after the classy of the device. The capability set is described by the device that provide services in the device authentification and description step of the communication. The device that request the service will access the device by capability set.

Device type list

0: PC (PC software or mobile App)

1: DVR

2: IPC

3: NVR

4: MDVR

1.2 Object description language definition:

Device description language is in XML format.

Object element definition

NODE	SUBNODE	ATTRIBUTE	ATTRIBUTE
RMDDL(top-level node)	**DEVICE**	**VERSION**	**Protocol version number**
	SERVICE		

NODE	SUBNODE	ATTRIBUTE	ATTRIBUTE
DEVICE(device node)	**EXTENSION**	**NAME**	**Device type**
		VERSION	**Device version number**

NODE	SUBNODE	ATTRIBUTE	ATTRIBUTE
EXTENSION(device extension node)		**NAME**	**Extension name**

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		VALUE	Extended Attribute

NODE	SUBNODE	ATTRIBUTE	ATTRIBUTE
SERVICE(device service node)	MODULE		

NODE	SUBNODE	ATTRIBUTE	ATTRIBUTE
MODULE(service module node)	OPERATION	NAME	Module name
		VERSION	Module version number

NODE	SUBNODE	ATTRIBUTE	ATTRIBUTE
OPERATION(Operation node)	PARAMETER	NAME	Operation name
	RESPONSE	TYPE	Operation type (4 types)
			REQUEST
			REQUEST-RESPONSE
			NOTIFICATION
			SOLICIT-RESPONSE

NODE	SUBNODE	ATTRIBUTE	ATTRIBUTE
PARAMETER(Parameter node)		NAME	Parameter name
		TYPE	Parameter type
			BITS
			BOOLEAN
			ENUM
			INTEGER
			INTEGER64
			DOUBLE
			STRING
		RANGE	Parameter range
			Numerical range limit
			String length

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			limitation

NODE	SUBNODE	ATTRIBUTE	ATTRIBUTE
RESPONSE(response node)		**NAME**	**Returned value name**
		TYPE	**Returned value type**
			BITS
			BOOLEAN
			ENUM
			INTEGER
			INTEGER64
			DOUBLE
			STRING
			ARRAY
		RANGE	**Returned value range**
			Numerical range limit
			String length limitation

```
<rmddl version="0.1">
    <device name="DVR" version value="RM1.0">
        <extension name="video_channel" value="16"/>
        <extension name="alarm_in_channel" value="4"/>
    </device>
    <service>
        <module name="avStream">
            <operation name="Reboot" type="Request">
                <parameter name="delay" type="int"/>
            </operation>
            <operation name="GetSaturation" type="Request-response">
                <parameter name="channel" type="bits"/>
                <response name="saturation" type="integer" range="1-
100"/>
            </operation>
            <operation name="MotionAlarm" type="Notification">
                <parameter name="channel" type="bits"/>
                <parameter name="time" type="integer"/>
            </operation>
            <operation name="get" type="Solicit-response">
                <parameter name="z" type="double"/>
                <response name="c" type="enum" range="1:2:3:4:5:6"/>
            </operation>
        </module>
    </service>
</rmddl>
```

Device service description (need update)

2 protocol carrier

2.1 message，media control link

2.1.1 packet header

All messages and media data adopt an unified packet header.

1-2bit	3bit	4bit	5-8bit	9-16bit	17-32bit
V	P	M	CSRC COUNT	PAYLOAD TYPE	SSRC
PAYLOAD LEN					
RESERVE					
CSRC(VARIABLE 0-16 ITEMS 32BITS EACH)					
PLAYLOAD					

V: version number;

P: The mark of padding field is 0.

M: Mark some important events;

CSRC COUNT(CC): Number of contributors，which is concerned with “CSRC”, used to distinguish different source;

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PAYLOAD TYPE: Payload data type;
SSRC: Synchronization Source Identifier。
PAYLOAD LEN: (TCP)payload data length. (UDP)sequence number.
RESERVE: Reserved bit。
CSRC: Contributing source, used to distinguish different souce.
PLAYLOAD: The payload data, not include the extend part.

PAYLOAD TYPE	Description	format
0	SIGNAL(message)	JSON string
1	METADATA (media description and extended metadata)	JSON string
2	H264(video stream)	
3	Video file	
4	Remotely playback (synchronously)	
5	Intercom	
6	JPEG(snapshot)	
7	RAW FILE(download video file)	
8	upgrade	
9	LOG	
10	Import parameters	
11	Export parameters	
12	AUDIO	
13	transmission data	
14	Data decoded by hardware for video wall.	
15	Separately apply for sub-stream (sub-stream 1) suitable for network transmission	
16	Separately apply for auxiliary sub-stream (one of sub-stream, sub-stream 2), also suitable for recording	
17	Blackbox data	
……		

2.1.2 Message format and definition

The message is packed in JSON format. There is mapped one-to-one between message packing and device description file, each message is represented by

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character stings in big endian.

example：

MODULE	AVSTREAM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SETVIDEOIMAGE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CHANNEL	INTEGER	1-32
	BRIGHTNESS	INTEGER	1-100
	CONTRAST	INTEGER	1-100
	SATURATION	INTEGER	1-100
	HUE	INTEGER	1-100
RESPONSE	NAME	TYPE	RANGE
	RETURN	BOOLEAN	

Request device format：

{"module":"avStream","operation":{"Type":"Request-response","name":"SetVideoImage"},"parameter":{"brightness":{"range":"1-100","type":"integer","value":50},"channel":{"range":"1-32","type":"integer","value":8},"contrast":{"range":"1-100","type":"integer","value":50},"hue":{"range":"1-100","type":"integer","value":50},"saturation":{"range":"1-100","type":"integer","value":50}},"session":"98190dc2-0890-4ef8-ac9a-5940995e6119"}

Device return format:

{"module":"avStream","operation":{"Type":"Request-response","name":"SetVideoImage"},"response":{"return":{"type":"boolean","value":true}},"session":"98190dc2-0890-4ef8-ac9a-5940995e6119"}

2.1.3 Module name definition:

Module name	name	Function	Description
Discover device	DISCOVERY		
Certify	CERTIFICATE		User login
Alarm module	EVENTMODEL	1、get various alarms	

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		switch control status information 2、configure various alarms switch control status information 3 query alarm status 4、Report alarm 5、Report alarm state actively 6、Motion detecting area 7、Configure motion detecting area 8、Get the alarm information which need to send emails 9、Configure the alarms which send emails	
Storage module	STORAGEMODEL	1、Get information of storage 2、Manage storage(format,readable,read-write,redundancy) 3、Search video,log,picture,card recorder,calendar query 4、lock,unlock	
Recording module	AVSTREAMMODEL	1、Get chroma, brightness, contrast, saturation 2、Setup chroma, brightness, contrast and saturation 3、Get video stream format, channel number, audio parameter 4、Setup video stream format, channel number, audio parameter 5、Get recording mode parameter (Auto,	

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		Manual, pre-recording, timer) 6、 Setup recording parameters 7、 Get I Frame	
Network service configuration	NETWORKSERVICE MODEL	1、 Get parameter(DDNS、UPNP、EMAIL、3G、WIFI) 2、 Configure parameter 3、 Test if DDNS、EMAIL is valid 4、 Get status	
Device management	DEVICEMANAGEMO DEL	1、 Get PTZ parameters 2、 PTZ parameter configuration 3、 Get parameter of IO 4、 IO parameter configuration 5、 Control device(shutdown,standby,restart,device control plan) 6、 Get parameter of Time 7、 Configure parameter of Time 8、 Serial port control 9、 User manage 10、 online user information 11、 device information (software version number.etc)	
Network communication configuration	NETWORKPROTOC OLMODEL	Configure port and server address	
Streaming media transmission	MEDIASTREAMMOD EL	1、 Preview video 2、 Playback,download	

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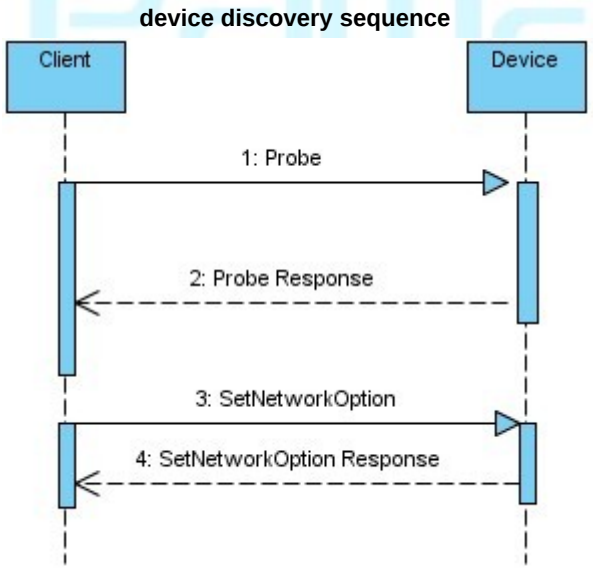
		video 3、 Download file(logs.etc) 4、 Upload files(upgrading file) 5、 Intercom audio 6、 snapshot	
Parameter module	CONFIGMODEL	There are many parameters in every module, so we use parameter module to get and setup parameters of all modules. To distinguish every module from the other modules, applying a second-level division,this facilitates devices to parse ,device network layer and the PC network SDK only provides a transparent transmission passage, the specific data communication is packed and parsed by PC application and device based on protocol.	

3 Protocol classification and description

3.1 Device discovery and IP configuration protocol

3.1.1 LAN Device

Using raw socket for listening at device side, send broadcast on the LAN on Client side, to find device and reconfigure network of device.



Client send PROBE package to Device first, to avoid the failure of device discovery due to lost package, Client can send PROBE package repeatedly during device discovery. After device received the PROBE package, it returns back the information to Client, which including the recognizable information of device,it's composed of UNID SN MAC.the Client can configure device after received the recognizable information of device, like setup and restart, the device will get the device ID from the command and check it with own ID, if different discarded directly, if the same is returned to the corresponding information.

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Device discovery

Device configuration

MODULE	DISCOVERY		
MAGIC	STRING(RM_475A4AA5)		
SUUID	STRING(UUID)		
DUUID	STRING(UUID)		
DEVICETYPE	ENUM	1.1	
OPERATION	NAME		TYPE
	SETNETWORKOPTION		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VERSION	STRING	
	WEBPORT	INTEGER	
	MEDIAPORT	INTEGER	
	MOBILEPORT	INTEGER	
	ETHERNET		
	IPMODE	ENUM	0:static,1:DHCP
	ADDRESS	STRING	
	NETMASK	STRING	
	GATEWAY	STRING	
	PRIMARYDNS	STRING	
	ALTERNATDNS	STRING	
	WIFI		
	IPMODE	ENUM	0:static,1:DHCP
	ADDRESS	STRING	
	NETMASK	STRING	
	GATEWAY	STRING	
	ALTERNATDNS	STRING	
	PRIMARYDNS	STRING	
RESPONSE	NAME	TYPE	RANGE
	RETURN	ENUM	Error code

Device restart

MODULE	DISCOVERY	
MAGIC	STRING(RM_475A4AA5)	
SUUID	STRING(UUID)	
DUUID	STRING(UUID)	

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DEVICETYPE	ENUM	1.1	
OPERATION	NAME		TYPE
	REBOOT		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE

Default device settings

MODULE	DISCOVERY		
MAGIC	STRING(RM_475A4AA5)		
SUUID	STRING(UUID)		
DUUID	STRING(UUID)		
DEVICETYPE	ENUM	1.1	
OPERATION	NAME		TYPE
	DEFAULTPARAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE

3.1.2 Discover NAT device

Client connect with device discovery server, send LISTDEVICE command, server returns device list.

MODULE	DISCOVERY		
OPERATION	NAME		TYPE
	LISTDEVICE		REQUEST-RESPONSE
PARAMET	NAME	TYPE	RANGE

ER	USER	STRING	
	PASSWORD	STRING	
RESPONSE	NAME	TYPE	RANGE
	RETURN	ENUM	Error code
	DEVICE ARRAY		
	DEVICE	STRING	
	ONLINE	BOOLEAN	

3.1.3 server load balance discovery

Connecting with balance server, there can be more than one balance server, send end LISTDEVICE command, server returns list

MODULE	DISCOVERY		
OPERATION	NAME		TYPE
	LISTSERVER		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	SIGNALSERVER	STRING	
	STREAMSERVER	STRING	
	EVENTSERVER	STRING	

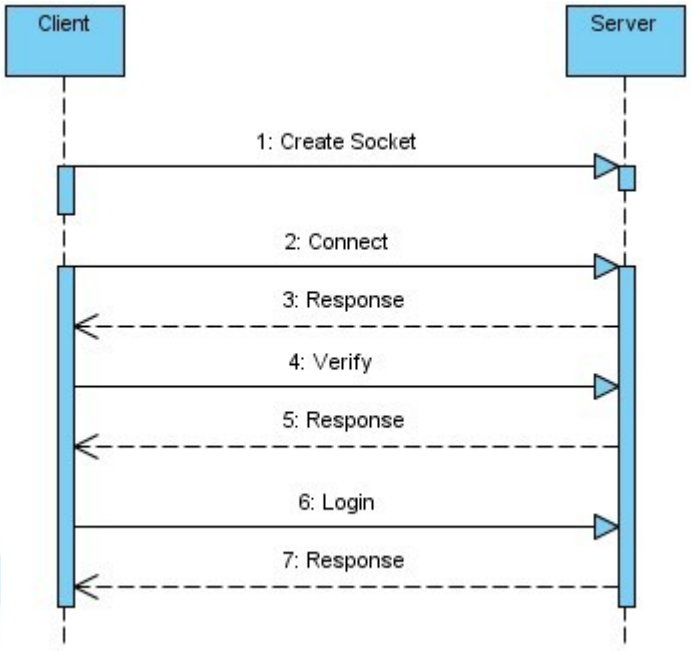
3.2 Device connection authentication and protocol description

3.2.1 Device authentication process

Device authentication means the process of communication between Client

and Device, including that Client connect to device, pass authentication, description, This process duration is limited to 15 seconds,it will be considered as illegal connections,the server can automatically reject the connection, and disconnect the link. Authentication process generates globally unique communication description . Subsequent communication is required by this descriptor marked.

Device authentication process sequence diagram



In Direct mode(passive mode),Client connects to the server entering into TCP,after the connection is established,it sends CONNECT packet data, the server directly return back SO and global descriptor SESSIONID data for subsequent connection when server receive CONNECT data. Client received the SO data and encrypt it ,the key is SESSIONID, and the encrypted SO packet is returned to the server, server will verify encrypted data, disconnect if it is incorrect ,return verification if it success. Client send user name and password to server, server will verify user name and password and return verification result.

In transmit mode (active mode), device as client, device connect to server actively, then only need to connect server, omit authentication and login services. Put the device to the server to establish a TCP connection, after connected, send CONNECT packet (including device ID and client type), server received the CONNECT data and back error code, if the device exists in the server then return success, and SO and global description SESSIONID data can be used in subsequent connection. If not exist, the device need to disconnect and put a connection again . To avoid that device reconnect to server ceaselessly due to network anomalies, three consecutive reconnection (three times in a row is called a reconnection service,one time succeed in three

times means reconnection succeed), tje device need to wait for 45 seconds if failed for 3 times.

Connection service

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	CONNECT		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	MODE	ENUM	link mode 0 : direct mode, 1: transmit mode
	CID	INTEGER	Customer identifier (in the early, if the field is empty for no parity), high byte bit24-bit31 retained as an extension, the default is all zeros, if there is a need from 0 to 127 to represent different types and the remaining three bytes distinguish independent of each other, the customer number only represented by the remaining three bytes from 0 (zero as the neutral version) calculated from the beginning, the biggest is 16777215, and each number represents a client。**(It is valid if the MODE is 1)**
	DSNO	STRING	Device id, unique **(MODE 1 IS valid), MDVR is encryption chip number**
	DEVNAME	STRING	Device name**(MODE1 is valid)**
	DEVCLASS	INTEGER	Not exist or value =o means DVR 0：DVR， 1：IPC， 2：NVR， **3: MIPC,** **4: MDVR(MODE 1 is valid)**
	PRO	STRING	The current protocol version number**(MODE1**

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			is valid)
	MAC	object	3.5.1.1 MAC address parameter**(MODE 1 is valid，version number is 1.0.2)**
	DLIP[N]	ARRAY	3.5.1.2 DLIP address parameter**(MODE 1 is valid，version number is 1.0.2)**
	DLP[N]	ARRAY	Listening port of the device itself, the field includes equipment all listening ports, is an array containing each port represents a decision by the subscript.0：web port 1：media port**(MODE 1 is valid，version number is 1.0.2)**
	CHANNEL	INTEGER	Device channel number**(MODE 1 is valid)**
	CARNUM	STRING	Device plate number **(MODE 1 is valid) (MDVR dedicated)**
	UK	STRING	**32 byte string**

RESPONSE	NAME	TYPE	RANGE
	S0	STRING	
	ERRORCODE	INTEGER	**(MODE 1 is valid)**
	ERRORCAUSE	STRING	1-100(**MODE 1 is valid)**

Authentication service

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	VERIFY		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	S0（MD5 加密）	STRING	
RESPONSE	NAME	TYPE	RANGE
	RETURN	BOOLEAN	
	ERRORCODE	INTEGER	
	ERRORCAUSE	STRING	1-100

Login service

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE

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	LOGIN		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	USER	STRING	
	PASSWD	STRING	
	MAC	STRING	Mac(capital type:00-11-22-33-44-5F) if there are many MAC address when the client log in, split every MAC by "|"
	CID	INTEGER	Client identifier (in the early, if the field is empty for no parity), high byte bit24-bit31 retained as an extension, the default is all zeros, if there is a need from 0 to 127 to represent different types and the remaining three bytes distinguish independent of each other, the customer number only represented by the remaining three bytes from 0 (zero as the neutral version) calculated from the beginning, the biggest is 16777215, and each number represents a client(definition please refer to Streamax customer list numbering .xls)
	LOGINTYPE		0：Field is empty or a value of 0 for retention。 1：nvr connection
RESPONSE	NAME	TYPE	RANGE
	RETURN	BOOLEAN	
	ERRORCODE	INTEGER	
	ERRORCAUSE	STRING	
	DSNO	STRING	Device ID，unique**(MODE 0 is valid),MDVR is encryption chip number**
	DEVNAME	STRING	Device name**(MODE 0 is valid))**
	CHANNEL	INTEGER	Device channel number**((MODE 0 is valid))**
	UID	STRING	Device numbering**((MODE 0 is valid))**
	ALARMIN	INTEGER	Alarm input number**((MODE 0 is valid))**

	ALARMOUT	INTEGER	Alarm output number**((MODE 0 is valid))**
	TYPE	STRING	Device type name，example：C601**((MODE 0 is valid))**
	DEVCLASS	INTEGER	Not exist or value=0 means DVR 0：DVR， 1：IPC， 2：NVR， **3: MIPC,** **4: MDVR((MODE 0 is valid))**
	PRO	STRING	Current version number **((MODE 0 is valid))**
	CARNUM	STRING	Vehicle number **((MODE 0 is valid))** **(MDVR dedicated)**
	LEVEL	INTEGER	**((MODE 0 is valid))** User level 1、 super user 2、 Administrator 3、 user

3.2.2 Device description process and keep connection process

After passing the authentication process, Client can send local description information and get server description information, through the heartbeat packet to keep connection

Description service

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	DESCRIBE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	XML	STRING	
RESPONSE	NAME	TYPE	RANGE
	XML	STRING	

Device heartbeat

Device heartbeat is used to keep connection, heartbeat packet is set to trigger every 10 seconds, no heartbeat or response for continuous 30 seconds is regard as disconnection,heartbeat packet is created in message link and start by Client to connect.

MDVR in transmit mode, heartbeat packet time interval is 45 seconds, heartbeat for 5 times, no response for 5 times is regard as disconnection.

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	KEEPALIVE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE

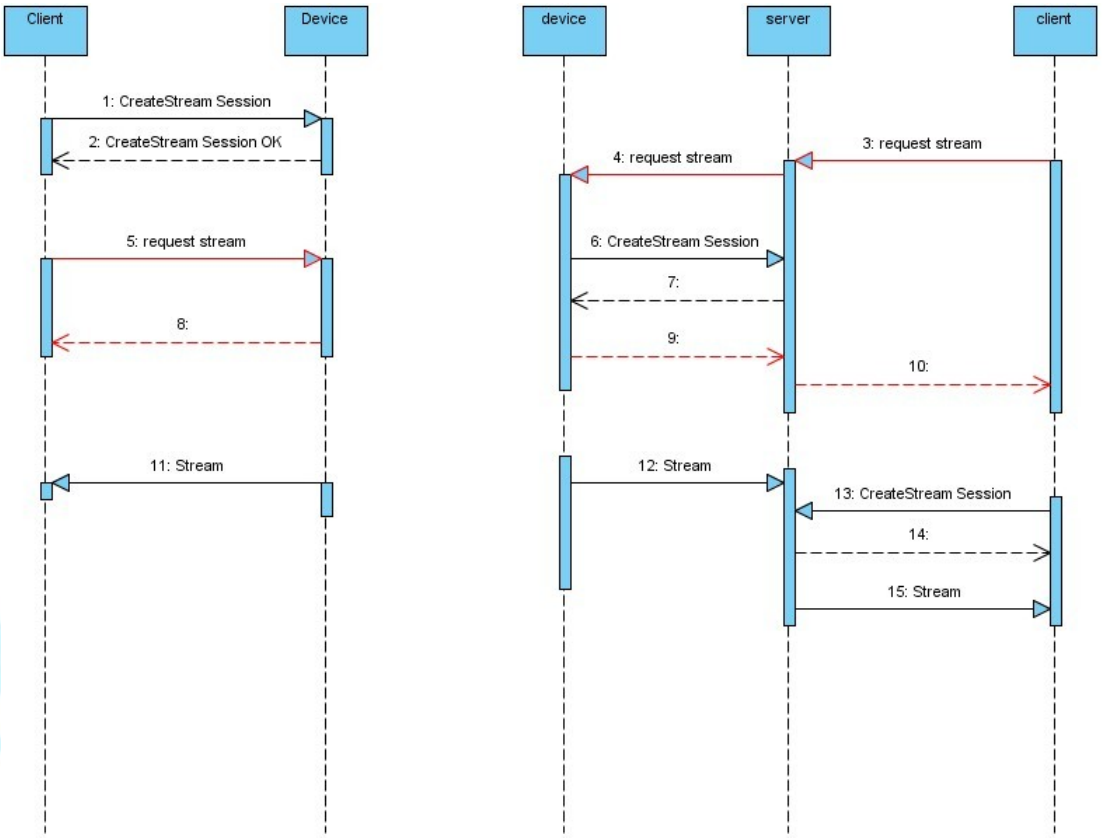
3.3 video stream transmisstion protocol

The transforming stream data contain the stream data such as audio,video,picture,normal file and the description data for this stream data. The transport channel is separated to the control channel.

3.3.1 Communication process

Communication Sequence Diagram

(The red line means control signal)



Create streaming:Creating media channel

Request media service create media channel. The creation message channel must send the global descriptor(SESSIONID) of the conversation from this media channel, the server side should send ACK to the client side after received and create the media channel successful. The server side should add this link to the conversation if the session was created successful, otherwise disconnect the link. The media channel can transport media stream double direction if the media channel was created successful. Then the STREAMNAME will be used to describe the exact media channel(the command will see 3.4.7)

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE

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PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(protocol version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

Request Media stream

The request of media stream is through control communication channel. The channel used to transport the media stream can be choose in the following way, transport the media stream in the same communication channel in the multiplexing way, transport a single media stream in single channel, combine the ways before to make the system reach the best load. The request side can request the server side connect active in reverse connection mode.(the command will see 3.4.7)

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	REQUESTSTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	STEAMTYPE	ENUM	
	STREAMNAME	STRING	1-100
	CSRC	STRING	0-64BYTE(service provider)
	SSRC	INTEGER	0-255（channel）
RESPONSE	NAME	TYPE	RANGE
	RETURN	BOOLEAN	
	ADDRESS（IP:PORT）	STRING	

The control of media stream

The control of media stream is through control channel.(The command will see 3.4.7)

MODULE	MEDIASTREAMMODEL

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SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	CONTROLSTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE
	SSRC	INTEGER	0-255
	STREAMNAME	STRING	1-100
	OPERATION	ENUM	
	RATECTRL	INTEGER	
RESPONSE	NAME	TYPE	RANGE
	RETURN	BOOLEAN	

The notification of the media channel status, the PT is 0 in the protocol head, is transported in media channel. Has the status of media start, error and terminate.It only means the error of the media data, can not used as the error status of the media channel.

The notice for media channel register error.

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	MEDIAREGISTEFAILACK		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(service provider)
	PT	CHAR	see PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-65535 This is provided by the client when it send request, it is the same as it in media task request command.
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

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	STREAMNAME	STRING	1-100 This field is the same as it in media task register.
	IPANDPORT	STRING	1-32

The start of the media channel conversation

The media conversation will begin after the establishment of the media task. It need to tell the receiver ready for media conversation by message.

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	MEDIATASKSTART		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(service provider)
	PT	CHAR	see PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-65535 This is provided by client when it request the service. This field is the same as it in media task request command.
	STREAMNAME	STRING	1-100 This field is the same as it in the media task request command.
	IPANDPORT	STRING	1-32

The termination of the media conversation

Need tell the receive side to terminate the media task through signal channel when the media task should be terminate.

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	MEDIATASKSTOP		NOTIFICATION
PARAMET	NAME	TYPE	RANGE

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ER	CSRC	STRING	0-64BYTE(service provider)
	PT	CHAR	see PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-65535 This field is provided by client when it send request, the field here is the same as it in the media task request command.
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-100 This field is the same as it in the media task register command.
	IPANDPORT	STRING	1-32

The transportation of media stream

This transportation is a two-way transmission. The SSRC is used as the Synchronization Source Identifier to distinguish different streams for multiplex and demultiplex, if the streams are multiplexing in one channel. It use the asynchronous source to multiplex and demultiplex if use multi asynchronous source.

synchronous Source: The client connect to a service provider and request the transportation of the audio and video stream of the first and the second channel with a download stream, this threes stream are Synchronization source.

asynchronous source: The server request to transmit the media stream from multi service provider, and need to describe different service provider, then it need to use asynchronous Source stream from different service provider.

The package length is not fixed if use TCP to transport the stream, it uses PAYLOAD LEN to split the packet. It is package-oriented if use UDP to transport the stream, and the PAYLOAD LEN is used to describe the sequence number of the packet, the UDP protocol need this information to recombine the packet or to modify the policy of the retransmission.

Different media has different METADATA in the packet header, the METADATA is described use JSON, need 1 packet. It can make the METADATA be separated by one in the steam if needed.

1-2	3	4	5-8	9-16	17-32

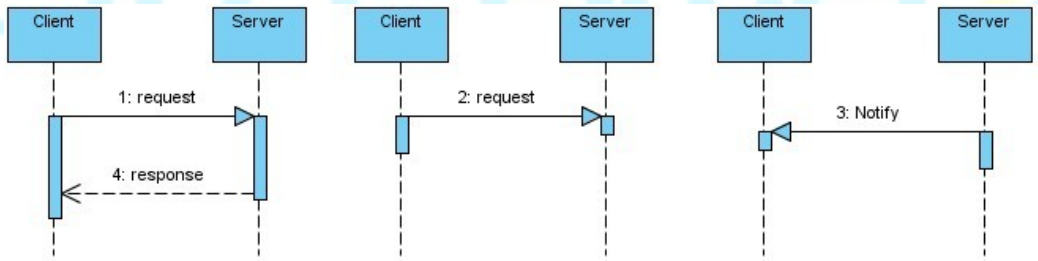
V	P	M	CSRC COUNT	PAYLOAD TYPE	SSRC
PAYLOAD LEN					
RESERVE					
CSRC(VARIABLE 0-16 ITEMS 32BITS EACH)					
PLAYLOAD					

3.4 Service communication control protocol（REQUEST， REQUEST-RESPONSE）

The procedure of the device control contains the whole service access and control that device provide, contanning the procedure to communication by the connectted SESSION after device create the connection. It contans the protocol for event upload, device service request, media stream request and media stream control.

Sequence Diagram

Service communication control protocol sequence diagram



3.4.1 ALARM EVENT MODULE

The alarm module can support 32 kind of alarm now, it need add external item if the alarms are more than 32 kind. It is easy to extend to use JSON analysis without the influence to analysis. Although it can only support 32 channel, but it will be easy to support 64 channel or more by extend.

3.4.1.1.1 Buzzer parameters

The JSON combination for parameter ALARMPROBUZZER	Atomic data structure	Remark
AB	BT	The buzzer alarm time:

		unit:second, arrange:0~200,ie,0-off, 255-always. In order to keep the same structure format with the device.

3.4.1.1.2 IO output

The JSON combination for IO output parameter	Atomic data structure	Remark
AS	SOT	Sensor output time, unit:second, arrangement:0~200,0-off, 255-always.
	SOID	Sensor output bind ID, use bit set.1-valid,0-invalid.

3.4.1.1.3 Parameter for Send Email when Alarm triggered

ALARMEMAIL:The Parameter combination for send email when alarm trigered.	Atomic data structure	Remark
AE	BSE	If send email when alarm,0-no, 1:yes. In order to keep the same format with device data structure.

3.4.1.1.4 Link Record with Alarm

ALARMPRORECOR:The JSON parameter combinationfor alarm linkage.	Atomic data structure	Remark
AR	CH	Binded channel, bitset, bit0~bit31 stand for channel 1~channel 32.
	PRS	Prerecord seconds, unit:second
	DRS	Record delay, unit:second
	LF	Lock the video data, 0-do not lock,1-lock.

3.4.1.1.5 alarm link cradle head

ALARMPROPTZ:JSON parameter combination for cradle head with alarm.	Atomic data structure	Remark

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APT	T	0:linkage preset 1:linkage cruise 255:invalid
	V	Call preset position when alarm occur arrangement：0~255； 255:off It is the number of cruise line, if it is bind to cruise line.

3.4.1.1.6 channel full screen Parameter.

JSON combination for ALARMPROFULLSCREAM	Atomic data structure	Remark
AFS	CHL	Full screen

3.4.1.1.7 time schedule

JSON combination for PARAMALARMPLAN parameter	Atomic data structure	Remark
APLAN	RSI[7][16]	3.4.1.1.16 The record schedule parameter is a two dimension array.The first dimension is for weekday(0-Sunday,1-Monday,2-Tuesday,3-Wednesday,4-Thursday,5-Friday,6-Saturday).The second dimension is for record time slices, each slice match an item, and the subscript must begin with 0.One day can be divided to 16 time slice at the most.The weekday is empty if that day has no record schedule. The subscript of the time quantum must continuous if that day has record schedule(keep the time quantum that has record schedule together).

3.4.1.1.8 Alarm interaction with alarm output task

JSON combination for	Atomic data structure	Remark

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ALARMPROCESS		
APRO	AB	3.4.1.1.1 Alarm Buzzer Parameter
	AS	3.4.1.1.2 IO output parameter when Alarm
	AE	3.4.1.1.3 Email send parameter when alarm
	AR	3.4.1.1.4 record parameter when alarm
	AFS	3.4.1.1.6 full screen parameter when alarm
	APT[N]	3.4.1.1.5 Pan&Tilt parameter when alarm. N stand for channel number, 0-channel one, 15-channel 16
	SPS	3.4.1.1.19 Snap parameter when alarm
	PUS	3.4.1.1.20 push parameter is supported in alarm interaction.
	FTPUP	3.4.1.1.21 FTP upload parameter when alarm.
	LAA	3.4.1.1.22 audio out put delay time when alarm
	UP	Video upload when alarm.0-off,1-Upload to FTP(3.4.1.1.21);2-Upload to Net disk(3.4.1.1.28))

3.4.1.1.9 IO Alarm handle Parameter

The JSON combination of the IO Alarm parameters	Atomic data structure	Remark
IO	EN	Alarm status: 0:disable,1:enalbe
	NCNO	0:NO 1:NC
	ION	Name EG: SENSOR1
	IOS	abbreviation
	APLAN	3.4.1.1.7 time slice plan
	APRO	3.4.1.1.8 alarm handler

3.4.1.1.10 Alarm parameter for motion detection

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PARAMMDALARM The JSON combination of motion detection Alarm.	Atomic data structure	Remark
MDA	APLAN	3.4.1.1.7 time slice plan
	APRO	3.4.1.1.8 alarm handler

3.4.1.1.11 Alarm handle parameter for cover detection.

The JSON combination for PARAMVIDEOSHIELDALARM.	Atomic data structure	Remark
VSH	APLAN	3.4.1.1.7 time slice plan
	APRO	3.4.1.1.8 alarm handler

3.4.1.1.12 Alarm handle Parameter for video loss.

The JSON combination for video loss alarm parameter(PARAMVIDEOLOSTALARM)	Atomic data structure	Remark
VLOSTA	APRO	3.4.1.1.8 alarm handler

3.4.1.1.13 Alarm handle parameter for Hard disk.

The JSON combination for PARAMHDDALARM	Atomic data structure	Remark
HDD	INVALID	Hard disk invalid alarm: 0:disable;1:enable
	HDDFULL	Hard disk full alarm: 0:disable;1:enable
	APRO	3.4.1.1.8 alarm handler

3.4.1.1.14 IP confliction alarm parameters

The JSON combination of PARAMIPCONFLICTALARM	Atomic data structure	Remark
IPCON	EN	Alarm switch 0: disable 1: enable
	APRO	3.4.1.1.8 alarm handler

3.4.1.1.15 Parameters for Motion detection

The JSON combination for PARAMMOTIONDETECT	Atomic data structure	Remark
MDP	EN	Enable/Disable motion detection 0: close 1: open

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	SST	Sensitivity of motion detection:has 8 levels (1~8 from high to low,1 is the highest, and 8 lowest).
	RGN	Region setup: The 396 regions use 50 bytes to storage the parameter. Each byte was described in two hexadecimal data. Padding with zeros if the bytes are not used. Each bit stand for one region:1 means enable, while 0 means disable.

3.4.1.1.16 The parameter for recording schedule.

The JSON combination for RecordScheduleItem	Atomic data structure	Remark
RSI	S	The time to start record(hours * 3600 + minute * 60 + second). Integer, the unit is second.
	E	The time to stop record(hours * 3600 + minute * 60 + second). Integer, the unit is second.

3.4.1.1.17 parameter for video cover alarm detection

JSON combination for PARAMVIDEOLOSTALAR	Atomic data structure	Remark
PS	EN	Function switch 0: disable 1: enable
	SST	Sensitivity: 0: high 1: middle 2:low

3.4.1.1.18 video loss parameter

JSON combination for PARAMVIDEOLOSTALAR	Atomic data structure	Remark
PL	EN	Function switch 0: disable 1: enable

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3.4.1.1.19 Parameter for channel snap when alarm

The JSON Parameter combination for SPS	Atomic data structure	Remark
SPS	CH	Bound channel, use bit map, bit0~bit31 stand for channel 1 to channel 32.

3.4.1.1.20 The parameter for push when alarm.

The JSON parameter combination for PUSHSWITCH	Atomic data structure	Remark
PUS	EN	Push function switch 0: disable 1: enable

3.4.1.1.21 The parameter for ftp upload when alarm.

The JSON Parameter combination for PUSHSWITCH	Atomic data structure	Remark
FTPUP	EN	ftp upload Function switch 0: disable 1: enable

3.4.1.1.22 The parameter for audio output time when alarm.

The JSON combination for LINKALARMAUDIO	Atomic data structure	Remark
LAA	EN	The audio output time Unit:second Arrangement:0-200 0-disable; 255-always enable.

3.4.1.1.23 AVD Alarm Parameter

The JSON combination for Parameter AVD	Atomic data structure	Remark
AVD	EN	Function switch 0: disable 1: enable Default to 1
	SST	Sensitivity:5 leves from 1 to 5. 1 is the lowest, 5 is the highest, and 3 is the defualt value.
	UT	Alarm delay time:1~20 second, default vavlue is 5

		second.

3.4.1.1.24 AVD alarm handle parameter

JSON combination for AVD alarm handler	Atomic data structure	Remark
AVDA	APRO	3.4.1.1.8 alarm handle

3.4.1.1.25 PEA region point define

PEA region point define	Atomic data structure	Remark
PIT	X (uint32_t)	Range 0~1028, positive integer
	Y (uint32_t)	Range 0~768, positive integer

3.4.1.1.26 PEA region configuration parameter.

PEA region configuration parameter.	Atomic data structure	Remark
PEAA （PEA area）	DRT	Direction select, 0: single side line 1: double side line.
	FBDD	The arrangement of forbidden angles 0~360 degree.
	PIT[M]	3.4.1.1.25 PEA The define of region point. When detect the warning line, it is the begin point if the subscript of the array is 0, and end point if the subscript of the array is 1. The other subscript value is reserved. M stand for the length of the array.

3.4.1.1.27 PEA alarm handle parameter

PEAP	Atomic data structure	Remark
PEAP	EN	Function switch 0: disable 1: enable Default to 1

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	SST	Sensitivity:three levels from 1 to 5. 1 is the lowest and 5 is the highest, the default value is 1.
	M(uint8_t)	0:boundary detect; 1:fire line detect.
	PEAA	3.4.1.1.26 PEA region configuration parameter.

3.4.1.1.28 Parameter for net disk.

tag_paramCloudSetting	Atomic data structure	Remark
PCS	EN	Function switch 0: disable 1: enable Default to 1
	ST	Net disk type: 0-Baidu 1-Dropbox; 2-Huawei; 3-Microsoft
	EC	Overwrite: 0-disable; 1-overwrite by size; 2-overwrite by time
	OVD	Days to keep the record (Has effect only when EC is 2).The default value is 30.
	UF	User defined upload directory.
	Selet this parameter by the type of ST.	3.4.1.1.28.1、 3.4.1.1.28.2

3.4.1.1.28.1 Parameter format for Baidu Net disks

stuBaiduAccessInfo	Atomic data structure	Remark
BD	BS	String

3.4.1.1.28.2 Parameter format for DropBox

stuDropboxAccessInfo	Atomic data structure	Remark
DB	TOK	String
	BS	String

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3.4.1.1.29 PEAA Alarm schedule parameter

PEA Alarm schedule parameter	Atomic data structure	Remark
PEA	APLAN	3.4.1.1.7 Time schedule
	APRO	3.4.1.1.8 Alarm handle

MODULE	EVEM(EVENTMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SENDALARMSTATUSINFO		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	MD[N]	ARRAY	3.4.1.4.1 parameter for motion detection alarm. N:channel number,based from 0.ie,0,1,2,3 stand for channel 1,2,3 and 4.
	IO[N]	ARRAY	3.4.1.4.2 Parameter for IO Alarm. N is the total number of the IO port.
	STOR[N]	ARRAY	This item is deleted because is not suitable for MDVR
	ST[N]	ARRAY	3.4.1.4.21 Parameter for storage error. N is the total number of the storage device.
	VS[N]	ARRAY	3.4.1.4.4 Parameter for cover alarm. N is the channel number.
	VL[N]	ARRAY	3.4.1.4.5 Parameter for video loss Alarm. N is the channel number.
	CAT[N]	ARRAY	3.4.1.4.6 Parameter for Post check alarm.

			N is the serial number.
	VRAT[N]	ARRAY	3.4.1.4.7 Parameter for break the rule check Alarm. N is the channel number.
	UR		3.4.1.4.8 Parameter for emergency alarm.
	SPEED		3.4.1.4.9 Parameter for over speed Alarm.
	LV		3.4.1.4.10 Parameter for low voltage Alarm.
	BR		3.4.1.4.15BR emergency brake.
	REVV		3.4.1.4.16REVV sharp turn
	SHAREP		3.4.1.4.17SHAEP sharp acceleration
	SLIDE		3.4.1.4.18SLIDEneutral position running.
	ENGINE		3.4.1.4.19EGNINE Engine over speed.
	IDLE		3.4.1.4.20IDLE:Idle speed timeout.
	SERI		3.4.1.4.22 Serial port Alarm parameter.

3.4.1.4 Alarm status Auto upload.

3.4.1.4.1 parameter for motion detection alarm.

JSON parameter combination for motion detection alarm.	Atomic data structure	Remark
MD	ISA	Alarm status for motion detection. 0:No Alarm(Alarm relieved) 2:Has Alarm.
	LCH	LCH bit set of the channels bind to alarm. Ie:IO1 port bind channel 0, channel 1,channel 2, channel 3,then LCH =

		15(Decimal).

3.4.1.4.2 IO sensor alarm status parameters

JSON parameter combination for IO Alarm.	Atomic data structure	Remark
IO	ISA	Status of IO alarm. 0:No Alarm(Alarm relieved). 1:has Alarm.
	IONO	IO number.
	LCH	IONO:The IO number that has alarm. LCH:The channel bit set that IONO bind when alarm happened. ie:IO1 port bind channel 0, channel 1, channel 2, channel 3, then LCH = 15(Decimal).
	NAME	Name
	NSER	Abbreviation

3.4.1.4.3 Parameter for Storage error Alarm(deleted)

Parameter JSON combination for Storage error Alarm.	Atomic data structure	Remark
STOR	EN	If the STOR is 0 and 4, it means begin alarm if this value is 1, it means alarm ended or alarm relieved if the value is 0. This value is 2 if the STOR is not 0 or 4.
	ST[N]	Storage type: 0:hard disk. 1:USB disk. 2:SD card.
	SID[N]	The logical number of the Storage device.

3.4.1.4.4 Parameter for cover alarm.

JSON Parameter	Atomic data structure	Remark

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combination for cover alarm.		
VS	ISA	status of cover alarm. 0:No alarm(Alarm relieved). 1:Has alarm.
	LCH	LCH:channel bit set bind to Alarm. For example:IO1 bind to channel 0,1,2 and 3 to record, then LCH=15(decimal)

3.4.1.4.5 Video loss alarm status parameter

JSON Parameter combination for video loss Alarm.	Atomic data structure	Remark
VL	ISA	Status of video loss Alarm. 0:No Alarm(Alarm relieved) 1:Has Alarm.
	LCH	LCH:channel bit set bind to Alarm. For example:IO1 bind to channel 0,1,2 and 3 to record, then LCH=15(decimal)

3.4.1.4.6 Parameter for check post Alarm.

The JSON parameter combination for check post alarm .	Atomic data structure	Remark
CAT	ISA	Status for check post Alarm. 0:No alarm(Alarm relived). 1:Has alarm.
	IONO	Serial number for IO
	CHANNEL	Bound channel number, based on 0.

3.4.1.4.7 Parameters for brake rule detect alarm

JSON combination for brake rule alarm detection	Atomic data structure	Remark
VRAT	ISA	Break rule detect status: 0:No alarm(alarm relieved) 1:Has alarm

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		2:Pre-Alarm

3.4.1.4.8 panic button alarm status parameter

JSON combination for emergency alarm parameter.	Atomic data structure	Remark
UR	ISA	Emergency alarm status: 0:No Alarm(alarm relieved) 1:Has Alarm.
	NAME	Name
	NSER	abbreviation
	CH	Bit set for bind channel number. It is valid if bit is set to 1.

3.4.1.4.9 Overspeed:Parameter for over speed Alarm.

JSON combination for over speed alarm parameter.	Atomic data structure	Remark
SPEED	ISA	Over speed alarm status: 0:No alarm(alarm relieved) 1:Has alarm.
	CUR	The current speed. Range:0~99999(0~999.99Km/h). Unit:0.01Km/h
	NAME	Name
	NSER	Abbreviation
	CH	Bit set for bind channel number.It is valid if bit is set to 1.

3.4.1.4.10 Parameter for low voltage alarm status.

JSON combination for low voltage alarm status.	Atomic data structure	Remark
LV	ISA	Low voltage alarm status: 0:No Alarm(Alarm relieved) 1:Has Alarm.
	V	Current Voltage. Unit:0.01V Range:100~7200(1.00~72.00V)

3.4.1.4.11 OBD original status parameter

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Name	Atomic data structure(type)	Remark
OBD	REFVALUE (INT)	Threshold
	RPM(INT)	Engine RPM
	COOLANTTEMP (INT)	Coolant temperature
	OILPRESSURE (FLOAT)	Lube Pressure.
	KEYSTATUS (BOOL)	Key Switch Status.
	ACCEL (INT)	Accelerator Pedal Position percentage.
	SPEED (INT)	speed
	BATTERY (FLOAT)	Battery voltage
	OILWEAR (FLOAT)	Oil usage amount.
	OILTEMP (FLOAT)	Oil temperature
	ENGINENUM (STRING)	Engine Serial Number.

3.4.1.4.12 AXIS Status.

Name	Atomic data structure	Remark
AXIS	REFVALUE (INT)	threshold values to trigger an event.
	DATSRC (STRING)	Data source.
	ACCEL X (FLOAT)	Acceleration in X axis. Unit:G.
	ACCEL Y(FLOAT)	Acceleration in Y axis. Unit:G.
	ACCEL Z(FLOAT)	Acceleration in Z axis. Unit:G.
	ANGULAR VELOCITY X (FLOAT)	rotational speed in X axis. Unit:degree/second.
	ANGULAR VELOCITY Y (FLOAT)	rotational speed in Y axis. Unit:degree/second.
	ANGULAR VELOCITY Z (FLOAT)	rotational speed in Z axis. Unit:degree/second.

3.4.1.4.13 Tire pressure status.

item(Main)	Atomic data structure（Sub）	Remark
TIRESPRESS	REFVALUE (STRING)	threshold values to trigger an event.
	DATSRC (STRING)	Data source.
	TNUM(INT)	Tire Number.
	TIRE[TNUM]	Tire data array.

3.4.1.4.13.1 Tire parameter(sub item)

Type	Atomic data structure	Remark
TIRE	ID(STRING)	Serial ID

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	NAME (STRING)	Name
	PRESS (FLOAT)	Pressure (float)
	TEMP (FLOAT)	Temperature (float)

3.4.1.4.14 Load parameter.

Name	Atomic data structure	Remark
LOAD	REFVALUE (STRING)	Threshold
	DATSRC (STRING)	Origianl data source.
	AXLESNUM (INT)	Number of axles.
	LOADLIMIT (INT)	Load limit.
	LEFT (INT)	Left load.
	RIGHT (INT)	Right load.
	TOTAL (INT)	Total load

3.4.1.4.15 BR:urgent break

JSON	Atomic data structure	Remark
BR	ISA	Over speed Alarm stats: 0:No Alarm(Alarm relieved) 1:Has Alarm.
	NAME	Name
	NSER	Abbreviation
	CH	Bit map for bind channel number.It is valid if bit is set to 1.
	DATSRC(STRING)	Alarm source: CANINFO（OBD） 6-AXIS TIREPRESS TRUCKLOAD
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load

3.4.1.4.16 REVV Sharp turn

JSON combination	Atomic data structure	Remark
REVV	ISA	Over speed status: 0:No Alarm(Alarm relieved) 1:Has Alarm.
	NAME	Name
	NSER	abbreviation
	CH	Bit map for bind channel number.It is valid if bit is set to

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		1.
	DATSRC(STRING)	Alarm Source: CANINFO（OBD） 6-AXIS TIREPRESS(tire pressure) TRUCKLOAD(load)
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load

3.4.1.4.17 SHAEP acceleration

JSON combination	Atomic data structure	Remark
SHAEP	ISA	Over speed alarm status. 0:No Alarm.(Alarm relieved) 1:Has Alarm.
	NAME	Name
	NSER	Abbreviation
	CH	Bit map for bind channel number.It is valid if bit is set to 1.
	DATSRC(STRING)	Alarm source: CANINFO(OBD) 6-AXIS TIREPRESS(Tire pressure) TRUCKLOAD(Load)
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load

3.4.1.4.18 SLIDE:Driving with neutral gear.

JSON combination	Atomic data structure	Remark
SLIDE	ISA	Over speed alarm: 0:No Alarm(Alarm relieved) 1:Has Alarm.
	NAME	Name
	NSER	Abbreviation
	CH	Bit map for bind channel number.It is valid if bit is set to 1.
	DATSRC(STRING)	Alarm source: CANINFO(OBD)

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		6-AXIS TIREPRESS TRUCKLOAD
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load

3.4.1.4.19 EGNINE:Engine over speed.

JSON Combination	Atomic data structure	Remark
EGNINE	ISA	Over speed alarm: 0:No Alarm(Alarm relieved) 1:Has Alarm.
	NAME	Name
	NSER	Abbreviation
	CH	Bit map for bind channel number.It is valid if bit is set to 1.
	DATSRC(STRING)	Alarm source: CANINFO(OBD) 6-AXIS TIREPRESS TRUCKLOAD
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load

3.4.1.4.20 IDLE:idle time-out.

JSON Combination	Atomic data structure	Remark
IDLE	ISA	Over speed Alarm: 0:No alarm(Alarm relieved) 1:has alarm.
	NAME	Name
	NSER	abbreviation.
	CH	Bit map for bind channel number.It is valid if bit is set to 1.
	DATSRC(STRING)	Alarm source: CANINFO(OBD) 6-AXIS TIREPRESS TRUCKLOAD

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	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load

3.4.1.4.21 storage media fault alarm parameters

JSON combination for storage err Alarm.	Atomic data structure	Remark
ST	SID	Logical number of the storage device.
	ST	Storage type: 0-HDD; 1-USB; 2-SD
	E	0: Storage full. 1: R/W error. 2: Unformat 3: No HDD 4: Mount HDD failure、 5: Storage partition format error.

3.4.1.4.22 Serial port Alarm

JSON Combination	Atomic data structure	Remark
SERI	ISA	Over speed alarm: 0:No Alarm(Alarm relieved) 1:Has Alarm.
	NAME	Name
	NSER	abbreviation
	CH	Bit map for bind channel number.It is valid if bit is set to 1.
	SUM	Total number of serial port alarm.
	S[SUM]	3.4.1.4.23 Serial port alarm description.

3.4.1.4.23 Serial port Alarm description

JSON Combination	Atomic data structure	Remark
S	NA	Serial port number.
	AN	Enumerate for alarm definition.

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MODULE	EVEM(EVENTMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SENDALARMINFO		NOTIFICATION
PARAMET	NAME	TYPE	RANGE

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ER	ALARMTYPE	INTEGER	0:Video loss alarm (3.4.1.5.1 json structure for channel alarm) 1:Camera cover alarm (3.4.1.5.1 json structure for channel alarm) 2:Motion detection alarm (3.4.1.5.1json structure for channel alarm) 3:Storage error alarm (3.4.1.5.2 Json structure for storage error alarm)) 4:User defined alarm. (3.4.1.5.3 Json string for user defined alarm) 5：check post alarm (3.4.1.5.4 Json string for check post alarm)(contain pre alarm) 6：Break rule detect alarm(3.4.1.5.1Json string for channel number alarm))(include prealarm) 7：Urgent alarm(json struction for urgent alarm) 8: over speed alarm(3.4.1.5.6 Json structure for over speed alarm) 9:Low voltage alarm(3.4.1.5.7 json structure for low voltage alarm) 10 urgent break (3.4.1.5.8urgent break alarm) 11 urgent turn(3.4.1.5.9urgent turn alarm) 12 urgent acceleration (3.4.1.5.10 urgent acceleration alarm) 13 drive with neutral gear (3.4.1.5.11 drive with neutral gear alarm) 14 Engine over speed

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	CMDTYPE	ENUM	0:relieve alarm 1:start alarm 2:pre-alarm
	ALARMUID	INTEGER	Indicate whether the alarm message is first send or resend. Two alarm messages has the same type and the same ALARMID is the same alarm. 1-0X7FFFFFFF, it will return from 1 when reaches 0x7fffffff.
	ALARMCOUNT	INTEGER	The send times of a message send. It is 1 when the first time, and add 1 when resend. The range is 1 to 65535.
	TRIGGERTYPE	ENUM	0:Manual 1:Automatic
	CONTINUETIME	INTEGER	Alarm delay time.
	CURRENTTIME	INTEGER	(UTC Time) The alarm trigger time.
	L	INTEGER	ID for language, defined by the configure file. 0:Chinese-Simple 1:English 2:Korean 3:Italian 4:German 5:Thai 6:Turkish 7:Portuguese 8:Spanish 9:Romanian 10:Greek 11:French 12:Russian 13:Dutch 14:Hebrew 15:Chinese-traditional
	P		GPS Information. 3.4.5.27.1 Location information(Only MDVR use)
	The above is the common part of the alarm upload protocol. The following part		

	will follow the common part when an alarm occur, since this part is different in different alarm.

3.4.1.5 Alarm upload

3.4.1.5.1 Json structure for channel alarm.

	NAME	TYPE	RANGE
	CHANNEL	INTEGER	1-32(hexadecimal,bit map,bit0-bit31 stand for channel 1-channel32. Valid when bit is set, invalid when bit is clear.)
	CHANNELMASK	INTEGER	1-32(hexadecimal，bit map,bit0-bit31 stand for channel 1-channel32. The alarm for the channel is valid if the bit is set,other wise it is in valid.)
	LCH[N]	INTEGER	N:The valid alarm channel,based on 0, each LCH stand for the bit map of the channel bind to the cannel N. The set is a bit map. E.g. Motion detection alarm triggered on channel 1, and bind channel0, channel 1, channel 2, channel 3,The LCH[1] = 15 (in Decimal)
	PUSH	INTEGER	1-32(Hexadecimal, bit map, bit0-bit31 stand for channel 1-31.The alarm of this channel will push if the bit is set, other wise do not push.
	ALARMNAME	STRING	The name of the alarm, 32 bytes.

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	SER	STRING	The abbreviation of the alarm name, 16 bytes.

3.4.1.5.2 json structure for storage error alarm.

	NAME	TYPE	RANGE
	STORAGETYPE	ENUM	0:hard disk. 1:USB disk. 2:SD card.
	STORAGEINDEX	INTEGER	1-32(lotical number of the storage device)
	ERRORCODE	INTEGER	1-32 error code of the storage error.**(see 6.2.2)**
	ERRORDESCRIPTION	STRING	1-100 description of storage error.**(see 6.2.2)**
	PUSH	INTEGER	1:need push 0:do not push

3.4.1.5.3 json structure for user defined alarm.

	NAME	TYPE	RANGE
	SNO	CHAR	1～255. The user defined alarm is numbered by the device globally, the number must not be repeated.
	ALARMNAME	STRING	Alarm name string. Range:1-32 bytes.
	SER	STRING	Abbreviation of the alarm name, 1-32 bytes.
	LCH[N]	INTEGER	SNO number for valid IO alarm. Based on 1, each LCH item stand for the channel bit set bind to the N alarm. E.g. Motion detection alarm triggered on channel 1, and bind channel0, channel 1, channel 2, channel 3,The LCH[1] = 15 (in Decimal)
	PUSH	INTEGER	1:need push. 0:not push.

3.4.1.5.4 json structure for check post alarm.

	NAME	TYPE	RANGE
	SNO	CHAR	1～255. The user defined alarm is numbered by the device globally, the number must not be repeated.
	CHANNEL	CHAR	bound channel number, based on 0.

3.4.1.5.5 JSON structure for urgent alarm.

	NAME	TYPE	RANGE
	ALARMNAME	STRING	Alarm name string. 1-32 bytes.
	SER	STRING	Abbreviation string. 1-32 bytes.
	LCH	INTEGER	Bind record channel number. in bit map, it is valid when the bit is set.
	PUSH	INTEGER	1:need push， 0:Do not push

3.4.1.5.6 JSON structure for speed alarm

	NAME	TYPE	RANGE
	ATYPE	INTEGER	Alarm type: 0:standard low speed alarm. 1:standard over speed alarm.
	CSP	INTEGER	Current speed value. Range:0~99999. Unit:0.01Km/h
	MINSP	INTEGER	The lowest speed. Range:0~99999 Unit:0.01Km/h.
	MAXSP	INTEGER	The highest speed. Range:0~99999 Unit:0.01Km/h.
	ALARMNAME	STRING	Alarm name string 1-32 bytes.
	SER	STRING	Abbreviation for alarm name. 1-32 bytes.

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	LCH	INTEGER	Bind record channel number. Bit set, it is valid when the bit is set.
	PUSH	INTEGER	1:need push. 0:Not push.

3.4.1.5.7 JSON structure for low voltage

	NAME	TYPE	RANGE
	V	INTEGER	Current voltage. Range:100-7200(1.00V-72.00V) Unit:0.01V
	PUSH	INTEGER	1:need push 0:not push

3.4.1.5.8 urgent break

	ALARMNAME	STRING	Alarm name string 1-32 bytes.
	SER	STRING	Abbreviation for alarm name 1-32 bytes.
	LCH	INTEGER	Bind record channel number. Bit set, it is valid when bit is set.
	ALARMNAME	STRING	Alarm name:1-32
	DATSRC(STRING)	Alarm source CANINFO 6-AXIS TIREPRESS TRUCKLOAD	(OBD)
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load	

3.4.1.5.9 urgent turn

	ALARMNAME	STRING	Alarm name: 1-32
	SER	STRING	Abbreviation: 1-32
	LCH	INTEGER	Bind Record channel number.

			Bit set, it is valid when the bit is set.
	ALARMNAME	STRING	Alarm name: 1-32
	DATSRC(STRING)	Alarm source: CANINFO（OBD） 6-AXIS TIREPRESS TRUCKLOAD	
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load	

3.4.1.5.10 urgent acceleration.

	ALARMNAME	STRING	Alarm name string 1-32 bytes.
	SER	STRING	Abbreviation of the alarm name string. 1-32 bytes.
	LCH	INTEGER	Bind channel number. Bit set, it is valid when the bit is set.
	ALARMNAME	STRING	Alarm name string 1-32 bytes.
	DATSRC(STRING)	Alarm source: CANINFO 6-AXIS TIREPRESS TRUCKLOAD	
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load	

3.4.1.5.11 drive with neutral gear

	ALARMNAME	STRING	Alarm name string 1-32 bytes
	SER	STRING	Abbreviation of the alarm name string 1-32 bytes
	LCH	INTEGER	Bound record channel number, it is bit set. It is valid when the bit is set.
	ALARMNAME	STRING	Alarm name string 1-32 bytes.
	DATSRC(STRING)	Alarm source: CANINFO（OBD） 6-AXIS TIREPRESS TRUCKLOAD	
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load	

3.4.1.5.12 Engine over speed

	ALARMNAME	STRING	Alarm name string 1-32 bytes
	SER	STRING	Abbreviation of the alarm name string 1-32 bytes
	LCH	INTEGER	Bound channel number, bit set. It is valid when the bit is set.
	ALARMNAME	STRING	Alarm name string 1-32 bytes
	DATSRC(STRING)	Alarm source: CANINFO（OBD） 6-AXIS TIREPRESS TRUCKLOAD	
	DATA(OBJECT)	Alarm source check 3.4.1.4.11	

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		OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load	

3.4.1.5.13 idle time out

	ALARMNAME	STRING	Alarm name string 1-32 bytes
	SER	STRING	Abbreviation for alarm name string 1-32 bytes
	LCH	INTEGER	Bound channel number. Bit set, it is valid when the bit is set.
	ALARMNAME	STRING	Alarm name string 1-32 bytes.
	DATSRC(STRING)	Alarm source: CANINFO 6-AXIS TIREPRESS TRUCKLOAD	
	DATA(OBJECT)	Alarm source check 3.4.1.4.11 OBD 3.4.1.4.12 AXIS 3.4.1.4.13 Tire pressure 3.4.1.4.14 Load	

3.4.1.5.14 serial alarm

	ALARMNAME	STRING	Name:1~32 bytes.
	SER	STRING	Abbreviation:1~32 bytes.
	LCH	INTEGER	Bound channel number. Bit set, it is valid when the bit is set.
	SUM	INTEGER	Total number of serial port alarm.
	S[SUM]	ARRAY	3.4.1.4.23 serial port alarm description.

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3.4.1.8 release alarm

MODULE	EVEM(EVENTMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	TERMINATEALARM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	ALARMTYPE	INTEGER	Alarm type 0:video loss alarm 1:video cover alarm 2:motion detection alarm 3: storage device error alarm 4: user define alarm 5：check post alarm. 6：break rule detect alarm. 7：panic button alarm 8：speed alarm 9：low voltage alarm
	SNO	CHAR	User define alarm number. Can not be empty if the relieved alarm contain user defined alarm. The json structure is the same as 3.4.1.5.3.
	ST	INTEGER	Time of alarm stop. Device will not trigger this the same kind of alarm within this time. Unit:second Range:1~65535 The same kind alarm will triggered again if the ST item is empty.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.，the same as request.

3.4.2 Storage module

3.4.2.1.1 Storage media parameters

Json combination for MEMORYPARAM	Atomic data structure	Remark
MEMP	DEVTYPE	Device type
	DEVID	Device ID
	OVERW	HDD overwrite ON/OFF status 0: disable 1: enable
	OVERT	Overwrite mode 0: day 1: capacity
	STORT	Storage media type 0: Normal 1: backup 2: temperory
	OVD	Timeout days to overwrite. Integer.

3.4.2.1.2 Customer item information parameter

JSON combination for szContentItems	Atomic data structure	Remark
SCI		Customer item information (character string)

3.4.2.1.3 customer information parameter

JSON combination for CustomAttrSetting	Atomic data structure	Remark
CAT	SCI[N]	3.4.2.1.2 Customer item information parameter

3.4.2.1.4 SCC21 user information parameters

JSON combination for ParamScc21User	Atomic data structure	Remark
SCC21	SNAME	User name
	SPWD	Password
	SHOST	Device name

	SLPWD	Network password

3.4.2.1.5 CSSP 附加客户信息参数

JSON combination for paramCustomSpecialSetting	Atomic data structure	Remark
CSSP	CT	enumerate CSST_SCC21USER, CSST_SHILIAN, CSST_VSP, CSST_KGUARD, CSST_INVALID
	SCC21	3.4.2.1.4 SCC21 customer information is valid when CT is CSST_SCC21USER.
	SHILIAN	3.4.2.1.6 SHILIAN customer information is valid when CT is CSST_SHILIAN
	VSP	3.4.2.1.6.11VSPcustomer information parameter.
	CKD	Not use.
	CCV	Not use.

3.4.2.1.6 SHILIAN customer defined parameter.

3.4.2.1.10 VSPB customer defined parameter.

3.4.2.1.6.11VSP customer defined parameter.

3.4.2.1.11 Disk manage mode parameter.

JSON combination for paramDiskManage	Atomic data structure	Remark
PDM	M	Storage ration manage mode: 0:automatically 1:Manual.
	PADM	3.4.2.1.12 Device automatically manage parameter is valid only when the M parameter is 0.
	PCDM	3.4.2.1.13 Device User manual manage parameter is valid only when the

		ucMode is 1.

3.4.2.1.12 Parameter for device automatically manage storage device.

JSON combination for paramAutoDiskManage	Atomic data structure	Remark
PADM	OM	Storage overwrite mode: 0:by size(default value); 1:by date; 2:never.
	SVD	Keep time of the record file is valid when ucOverMode is 1. Rangie:1~365,default value is 30. Unit:day

3.4.2.1.13 Parameter for User define mode storage management.

JSON combination for paramCustomDiskManage	Atomic data structure	Remark
PCDM	PDG[N]	3.4.2.1.14 Parameter for device auto manage storage mode. N is the number of the disk.

3.4.2.1.14 Parameter for Single storage device in user define manage mode.

paramDiskGroup 参数的 JSON 组合	Atomic data structure	Remark
PDG	SN	Unique serial number of the storage device.
	VDM	Serial number mask for the disk group. It is bit map, each bit stand for a disk. E.g. The disk group contain disk 1 if the bit0 is set.
	PS	Picture storage space quota. Range:[1,20] Defualt value:5 Unit:%5 of the disk size.
	VOM	Video overwrite mode: 0:by size(default value). 1:by date

		2:never
	POM	Pictrue overwrite mode: 0:by size(default value). 1:by date.
	VSVD	Period of validity for video file.This parameter is valid only when VideoOverMode is 1. Ragne:[1,365] Default value:30 Unit:day
	PSVD	Period of validity for picture file.This parameter is valid only when PicOverModeis 1. Range:[1,365]. Default value:30 Unit:Day
	RM[N]	Channel numbers that the Main stream will stored on this disk group. Use bit map describe: 0:do not record the channel. 1:record the channel. This item use 64 bit storage for future use.
	RS[N]	Channel numbers that the Sub stream will stored on this disk group. Use bit map describe: 0:do not record the channel. 1:record the channel. This item use 64 bit storage for future use.

3.4.2.1.15 Multi -task timer snapshot upload parameter

JSON combination for paramTimePlanCapture_t	Atomic data structure	Remark
PTPC	PEPC [N]	3.4.2.1.15.1 Parameter for single task snap by schedule. N is the total number of the snap schedule.

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3.4.2.1.15.1 Parameter for single task snap and upload.

JSON combination for paramOnePlanCapture_t	Atomic data structure	Remark
PEPC	V	Is current schedule valid: 0:invlaid. 1:valid.
	WD	Weekday that each schedule use. 0:every day 1:Monday 2:Tuesday 3:Wednesday 4:Thursday 5:Friday 6:Saturday 7:Sunday
	ST	The begin time of the schedule.
	ET	The end time of the schedule.
	POM	The interval time unit of the schedule. 0:second 1:minute 2:hour
	CLP	3.4.2.1.15.2 upload parameter for single snap schedule task.

3.4.2.1.15.2 Parameter for single task snap upload.

JSON combination for paramCaptureLink_t	Atomic data structure	Remark
CLP	PM	Snap handle mode: Bit set. 0:upload by email. 1:upload by FTP. 2:local storage.
	CM[N]	Channel bind to snap channel. bit map:Bind to this channel when the bit is set. CM is a 32 bits array, it will

		use array to describe all the channel if one 32 bit can not describe all the channel. E.g. CM[0] is bit0-bit31stand for channel 1 to channel 32. bit0-bit31 of CM[1] stand for chanel 33 to channel 64.

3.4.2.1.16 Volume parameter used by CENOVA.

3.4.2.3 Get storage space information.

MODULE	STORM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETSTORAGEINFO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	Error code
	ERRORCAUSE	STRING	1-100
	STORAGECOUNT	INTEGER	The total number of the storage device. That is, The element number of the following 6 item.
	STORAGETYPE[STORAGEINDEX]	ENUM	0-Hard disk 1-USB 2-SD card

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	STORAGEUNIT[STORAGEINDEX]	ENUM	0:B 1:KB 2:MB 3:GB 4:TB
	STORAGEINDEX[STORAGEINDEX]	ARRAY	Logical number of all the storage device. Based on 0. E.g. 0,1,2,3,4...
	STORAGESTATUS[STORAGEINDEX]	ARRAY	0- Not exist 1- Unformatted 2- Formatting 3- Can't mount 4- HDD full 5- Normal 6- Recording 7- HDD R/W error 8- Test HDD 9- Partition error
	STORAGELASTSIZE[STORAGEINDEX]	ARRAY	Free space for each storage device. 64bit.
	STORAGETOTALSIZE[STORAGEINDEX]	ARRAY	Total space for each storage device. 64bit.
	STORAGEPOSITION[STORAGEINDEX]	ARRAY	Install position for each storage device. 0:inside. 1:outside.

3.4.2.4 Storage management.

MODULE	STORM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SETCONTROLSTORAGE		REQUEST-RESPONSE
PARAMET	NAME	TYPE	RANGE

ER	STORAGEINDEX	INTEGER	Bit map description for logical number of the storage device. Bit0-bit31 sand for the logical number of the storage device. bit0:the logical number of the storage is 1. Bit1: 2 ... Bit 31:32
	CMDTYPE	ENUM	0:Read and Write 1:Read Only 2:Format 3:Clear data 4:redundancy
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STORAGETYPE	ENUM	The same as the running command.
	CMDTYPE	ENUM	The same as the running command.

3.4.2.5 Search by calendar

MODULE	STORM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETCALENDAR		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CALENDARTYPE	ENUM	1:Get the month calender by year and month. 2:search all the calender 历 3：search the calender of a month my the given year and month. The channel number can use as a input parameter.

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	FILETYPE	INTEGER	File type to Serach(bitmap) bit0:nomal file(video file) bit1:alarm file bit2:check post alarm bit3:check post warning bit4:break rule alarm bit5:break rule warning Bit6:lock file 一次可以查询多种类型数据的日历.The check is valid if the bit is set.
	CHANNEL	INTEGER	1-32(bit map, BIT0-BIT31 stand for channel 1-32, it is valid when the bit is set).It means all the channel if all the bits are set. Only bit0 and bit1 is valid now.
	STREAMTYPE	ENUM	0:sub stream. 1:main stream 2:mobile stream(mirror stream)
	QUERYTIME	STRING	1、This field is valid and can not be empty if the CALENDARTYPE is 1. The format must be xxxxxx, the first 4 bit stand for year, the last 2 bit stand for month. The base of month is 1. The last two bit is invlaid if the CALENEARTYPE is 2. E.g 201109 stand for September of 2011. (Notice:The 'valid' in Remark means it will must use the parse of the protocol, while 'invalid' means it will not be used in protocol parse.)
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

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RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CALENDARTYPE	ENUM	The same as request.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode. It is the same as it in the request.
	COUNT	INTEGER	The element number in CALENDER array. The COUNT is not fixed if the CALENDARTYPE is 1 or 2. The COUNT means how many days have record.

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	CALENDER[COUNT]	ARRAY	It is valid when CALENDARTYPE is 1 or two. CALENDER is an array, the make up of each element is YYYYMMDDXXXXXXXX, byte1-4 stand for year,byte5-6 stand for month,byte 7-8 stand for day, byte 9-16 stand for file type.. Byte 9~byte16 is used to store the hexadecimal string for a 32 bit integer. This 32 bit data has the same meaning as the FILETYPE in request command. Bit0 to bit 31 means 32 kind of different data type want to check. It is valid if the bit is 1. The sub script of the CALENDER means day in a month, and month in a year. 1、CALENDARTYPE 为 1、2 时每一天的录像记录表示如下： 2011090100000001:2011 年 9 月 1 号有普通录像文件。如果不知道该天的录像文件类型则第 9-第 16 个字节全为 0，否则如果知道具体录像就必须对应 bit 位置 1。 Notice:In order to parse easy, each element has the same length.
	CHANNEL	INTEGER	The channel number that the device supported.
	CHCALENDER[COUNT]	ARRAY	It is valid if CALENDARTYPE is 3 or 4. COUNT means the number

			of the days. Each element point to the record status of a day(3.4.2.5.1 the record status of each channel in each day)

3.4.2.5.1 The record status for each channel in each day.

NAME	TYPE	RANGE
DAY[N]	ARRAY	N is the channel number,each element stand for the record status of a channel. The element is a 32bit bit map. The value of each bit is the same as the request command. DAY is the result of the search, the format is ”YYYYMMDD”. E.g. 20140904:[null,null,null,1] means the channel 4 has video record in september 4th of 2014.

3.4.2.6 Search(record)

This search has two limits:1. The response speed of the location search. 2. The data size need to transport. The response for one request may be split to many part. It required that the device must response the next search request after finis of the one before from the same user. Other wise, there will be errors.

MODULE	STORM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	QUERYFILELIST		REQUEST-RESPONSE
PARAMET	NAME	TYPE	RANGE

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ER	FILETYPE	INTEGER	The bit set to search file type: bit0:Normal file(video file, distinguish stream type) bit1:alarm file(video file) bit2：check post alarm bit3：check post warning bit4：break rule alarm bit5：break rule warning More than one data type can be used to search in a search request. It is valid if the bit is set.
	STREAMTYPE	ENUM	0:sub stream 1:main stream 2:mobile stream(mirror record) The field is valid only when the FILETYPE is 0 or 1.
	CHANNEL	INTEGER	1-32 (bit set, BIT0-BIT31 stand for channel 1 to channel 32. The channel is valid only when the bit is set.)
	STARTTIME	STRING	1-14 (20110928090909:stand for 09:09:09 at 28 of September 2011.
	ENDTIME	STRING	1-14 The default is from STARTTIME's 23 to 23:59:59, if this field is not exist or set with empty value.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

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RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode. It is the same to the EARIAL part of the request message.
	SENDFILECOUNT	INTEGER	The file number of this send.
	SENDTIME	INTEGER	There may be more than one response to the request when send a request package. The reasons are: 1. The device can search quickly by the parameter. 2. The network layer will split the send when the data size is to big. This field means the upload times of a request before this response. The value of this field will auto add 1 after an upload. The value of this field is initialized to 1 when received a request.
	LASTRECORD	INTEGER	Is this the last response of a request. 0:It is not the last one. 1:It is the last one. It means the current search is finished if the field is 1.

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	RECORD[SENDFILECOUNT]	ARRAY	1-30 record time quantum (20110928090909-20110929101010: stand for to record from 09:09:09 2011-09-28 to 10:10:10 2011-09-29, the research can step over day) Picture name (20110928090909.JPG), transaction record, the number of element is SENDFILECOUNT
	FILETYPE[SENDFILECOUNT]	ARRAY	The file type of each file. It is matched to RECORD. Has the same meaning with the FILETYPE field in request package. There will be only one bit is valid in this field when response. It is valid if the bit is set, the size is SENDFILECOUNT.
	RECORDSIZE[SENDFILECOUNT]	ARRAY	This field means file size if the file type is file or picture. It is matched to the RECORD, and the size is SENDFILECOUNT.
	RECORDID[SENDFILECOUNT]	ARRAY	The record file has a ID, which is used to distinguish the file in each time quantum. The PC can save this but no need to display it. The PC can distinguish the record files in the same time quantum. The format is %c-%u-%u 。The size is SENDFILECOUNT

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	RECORDCHANNEL[SENDFILECOUNT]	ARRAY	The channel number of each file. It is invalid if there is no this field. It mapped to RECORD ,the size is SENDFILECOUNT
	LOCK[SENDFILECOUNT]	ARRAY	Whether the file was locked, it mapped to the file list: 0:No lock 1:locked

3.4.2.7 Lock and Unlock

MODULE	STORM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	SETLOCK	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	LOCKTYPE	ENUM	0:Unlock 1:Lock Use only one type in a single operation.
	FILETYPE	ENUM	0:Video file(The only one supported now) 1:Picture 2:Clock in log.
	CHANNEL	ENUM	Channel number(bit map) bit0-bit31 stand for chanel 1 to channel 32. It is valid when the bit is set.
	STREAMTYPE	ENUM	0:Sub Stream 1:Main Stream 2:Mirror Stream
	STIME[N]	ARRAY	The begin time of lock or unlock. The format is 20110928090909,N stand for the number of the time quantum.

	ETIME[N]	ARRAY	The end time of lock or unlock. The format is 20110928090909, N stand for the number of time quantum. It matched with STIME one by one, and the ETIME and STIME can not have intersection. Each time quantum can not have the intersection if it have multi-time quantum. The time quantum can not in two days, and the ETIME must bigger than STIME.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.The value is the same as the SERIAL part in request.

3.4.2.8 Calender search of log

MODULE	STORM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETCALENDARLOG		REQUEST-RESPONSE
PARAMET	NAME	TYPE	RANGE

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ER	CTYPE	ENUM	1:Search log calender of a whole month by a given time of year and month. 2:Search log calender of a whole year by a given year. 3:Search all the log from the device.
	CMDTYPE	ENUM	Command Type: The default search is log if this field is not exist. 0:log file; 1:black box file.
	QTIME	STRING	1.This field is valid and can not be empty if the CTYPE is 1.This field must use the format xxxxxx that the first 4 bit stand for year and the last bit stand for the month.The month is based on 1. The last two bit is invalid if the CTYPE is 2. E.g:201109 stand for September of 2011. 2.This field can be invalid if the CTYPE is 3. (Notice:The 'valid' in Remark means it will must use the parse of the protocol, while 'invalid' means it will not be used in protocol parse.)
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CTYPE	ENUM	The same as request.
	CMDTYPE	ENUM	The same as request.

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	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode. It is the same as it in request.
	COUNT	INTEGER	The element number in array of field CALENDER. The COUNT is 1 if the CALENDARTYPE is 1. The COUNT is 12 if the CALENDARTYPE is 1. The COUNT is not sure if CALENDARTYPE is 3, and it means the days that has logs.
	CER[COUNT]	ARRAY	CER is an array, each element is in the format of YYYYMMXXXXXXXX,The Byte1 to 4 stand for year, the byte 5 and 6 stand for month, the byte 7 to 14 stand for day count that has logs. The 7-14 byte is a 32 bit INTEGER in hexadecimal string format, The left and the highest bit is fixed 0, the other 31 bit stand for the 31 to the first day of a month. It is valid if the bit is set. E.g:CER[0]=2012093FFFFFFF stand for there has logs from the first day to the 31 day of September in 2012. Note:The length for each element is equal for it is easier to parse.

3.4.2.9 Get the file size of a given time quantum

The conditions to get files must be uniformity to each channel. The search conditions can not different from each channel.

MODULE	STORM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	GETFILESIZEBYTIME	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	DATATYPE	INTEGER	Data Type: 0:Video(Default value) 1:black box file.
	STREAMTYPE	ENUM	0:sub stream record. 1:main stream record. 2:mirror record.
	RECORDTYPE	INTEGER	Record Type:(bit map, it is valid if the bit is set.) Bit0:Alarm record. Bit1:Normal record.
	STIME	STRING	14 Bytes (Year,month,day,hour,minute,second:20110928090909),This field can not keep empty.
	ETIME	STRING	14 Bytes (Year,month,day,hour,minute,second:20110928090909),This field can not keep empty.
	CHANNEL	INTEGER	Channel number, bit map: bit0-bit31 stand for channel 1 to channel 32.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.The same as request.
	TOTALSIZE	ULONG ULONG	64bit unsigned integer, the total size of the selected file.

3.4.3 Recording module

3.4.3.1.1 sub-stream network parameters

paramNetTransferSetting_t sub stream transmitting's JSON group	Atomic data structure	Remark
SUBSTRNET	TOTALBW	Total bandwidth, unit :Kbps
	SUBSM	Sub-stream mode (DVR) 0: fixed mode 1: adapt mode

3.4.3.1.2 encoding parameters

The JSON combination for VIDEOENCODE	Atomic data structure	Remark
VEC	BR	bitrate (value) Unit:Kbps.
	VEN	The Enable switch for video encode. 0: disable 1: enable
	AEN	Audio encoding switch
	FR	Frame rate: PAL:1~25; NTSC:1~30 Special: HD 720p PAL/NTSC can be 1~60
	QLT	Quality: 1-best ; 2-better 3-good 4- normal

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	RST	Resolution: 0-CIF 1-HD1 2-D1 3-QCIF 4-QVGA 5-VGA 6-720P 7-1080P
	BRM	CBR or VBR: 0-CBR; 1- VBR

3.4.3.1.3 Parameter for video output

JSON combination for PARAMAUDIO	Atomic data structure	Remark
VOUTP	BCH[N]	Bound channel number, is a JSON array. N stand for the index: 0:channel 1, 15:channel 16 E.g BCH[0] = 1.
	PVE	Live view enable switch, is bit map. This field is an INTEGER, bit0-bit31 stand for channel 1 to channel 32. The channel is valid if the bit is set.
	POLLT	The Interval of channel cycling video output. The unit is :s If the value is 0, it means do not cycling.
	SM	3.4.3.1.11 Parameter for edeg distance of video out put.
	MVM	The switch for local live view channel, bit map. 1:enable 0:disable

3.4.3.1.4 Video image parameters

PARAMVIDEOIMAGE video	Atomic data structure	Remark

image parameters' JSON group		
VIP	CRM	Chroma (0-63) integer
	LUM	Brightness (0-63) integer
	CONT	Contrast (0-63) integer
	SAT	Satuation (0-63) integer
	SPN	Sharpness (0-63) integer
	ISF	Upside down 0:No 1:Yes
	ISM	Mirror image 0:No 1:Yes
	LFQ	Light frequency 50 or 60 (integer) 50: is 50HZ, 60:is 60HZ

3.4.3.1.5 Record Parameter for time schedule

JSON combination for VIDEO	Atomic data structure	Remark
VPLAN	RSI[7][16]	3.4.3.1.10 Parameter for schedule record, is a two-dimension array.The first dimension is weekday(0:,1:,2:,3:,4:,5:,6:), the second dimension stand for record time quantum, each quantum use one element. The valid time quantum must storage from index 0.There are 16 record time quantum from 0 to 15 at most in a day. The weekday need keep blank if that day has no record schedule.The record schedule subscript need be continuous if that day has record schedule. The valid part make a continuous block, and the invalid part

		make a continuous block.

3.4.3.1.6 Record parameter

JSON combination for RECORDPARA	Atomic data structure	Remark
REP	EN	Record Switch 0:OFF(Manual) 1:ON
	FT	Record Format 0:Streamax file type 1:AVI format
	RM	Record Mode 0:Power on Record 1:Schedule Record
	ISA	Audio Record 0:Do not record. 1:Record
	MRS	If the Manual record mode is enabled before last power off. 0:OFF 1:ON
	VPLAN	Record schedule 3.4.3.1.5 Parameter for time schedule record parameter.
	VOL	Used for enlarge the audio from the IPC. Range:0~7.(integer)

3.4.3.1.7 OSD Parameter(DVR,The red part if for MDVR)

Location parameter for Display the status data in the stream from IPC,this context is send by command in3.4.3.5

JSON combination for OSD	Atomic data structure	Remark
OSD	TMEN	Enable time overlying. 0:No 1:Yes
	CHEN	Enable channel name overlying: 0:No 1:Yes
	TX	X position to overlying time.
	TY	Y position to overlying time.
	CHX	X position to overlying channel number.

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	CHY	Y position to overlying channel number.
	CHNAME	Channel number,coded in UTF8 string, less than 32 bytes.
	SE	Enable speed overlying. 0:No 1:Yes(Added MDVR parameter from DVR)
	GE	Enable GPS overlying. 0:No 1:Yes(Added MDVR parameter from DVR)
	VE	Enable Vehicle number overlying. 0:No 1:Yes(Added MDVR parameter from DVR)
	SX	X position to overlying speed.
	SY	Y position to overlying speed.
	GX	X position to overlying GPS.
	GY	Y position to overlying GPS.
	VX	X position to overlying Vehicle number.
	VY	Y position to overlying Vehicle number.
	COSD[2]	7.21.1 Encode OSD parameter, preview 2 manual defined overlying parameter.
	DE	Enable Device Serial number display. 0:Do not display 1: display.
	DX	X position to overlying device serial number.
	DY	Y position to overlying device serial number.

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3.4.3.1.8 region parameter.

JSON combination for AREA	Atomic data structure	Remark
AREA	X	A region is described by a rectangle with the point of the top left point and the width and the height of the rectangle. The X co-ordinates of the top left point.
	Y	The Y co-ordinates of the top left point.
	W	The width of the rectangle.
	H	The height of the rectangle.

3.4.3.1.9 Parameter for Camera cover.

JSON combination for PARAMVIDEOCOVER	Atomic data structure	Remark
VCP	EN	Enable region cover 0:OFF 1:ON
	AREA[N]	3.4.3.1.8 JSON array for region description. Means number of regions in a channel.

3.4.3.1.10 Parameter for record schedule time quantum.

JSON combination for RecordScheduleItem.	Atomic data structure	Remark
RSI	S	The begin time of the record in a day . Unit:Second
	E	The end time of the record in a day. Unit:second
	T	Record type: 0:Normal record 1:Alarm record

3.4.3.1.11 Parameter for edge distance of the video display.

JSON combination for ScreenMargin.	Atomic data structure	Remark

SM	UL	Left distance
	UR	Right distance
	UT	Top distance
	UB	Bottom distance

3.4.3.1.12 Parameter for video single loop.

JSON combination for AutoSeq.	Atomic data structure	Remark
AS	UM	Video output mode: 0: single channel display. 1:2x2 four channel display 2:3x3 nine channel display. 3:4x4 16 channel display.
	DT	The delay time for rotation display.
	CHN[N]	Channels to rotation output.The index of the array means the order. The value of the array: 0xFF: invalid 0:none 1:channel 1 2:channel 2 .... N: channel N There may have more than one channel in a display.

3.4.3.1.13 Video auto loop task.

JSON combination for AutoSequence.	Atomic data structure	Remark
ASQ	ASN	The auto loop is valid.
	ASM	Auto loop mode: 0: Single channel 1: four channel 2: 8 channel 3: 16 channel 4: user defined

	AS[N]	3.4.3.1.12 parameters for video auto loop. The task number of the loop task is more than one.
	SW	Enable loop display: 0:Off 1:On

3.4.3.1.14 Attribute of the Camera

JSON combination for CameraAttributeParam.	Atomic data structure	Remark
CAP	WB	White balance(contextual model) 0:Auto 1:Indoors 2:Outdoors
	DN	Day night mode: 0:Auto 1:Night mode 2:Day mode.
	EM	Exposure mode: 0:Auto 1:Manual 2:Manual_1/50 3:Manual_1/120 4:Manual_1/250 5:Manual_1/500 6:Manual_1/1000 7:Manual_1/2000 8:Manual_1/4000 9:Manual_1/10000 20:Manual define range 21:User defined value.
	EV	Exposure time: Unit:millisecond It is valid if u8ExposureMode=21
	EMIN	The lowest value in exposure time range, it is valid if the u8ExposureMode=20

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	EMAX	The highest value in exposure time range.
	LF	Prevent blink. 1:50HZ 2:60HZ 3:Outdoors
	BL	Backlight compensation 0:standard 1:low 2:middle 3:high
	BLV	Backlight compensation Value: Range:0~63
	GM	Gain mode
	GV	Gain upper limit
	ISF	Enable image invert 0:Disable 1:Enable
	ISM	Enable mirror 0:Disable 1:Enable
	AI	Enable Auto aperture 0:Disable 1:Enable
	LT	Enable infrared ray: 0:Auto 1:Enable 2:Disable
	RT	Video rotation: 0:Disable 1:Rotation 90° 2:Rotation 180°(Not implemented) 3:Rotation 270°
	LDCE	Enable distortion correction: 0:Disable 1:Enable It is remedial strength, if the camera is has zoom function.The range is:0～255
	WDRE	Enable Wide Dynamic

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		Range: 0:Auto(default value) 1:Enable 2:Disable
	WDRS	WDR strength Range:0-255(default is 128)
	HEN	Strong Light inhibit Enable: 0:Disable(default value) 1:Enable
	SM	Special use(indoors and outdoors). 0:indoors mode(default) 1:outdoors mode

3.4.3.1.15 Camera number of the channel.

JSON combination for paramChtoCameraNum	Atomic data structure	Remark
CTCN	CCN[N]	The camera number of the channel, the index of the array means the channel number and the value of the array element means number of the camera(0~31).

3.4.3.1.16 The spot loop change task is the same as 3.4.3.1.13

JSON combination for SpotSequence	Atomic data structure	Remark
STSQ	ASN	Parameter for video polling
	ASM	Polling mode 0:single channel 1:4 channel 2:8 channel 3:16 channel 4:user defined
	AS[N]	3.4.3.1.12 Parameter for video auto loop, the task number may more than one.

3.4.3.1.18 Audio encode type

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JSON combination for paramAudioSetting_t	Atomic data structure	Remark
ASP	AT	Encode format: 0:g.711alaw; 1:g.711ulaw; 2:ADPCM; 3:g726; IPC:default 0, other default 2
	S	Sample rate: 0:8K(default value) 1:12k 2:11025 3:16k 4:22.05K 5:24k 6:32k
	BW	Bit width: 0:16bit(default value) 1:8bit 2:32bit
	SM	Audio channel mode: 0: monophony 1: stereo

3.4.3.3 get I frame Actively

MODULE	AVSM(AVSTREAMMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETIFRAME		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(service provider)

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	PT	CHAR	see PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	STREAMNAME	STRING	1-100
	STREAMTYPE	ENUM	0:Sub stream 1:Main stream 2:mobile stream
	CHANNEL	INTEGER	1-32(hexadecimal format, bit 0 to bit 31 stand for channel 1 to channel 32. It is valid if the bit is set)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.3.4 Parameter for images

MODULE	AVSM(AVSTREAMMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SETVIDEOPARAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CHANNEL	INTEGER	Channel mask Hexadecimal format, bit 0 to bit 31 stand for channel 1 to channel 32.It is valid if the bit is set.
	VIP[N]		
	SVIP[N]		7.22 Parameter for image display(for MDVR)
RESPON	NAME	TYPE	RANGE

SE	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CHANNEL	INTEGER	Channel mask Hexadecimal format, bit 0 to bit 31 stand for channel 1 to channel 32.It is valid if the bit is set.

3.4.3.5 set the OSD display context in real time(MDVR)

NVR need overlying some OSD data in real time if the IPC is connected. Such as GPS, speed. Those data do not need to store, just overlying in real time will be ok.

MODULE	AVSM(AVSTREAMMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	SETOVERLAY		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CHANNEL	INTEGER	Channel mask Hexadecimal format, bit 0 to bit 31 stand for channel 1 to channel 32.It is valid if the bit is set.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	L	INTEGER	Language
	G	STRING	GPS information overlying This information is the same as the overlying in NVR. It contain the display format. It will do not need to overlying this Information if this field is not exist. Use UTF-8 encode.

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	V	STRING	Vehicle number This information is the same as the overlying in NVR. It contain the display format. It will do not need to overlying this information if this field is not exist. Use UTF-8 encode.
	S	STRING	speed
	OE[M][N]		3.4.3.5.1 JSON combination for OSD overlying information. N stand for there are N channel, this will make it easier to parse the channel mask to make sure the information to overlying. This field is extend overlying field, it means no extend overlying data if this field is not exist. It must needed to overlying if this field is exist. M stand for how many extend data are there, the index of the array will match the overlying in parameter one by one. The max value of M is 2 now.
	ID	STRING	The serial number of the MDVR The length is 32 bytes.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CHANNEL	INTEGER	Channel mask Hexadecimal format, bit 0 to bit 31 stand for channel 1 to channel 32.It is valid if the bit is set.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode. It is the same as it in request.

3.4.3.5.1 Parameter for the OSD information to overlying(MDVR use only)

Parameter for the OSD information to overlying.	Atomic data structure	Remark

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OE	EXTID	The same as EXTID part of overlying parameter in ”7 overlying parameter ”跟“7 MDVR. INTEGER。
	EXTSTR	The information to overlying, use UTF-8 encode. The string need less than 32 bytes.
	EXTLEN	The length of the overlying string. The data type is INTEGER.

3.4.3.6 Set the video encode parameter dynamically.

MODULE	AVSM(AVSTREAMMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SETAUTOENCODE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CHANNEL	INTEGER	The real channel number, base on 0.
	STREAMTYPE	ENUM	0: sub stream. 1: main stream 2: mobile stream
	FRAME	INTEGER	Frame rate: Range:1-30 The value is integer.
	RST	INTEGER	Resolution: 0:CIF 1:HD1 2:D1 3:QCIF 4:QVGA 5:VGA 6:720P 7:1080P
	BITRATE	INTEGER	In order to reduce the times set bit rate, the unit to change the bit rate is 1kbs.

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	LEVEL	INTEGER	Level positive integer

3.4.3.7 Get the supported resolution of each sub stream channel.

MODULE	AVSM(AVSTREAMMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETSUPPORTFRAME		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
PARAMETER	NAME	TYPE	RANGE
	RST[N]	INTEGER	Resolution, bit map. It is valid if the bit is set. bit0:QCIF(176*144) bit1:WQCIF(232*144) bit2:QVGA(320*240) bit3:CIF(352*288) bit4:WCIF(464*288) bit5:HD1 (704*288) bit6:WHD1(928*288) bit7:VGA(640*480) bit8:D1(704*576) bit9:WD1(928*576) bit10:720p(1280*720) bit11:960p(1280*960) bit12:1080p(1920*1080) bit13:3mp(2048*1536) bit14:5mp(2592*1920), N stand for the channel number.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

3.4.4 Network server configuration module.

3.4.4.1.1 IP parameter

JSON combination for IP address.	Atomic data structure	Remark
PIP	IPADDR	IP address, use Dotted decimal notation(IPv4 or IPv6), string.
	SUBMASK	Sub mask, use Dotted decimal notation string.
	GATEWAY	Gate way, use dotted decimal notation string.

3.4.4.1.2 DNS parameter

JSON combination for DNS parameter	Atomic data structure	Remark
DNS	PDNS	Main DNS, use Dotted decimal notation string.
	ADNS	Secondly DNS, use Dotted decimal notation string.

3.4.4.1.3 Parameter for Ethernet(cable net)

JSON combination for cable net.	Atomic data structure	Remark
ETHERNET	IPMODE	IP gain mode: 0:static IP1 1:DHCP
	DNSMODE	Enable auto get address of DNS server. 0:Manual 1:Auto
	PIP	IP parameter, see 3.4.4.1.1
	DNS	DNS parameter, see 3.4.4.1.2

3.4.4.1.4 WIFI parameter

JSON combination for WIFI parameter.	Atomic data structure	Remark
WIFI	ENABLE	Enable WIFI: 0:Disable 1:Enable

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	ECRYPTTYPE	WIFI encrypt mode: 0：WE_NONE 1：WE_WEP 2：WE_WPA
	IPMODE	IP gain mode: 0:static IP1 1:DHCP
	DNSMODE	Enable auto get address of DNS server. 0:Manual 1:Auto
	ESSID	The ESSID of the connected or to be connected Hot point. It is a string.
	PWD	The password to connect AP. It is a string.
	PIP	IP parameter, see 3.4.4.1.1
	DNS	DNS parameter, see 3.4.4.1.2
	AP	Name of the AP, used for to start up the AP.
	APM	WIFI mode： 0:AP mode(default value). 1:Client mode.

3.4.4.1.5 ADSL Parameter

JSON combination for ADSL parameter	Atomic data structure	Remark
ADSL	ENABLE	Enable ADSL 0:Disable 1:Enable
	DIALDEVICE	Dial device 0:ETHERNET(cable net) 1：WIFI(wireless)
	USERID	Account
	PWD	User name

3.4.4.1.6 3G Parameter

JSON combination for 3G parameter.	Atomic data structure	Remark

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3G	ENABLE	Enable 3G 0:Disable 1:Enable
	NETTYPE	MODULE3G_GPRS = 0, MODULE3G_EDGE, MODULE3G_CDMA, MODULE3G_EVDO, MODULE3G_WCDMA, MODULE3G_TDSCDMA, NONE,
	ACTIVEMODE	Network connection mode: 0: Auto connect. 1:Manual active(Phone call,Message)
	APN	APN string
	USERID	Account string
	PWD	Password string
	SERVERCODE	Server code string
	PIN	SIM PIN code, is a string.

3.4.4.1.7 NTP Parameter

JSON combination for NTP Parameter.	Atomic data structure	Remark
NTP	NTPSWITCH	Enable NTP 0:Disable 1:Enable
	INTERNELTIME	Interval to calibrate the time. Unit:minute.
	SERVERNAME	NTP server address(Manual input), is a string.

3.4.4.1.8 DDNS Parameter

JSON combination for DDNS parameter.	Atomic data structure	Remark
DDNS	DDNSSWITCH	Enable DDNS 0:Disable 1:Enable

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	DDNSTYPE	DDNST_3322 = 0, DDNST_DYNDNS, DDNST_LTSCCTV, DDNS_LOREX, DDNS_DNSEXIT, DDNS_QSEE, DDNS_JSJDVR, DDNS_CCTVGOV
	HOSTNAME	Host name string.
	USERID	User ID string
	PWD	Password string.
	PORT	Some DDNS need define the port number.
	DE81	88110 Server enable: 1:use default 0:user define
	SNAME	88110 User defined server address

3.4.4.1.9 Email parameter

JSON combination for EMAIL parameter	Atomic data structure	Remark
EMAIL	EMAILSWITCH	Enable Email: 0:Disable 1:Enable
	SSLSWITCH	Enable SSL: 0:Disable 1:Enable
	SMTPSERVER	STMP server of the sender mailbox. It is a string.
	SENDERNAME	Mailbox of the sender. It is a string.
	SENDERPWD	Password for the mail box of the sender. It is a string.
	SSERVERPORT	The port number of the mail server, it is a string.
	SENDINTERVAL	Interval of the send
	RECVLIST[10]	Mail box for receiver. It is a string. each element stand for a receiver.
	SENDERUSER	The sender name.

3.4.4.1.10 UPNP Parameter

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JSON combination for UPNP	Atomic data structure	Remark
UPNP	STARTPORT	The begin port number. (for port number limit)
	ENDPORT	The end port number.
	ENABLE	Enable UPNP 0:Disable 1:Enable

3.4.4.1.11 Network port

JSON combination for paramPortSetting_t parameter	Atomic data structure	Remark
PORT	PORTLIST[N]	Use port set to describe PORTLIST, since the device may have more than one port. It is an array, the index of the array means the function of the port. The index: 0:WEB 1:Media 2:RTSP N stand for there are N ports, it defined by usage.

3.4.4.1.12 USEDWIFI Parameter

JSON bombination for USEDWIFI	Atomic data structure	Remark
USEDWIFI	PFD	Is WIFI the first choice: 0:No 1:Yes
	ETYPE	WIFI encrypt mode 0：WE_NONE 1：WE_WEP 2：WE_WPA
	IPM	How to obtain IP: 0:Static IP 1:DHCP
	DNSM	How to obtain DNS: 0:Manual set 1:Auto get
	ESSID	ESSID to connect to the AP, it is a string

	PWD	Password to connect to the AP, it is a string
	PIP	IP parameter, see 3.4.4.1.1
	DNS	DNS parameter, see 3.4.4.1.2

3.4.4.1.13 NVRSUBWORK parameter

JSON combination for NVRSUBWORK	Atomic data structure	Remark
NSW	IP	The IP pool that Nvr to distribute to front device, the begin IP.
	SUBM	Sub network mask
	DGW	Default gate way for local network

3.4.4.1.14 NVRRMOTENETWORK parameter

This parameter is used for to distribute the IP for the front device and the front device will store it.

JSON combination for NVRRMOTENETWORK	Atomic data structure	Remark
RNW	IP	The IP pool that NVR to distribute to front device, the begin IP.
	SUBM	Sub network mask
	DGW	Default gate way for local network

3.4.4.3 check network function

MODULE	NWSM(NETWORKSERVICEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	TESTFUN		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	EMAIL	OBJECT	3.4.4.1.9 email parameter

	DDNS		3.4.4.1.8 DDNS parameter
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.4.4 get the AP list

MODULE	NWSM(NETWORKSERVICEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETWIFIAPLIST		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	APICOUNT	INTEGER	The number of the AP that device can detect. Integer number.
	APLIST[N]	OBJECT	The list array of AP, each element is in JSON format. The list means the AP that device searched. 3.4.4.4.1 WIFI AP list

3.4.4.4.1 WIFI AP LIST

JSON combination for WIFI AP list	Atomic data structure	Remark
APLIST	ESSID	ESSID of WIFI
	ENCRYPT	WIFI encrypt mode 0:WE_NONE 1:WE_WEP 2:WE_WPA

	QUALITY	signal strength integer
	SAVED	0:The ESSID pointed AP had not been configured(WIFI list auto detected) 1:The ESSID pointed AP had been configured(by manual modify or already saved in flash)
	SCANNED	1:The WIFI list that device auto detected 2:The not detected WIFI but saved in device.

3.4.4.5 Get the configuration of the selected AP

MODULE	NWSM(NETWORKSERVICEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETAPCONFIG		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	ESSID	STRING	ESSID of the WIFI
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	ESSID	STRING	ESSID of the WIFI
	PWD	STRING	password
	IPMODE	INTEGER	How to get IP: 0:Static IP 1:DHCP
	DNSMODE	INTEGER	How to get DNS 0:manual set 1:auto obtain
	PIP	OBJECT	IP parameter, see 3.4.4.1.1

	DNS	OBJECT	DNS parameter, see 3.4.4.1.2

3.4.4.6 connect or configure the selected AP

MODULE	NWSM(NETWORKSERVICEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	CONFIGAP		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	ESSID	STRING	ESSID of the AP
	PWD	STRING	password
	ENCRYPT		Encrypt mode: 0:WE_NONE 1:WE_WEP 2:WE_WPA
	IPMODE	INTEGER	How to get IP: 0:Static IP 1:DHCP
	DNSMODE	INTEGER	How to get DNS 0:Manual set 1:Auto get
	PIP	OBJECT	IP parameter, see 3.4.4.1.1
	DNS	OBJECT	DNS parameter, see 3.4.4.1.2
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.4.7 get the detail information of the connected AP

MODULE	NWSM(NETWORKSERVICEMODEL)	
SESSION	TYPE	RANGE

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	STRING		
OPERATION	NAME		TYPE
	GETCONSTATEORINFO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	ESSID	STRING	ESSID of WIFI,can keep space.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	Error code 0X00000000, 0X0000003C, 0X00000047-0X0000004A
	ERRORCAUSE	STRING	1-100
	ESSID	STRING	ESSID of WIFI
	ENCRYPT	INTEGER	Encrypt mode of WIFI 0：WE_NONE 1：WE_WEP 2：WE_WPA
	SIGLVL	INTEGER	Signal strength 0-5
	SPEED	INTEGER	Not used now
	PIP	OBJECT	IP parameter, see 3.4.4.1.1
	DNS	OBJECT	DNS parameter, see 3.4.4.1.2

3.4.4.8 Auto inform the upper level the connection status of the AP.

MODULE	NWSM(NETWORKSERVICEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SENDCONSTATEORINFO		NOTIFICATION
PARAMET	NAME	TYPE	RANGE

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ER			
	ERRORCODE	ENUM	Error code: 0X00000000, 0X0000003C, 0X00000047- 0X0000004A
	ERRORCAUSE	STRING	1-100
	ESSID	STRING	ESSID of WIFI
	ENCRYPT	INTEGER	Encrypt mode of WIFI 0:WE_NONE 1:WE_WEP 2:WE_WPA
	SIGLVL	INTEGER	Signal strength: 0-5
	SPEED	INTEGER	Not used now
	PIP	OBJECT	IP parameter, see 3.4.4.1.1
	DNS	OBJECT	DNS parameter, see 3.4.4.1.2

3.4.5 Device management module

3.4.5.1.1 DST parameters

DST parameters' JSON group	Atomic data structure	Remark
DST	SW	Enable DST or not 0: Disable; 1: Enable
	DSTM	DST work mode 0: default(from SMON to ES) 1: User define mode 2: User defined Year/Month/Day (from STARTTIME to ENDTIME)
	DSTS	DST offset, unit: hour
	SMON	Start month (0 ～ 11) Integer

	SWEEK	Start week, (0: 1st week; 1:2nd week; 2: 3rd week; 3: 4th week; 4: last week) integer
	SWIND	Weekday (0: Sunday; 1-6 from Monday to Saturday) Integer
	EMON	End month (0～11) Integer
	EWEEK	End week (0: 1st week; 1:2nd week; 2: 3rd week; 3: 4th week; 4: last week) integer
	EWIND	Weekday (0: Sunday; 1-6 from Monday to Saturday) Integer
	SH	DST start hour
	SM	DST start minute
	SS	DST start second
	EH	DST end hour
	EM	DST end minute
	ES	DST end second
	STARTTIME	Start date: year/month/day,UTC time, for user define mode
	ENDTIME	End date: year/month/day,UTC time, for user define mode

3.4.5.1.2 Time parameters

paramTimeSetting_t JSON group	Atomic data structure	Remark
TIMEP	DATEM	Date format 0: MM/DD/YY 1: YY-MM-DD 2:DD-MM-YY
	TIMEM	Time format 0:24 Hours 1: 12 Hours

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	TIMEZ	Time zone, format is string which can contain digit, -, and letters. -720A=(GMT-12:00)INTERNATIONAL DATE LINE WEST -660A=(GMT-11:00)MIDWAY ISLANDS,SAMOA -660B=(GMT-11:00)UNIVERSAL TIME-11 -600A=(GMT-10:00)HAWAII -540A=(GMT-09:00)ALASKA -480A=(GMT-08:00)PACIFIC TIME(US & CANADA) -480B=(GMT-08:00)BAJA CALIFORNIA -420A=(GMT-07:00)CHIHUAHUA,LA PAZ,MAZATLAN -420B=(GMT-07:00)MOUNTAIN TIME(US&CANADA) -420C=(GMT-07:00)ARIZONA -360A=(GMT-06:00)GUADALAJARA, MEXICO CITY -360B=(GMT-06:00)SASKATCHEWAN -360C=(GMT-06:00)CENTRAL TIME(US & CANADA) -360D=(GMT-06:00)CENTRAL AMERICA -300A=(GMT-05:00)BOGOTA,LIMA,QUITO -300B=(GMT-05:00)EASTERN TIME(US & CANADA)

	DST	3.4.5.1.1 DST parameters

3.4.5.1.3 PTZ parameters

PARAMPTZ parameters' JSON group	Atomic data structure	Remark
PTZP	PRO	PTZ protocol 0:PELCO-D 1:PELCO-P
	BRATE	Baud rate: integer 0:1200 1:2400 2:4800 3:9600
	ADDR	Address code: 0 ～ 255 integer
	IFL	IR switch 0: Auto 1: Normal ON
	EN	Enable: 0:OFF; 1: ON

3.4.5.1.4 Device authority function parameters

RIGHTPARAM JSON group	Atomic data structure	Remark
RIGHT	PB	Priority for remote play back. Hexadecimal, the max value is 0xFFFFFFFF, bit0-bit31 stand for channel 1 to channel 32. It is valid if the bit is set.
	BP	Back up(video download), hexadecimal, the max value is 0xFFFFFFFF, bit0-bit31 stand for channel 1 to channel 32. It is valid if the bit is set.
	PTZ	Priority for PTZ control, hexadecimal. The max value is 0xFFFFFFFF, bit0-bit31 stand for channel 1 to channel 32. The channel is valid if the bit is set.

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	RV	Remote real time video, hexadecimal. The max value is 0xFFFFFFFF. bit0-bit31 stand for channel 1 to channel 32.The channel is valid if the bit is set.
	LV	Device supervisory, in hexadecimal. The max value is 0xFFFFFFFF, bit0-bit31 stand for channel 1 to channel 32. The channel is valid if the bit is set.
	OP	Priority for operate, in hexadecimal. The max value is 0xFFFFFFFF. bit0:log priority bit1:reboot device bit2:storage manage bit3:device maintain bit4:device operate bit5:system set bit6:time set bit7:display set bit8:record set bit9:(reserved) bit10:stream set bit11:user configure bit12:alarm configure bit13:network configure bit14:PTZ configure It is valid if the bit is set.

3.4.5.1.5 System paramters

paramSystemSetting_t JSON group	Atomic data structure	Remark
SSP	VSA	video system: 0-PAL 1-NTSC
	HRL	High definition(Not defined)

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	VGA	VGA RT_800x600_60 = 0, RT_1024x768_60, RT_1280x1024_60, RT_1366x768_60, RT_1440x900_60, RT_720P60, RT_1080I60, RT_1080P60, RT_480P60, RT_576P60, RT_INVALID
	LANT	Language 0: Chinese (simplified) 1: English 2: Korean 3: Italian 4: German 5: Thai 6:Turkish 7: Portuguese 8: Spanish 9: Romanian 10:Greek 11: French 12: Russian 13: Dutch 14: Hebrew 15: Chinese (Traditional)
	SSS	Unit: second, quite menu time
	UID	Unit ID (string)
	SUG	Start up guide: 0: Invalid; 1: valid
	AOPCH	Audio out channel number
	DEVN	Device name
	DS	Device Serial: Has encrypt chip, Serial has 10 bytes, end with '\0'; Has no encrypt chip,serial is the UUID with out the '-' character, 32 bytes, ended with '\0'.

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	DPWD	Password for log in device: 1-32 bytes
	VOL	Volume (live view)
	DDN	0--CVBS, 1—VGA: display parameter
	NUSERM	Maximum user number The min value is 1 The default value is 4 The max value is defined by device type.
	WM	Enable watermark 0:Disable(default value) 1:Enable

3.4.5.1.6 Auto reboot maintainence

JSON combination for DEVMAIN	Atomic data structure	Remark
DEM	MODE	Mode: 0:never reboot 1:Monthly; 2:weekly; 3:daily
	DAY	Valid when MODE is 1 or 2. It means weekday(0 stand for Sunday) if the MODE is 2 It means date(1 stand for the first day of a month) if the MODE is 1.
	HOUR	Hour
	MIN	Minute

3.4.5.1.7 User authority parameters

JSON combination for USERIGTH	Atomic data structure	Remark
USERIGTH	RIGHT	3.4.5.1.4 user authority parameter
	UN	User name
	PW	Password
	UR	Role: 1: super user; 2: administrator; 3: user
	BM	Binding Mac: 0: no; 1: yes

	UMAC	It is valid if BM is 1, means the mac address string. E.g 11:11:11:11:11:11

3.4.5.1.8 Manually snapshot

MANUALSNAPPARAM JSON group	Atomic data structure	Remark
MSNAP	PRET	It means the time offset from the current time to snap if the system support prior snap. Unit:second Not supported now.
	INTV	Interval time between two snap when used in the snap of a time quantum.
	NUM	Image number for one snapshot
	DAT	Snap last time, ie, the snap is valid in this time quantum. It is single snap if this value less than INTV. Unit: second
	USER	Image process mode: bit0: send email; bit1: upload to ftp; bit2 for local storage
	CHN	Channel number: bit

3.4.5.1.9 Timer snapshot parameters

TIMESNAPPARAM JSON group	Atomic data structure	Remark
TSNAP	SW	Snapshot switch: 1: enable; 0: Disable
	STH	Snapshot start time: hour
	STM	Snapshot start time: minute
	STS	Snapshot start time: second
	INTV	The interval between two snap. Unit:second
	NUM	The number of the picture to be snapped in a single snap operation.

	DAT	Continue time for snap, the snap is valid in this time quantum. It is single snap if this value is less than INTV. Unit:second
	USER	The usage for napped picture. Bit0:email send Bit1:FTP upload Bit2:local store
	CHN	The bit map notation for snap channel.

3.4.5.1.10 Event snap parameters

JSON combination for EVENTSNAPPARAM	Atomic data structure	Remark
ESNAP	PRET	It means the offset of time to snap from the current time if the system support prior nap. Unit:second (Do not support now, the default value is 0)
	INTV	It means the interval between two snap in a time quantum. Unit:second
	NUM	The number of the picture to snap in a snap operate.
	SW	Enable event snap: 1:Enable 0:Disable
	SM	Mode for snap period of validity: 0:Delay DAT second from the time begin of the alarm. 1:Delay DAT second from the time end of the alarm.

	DAT	Continue time to snap, the snap is valid in this time quantum. It is single snap if this value is less than INTV. Unit:second
	USER	Usage of the snapped picture. bit0:send by email bit1:upload by ftp bit2:local store
	CHN	Channel number to snap, use bit map.

3.4.5.1.11 snap parameter

JSON combination for SNAPPARAM	Atomic data structure	Remark
SNAPP	MSNAP	3.4.5.1.8 parameters for manual snap
	TSNAP[N]	3.4.5.1.9 parameters for timed snap. N is stand for the number of the time quantum.
	ESNAP	3.4.5.1.10 parameters for event snap

3.4.5.1.18 Key parameter

JSON combination for paramKeySetting_t	Atomic data structure	Remark
KEYS	MAC	Mac address

3.4.5.1.22 user manage parameter

JSON combination for paramUserManager_t	Atomic data structure	Remark
UMP	UIF[N]	3.4.5.1.22.1 user information configure. N is the number of the user.

3.4.5.1.22.1 user information

JSON combination for paramOneUserInfo_t	Atomic data structure	Remark
UIF	UP	User priority sets, 128 bytes

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	UN	User name,character string. 32 bytes.
	PW	Password, character string of 32 bytes.
	UD	Is Active: 0:No 1:Yes
	UR	User role and level: 1:super user 2:Administrator 3:Normal user
	UME	Enabled MAC address bind: 0:Disable 1:Enable
	MAC	It is valid if UME is 1, six bytes, need bind MAC address.

3.4.5.1.23 PTZ control parameter.

JSON combination for paramPtzAgingTestFlag_t	Atomic data structure	Remark
PAT	SF	Enable auto trun: 0:ptz stop move(default value) 1:ptz start move
	MT	Turn delay time. Unit:hour Range:1~72(default:48)
	ST	Time to start turn Unit:second

3.4.5.3 控制云台(已实现)

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	CONTROLPTZ		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	CHANNEL	INTEGER	Channel number is a decimal number based on 0.
	PTZCMD	INTEGER	See PTZ control command sets**(6.2.3)**
	SPEED	INTEGER	Rotate speed. Range:1~64 It is valid when use the rotate command.
	PSP	INTEGER	Serial number for PTZ preset position.
	LINE	INTEGER	Serial number for cruise
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.5.3.1 Parameters for cruise

JSON combination for PTZPLAN	Atomic data structure	Remark
CRUISEP	CN[32]	Name of the cruise line, it is a string.
	PN[32]	Cruise is made of N(0<= N <32) Point. PN[N] = VALUE, the range of preset point is VALUE, the order of the road way is in increase order of subscript of PN. VALUE is from the current setting or saved parameter(less than 255)

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	CT[32]	The stay time on a preset point. Unit:second It mapped to the subscript of CT[N] and PN[N] one by one, means the delay time at the pre-set point.
	CP[32]	The speed when pass the preset point, is mapped to PN[N] one by one.

3.4.5.4 device manage

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SETCONTROLDEVCMD		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CMDTYPE	ENUM	0:reboot 1:standby 2:shutdown 3: Timer reboot 4:3G standby
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CMDTYPE	ENUM	0:reboot 1:standby 2:shutdown 3: Timer reboot 4:3G standby

3.4.5.5 online user manage

The user that have a higher priority will force the user have a lower priority off line.

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MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	MANAGEONLINE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CMDTYPE	INTEGER	0:offline
	USERNAME	STRING	Advanced user
	USERSESSION[N]	STRING	The user that was forced off line sessionid
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.5.6 Notice information to user from the service provider.

The user need be noticed if the user was forced offline.

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	NOTICEUSERINFO		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	USERNAME	STRING	User name for Advanced user
	USERSESSION	STRING	The user was forced offline session id
	ERRORCODE	ENUM	The ERRORCOCE here is not for error, but for a result.
	ERRORCAUSE	STRING	1-100, see error code description.

3.4.5.7 Get user priority information

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETUSERRIGHTINFO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	USERIGTH[N]		3.4.5.1.7 user priority parameters, use array to describe, N is the max number of the user(used for DVR)
	UIF[N]		7.8.1 user information parameters(used for MDVR)

3.4.5.8 User authority management

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	MANAGEUSERCMD		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	MANAGECMD	INTEGER	0:Add user 1:Edit user 2:Delete user

Streamax-N9M Network communication protocol

	USERNAME	STRING	1-50bytes The original user name to be modified.
	ADDTIME	STRING	1-32(UTC)，It is valid if the MANAGECMD is 0.
	EDITTIME	STRING	1-32(UTC)，It is valid if the MANAGECMD is 0.
	USERIGTH		3.4.5.1.7 user priority parameters. It is valid if the MANAGECMD is 0. The parameter of this field can be the current operate user(used for DVR)
	UIF		7.8.1 user informaoton parameter(used for MDVR)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.5.9 Online user display

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETUSERINFO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CURRENTCOUNT	INTEGER	Total number of the online user.

	USERINFO[CURRENTCOUNT]	OBJECT	3.4.5.9.1 parameters for the online user information display

3.4.5.9.1 Parameter for user information display

JSON combination for the USERINFO	Atomic data structure	Remark
USERINFO	UN	User name It is a string
	UID	Session id of the user(Do not display but only for distinguish the different user)
	UL	1:super user 2:administrator 3:normal user
	UIP	Log in IP of the user.
	UT	Log in time of the user, UTC time.

3.4.5.10 Get device version number

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETDEVVERSIONINFO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	DEVINFO	OBJECT	3.4.5.10.1 device version parameter

3.4.5.10.1 Device version number parameters

JSON combination for DEVINFO	Atomic data structure	Remark

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DEVINFO	DEVNAME	Device name
	MANVERSION	Main version number(Main version and display version of the MDVR)
	APPVERSION	Application version
	PROTOCOLVERSION	Protocol version The first version is "1.0.0", the first "1" is main version(big change),the first “0” means added new command, the second “0” means the small fix work.
	UBOOT	Uboot version
	KERNEL	Kernel version
	ROOTFS	Rootffs version
	MCU	Mcu version
	CP4	CP4 version

3.4.5.11 get the UTC time of the current device

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETCTRLUTC		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CURT	INTEGER	UTC time
	Z		6.2.6 time zone definition

3.4.5.12 Set current UTC time

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SETCTRLUTC		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CURT	INTEGER	UTC time(modify the time of the device directly)
	Z		6.2.6 time zone definition
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.5.13 Device request time setting

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	CHECKTIME		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	HANDLE	INTEGER	Asynchronous handle of the device, need platform just return it with no modify
	CURT	INTEGER	The UTC time when device send data.
	Z		The time zone when device send, see 6.2.6 Time zone definition table.

Streamax-N9M Network communication protocol

RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	HANDLE	INTEGER	Asynchronous handle of the device, need platform just return it with no modify
	CURT	INTEGER	The UTC time when device send data,the same as request.
	Z		The time zone when device send, the same as the request see 6.2.6 Time zone definition table.
	CURS	INTEGER	The UTC time of the server
	ZS		The UTC time zone of the server, see 6.2.6 time zone definition table.

3.4.5.14 Change the stream forcibly(Do not implement)[D->C]

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SWITCHSTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-100
	CHANNEL	INTEGER	1-32(bit map description bit 0 to bit 32 stand for channel 1 to channel 32,It is valid if the bit is set)

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	SCRSTREAM	INTEGER	The current stream type 1(stream type of the control source: 0:Sub stream 1:Main stream 2:Mobile stream)
	DESSTREAM	INTEGER	Destination stream type 1(stream type of the control source: 0: Sub stream 1: Main stream 2: Mobile stream)
	ERRORCODE	ENUM	The reason for changed forcibly.
	ERRORCAUSE	STRING	1-100

3.4.5.17 update the priority of user

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	UPDATEUSERMANAGE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	USERIGTH[N]		3.4.5.1.7 user priority parameter(for DVR)
	UIF[N]		7.8.1 user priority parameter(for MDVR)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.5.18 reset the configuration to default.

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	SETRESTOREDEFAULT		REQUEST-RESPONSE
PARAMET	NAME	TYPE	RANGE

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	PARAMMASK	LONG LONG	64 bit long integer, each bit stand for on kind of configuration before leave factory, it is valid if the bit is set. Bit0：USERMANAGE(User management) Bit1：TIMESETTING（time setting） Bit2：SYSTEMSETTING（system setting） Bit3：ETHERNET（network configure） Bit4：WIFI Bit5：ADSL Bit6:3G Bit7：NTPSETTING Bit8：DDNS Bit9：EMAIL Bit10：UPNP Bit11：IECLIENT(IE client) Bit12：SUBSTREAMNET（sub stream） Bit13：SERVICEPORT(center server port) Bit14：MEMORY Bit15：PTZ Bit16:VIDEOOUTPUT（video out） Bit17：RECORD（record） Bit18：MAINSTREAM Bit19：SUBSTREAM Bit20：MOBILESTREAM Bit21:MOTIONDETECT(motion detection) Bit22:VIDEOCOVER（vi

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RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.5.19 Get the encode parameter the device supported

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETDEVTYPE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	TYPE	STRING	Device type, such as:C601
	MCOUNT	INTEGER	How many kind of resolution the device can support.
	MRES[N]	ARRAY	The resolution value of each item of the main stream.ie , the device supported resolution. The value can be: 0: CIF 1: HD1 2: D1 3: QCIF 4: QVGA 5: VGA 6: 720P 7: 1080P 8: 3MP(2048*1536) 9: 5MP(2592*1920) 10: WQCIF 11: WCIF

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			12: WHD1 13: WD1(960H) 14: 960P
	MFRE[N]	ARRAY	The frame rate supported by each resolution of the main stream. It mapped to RES one to one.
	SCOUNT	INTEGER	How many resolution supported by the sub stream.
	SRES[N]	ARRAY	The resolution value of each item of the sub stream.ie , the device supported resolution. The value can be: 0: CIF 1: HD1 2: D1 3: QCIF 4: QVGA 5: VGA 6: 720P 7: 1080P 8: 3MP(2048*1536) 9: 5MP(2592*1920) 10: WQCIF 11: WCIF 12: WHD1 13: WD1(960H) 14: 960P
	SFRE[N]	ARRAY	The frame rate supported by each resolution of the sub stream. It mapped to RES one to one.
	TSOURCE	INTEGER	The total encode resource of the device. It valued by 10 times of the CIF format. ie, translate to CIF and multiply 10. 1 CIF is described use 10 CIF.

3.4.5.20 get all the version information of the device.

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETDEVALLVERSIONS		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
RESPONSE	NAME	TYPE	RANGE
	COUNUT	INTEGER	N of the VER
	VERS[N]	OBJECT	3.4.5.20.1 VER:version parameter
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.5.20.1 VER: version parameter

JSON combination for VER	Atomic data structure	Remark
VERS	ID	Version id
	VER	Version number (u-boot，kernel etc.)

3.4.5.21 resource priority verification in transmit mode.

It need re-verification the priority for each request in transmit mode.

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MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	GETDEVALLRIGHT		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	UN	STRING	User name 1-20
	PD	STRING	The MD5 harsh string of the password
	RFD	INTEGER	see：3.4.5.21.1 transmit mode resource map table
	ADAPTER	STRING	see：3.4.5.21.1 transmit mode resource map table
RESPONSE	ADAPTER	STRING	see：3.4.5.21.1 transmit mode resource map table
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.5.21.1 transmit mode resource map table

RFD value	Resource type	ADAPTER Type
0	Live video	Uint (channel number, it is valid if the bit is set), or have rights to the channel(response).
1	Download file	uint (channel number, it is valid if the bit is set), or have rights to the channel(response).
2	Remote play back	uint (channel number, it is valid if the bit is set), or have rights to the channel(response).
3	Remote upgrade	(undetermined)
4	PTZ	(undetermined)
5	Storage management:format	(undetermined)
…	…	

3.4.5.25 Power off upload (MDVR not implement now)

MODULE	DEVEMM(DEVICEMANAGEMODEL)	
SESSION	TYPE	RANGE

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	STRING		
OPERATION	NAME		TYPE
	SENDPOWEROFF		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	PWTYPE	INTEGER	Power off mode: 0: Cancel 1: Delay 2: Timer 3: Abnormal 4: remote controller pad 5: network 6: Timer or delay 7: Timer and delay 8: network reboot
	PWTIME	INTEGER	Remain time to reboot. 1~65535s It is empty if the power off mode is Cancel, other wise this can not be blank.

3.4.5.26 Start/Stop the real time location and device status upload(MDVR Only)

The device will automatically stop the current upload mode, and start to use the location upload mode in this command. The parameter in this command need saved to the device, and use this parameter when next boot up.

Device upload position information is at 3.4.5.28

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	SETPOSMONITORING		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	PGPS	OBJECT	7.30.1 GPS(Location) parameter
	PDSM	OBJECT	7.30.2 Device status parameter
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

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RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.it is the same as it in the request.

3.4.5.27 Request current location(MDVR use Only)

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	GETPOS		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.It is the same as it in the request.
	P	OBJECT	3.4.5.27.1 location information parameter.

3.4.5.27.1 location information parameter(MDVR use Only)

Current location information parameter	Atomic data structure	Remark
P	V	Location status,INTEGER: 0:valid 1:invalid 2:No GPS module.

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	J	longitude. Character string description of float number, 6 bit after decimal point in the format of dddd.mmmmmm(all the zeros need keep) dddd Range:-179~179 Mmmmmmmm Range:0~999999 Positive value means east longitude, Negative value means west longitude. E.g '-080.092000' stand for west longitude 80.092.
	W	Latitude. Character string described float number, 6 bit after decimal point in the format of ddd.mmmmmm (all the zeros need keep). dddd Range:-89~89 mmmmmm Range:0~999999 Positive value means North latitude. Negative value means South latitude. E.g '-80.590920' stand for N 80.590920
	S	Ground speed. Integer: 0~99999 (0 Km/h~999.99Km/h) Unit:0.01Km/h
	C	Ground course Integer,range:0~35999 Unit.0.01 degree offset of the North in the clock wise.
	T	14 Bytes Local time in yyyymmddhhmmss format. E.g :20120928121212 stand for 12:12:12 at 28 of September 2012..

3.4.5.28 device location information upload(MDVR use Only)

The device will send the location information of the device automatically if received the command in 3.4.5.26 or was in trace mode.

In order to manage the status of the device, the device send the status information after it boot up by default.

MODULE	DEVEMM(DEVICEMANAGEMODEL)	
SESSION	TYPE	RANGE
	STRING	

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OPERATION	NAME		TYPE
	SPI		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	T	INTEGER	Trigger flag 0: server request 1: history information or Status(cause of network error)
	M	INTEGER	The auto upload information contain GPS or Device status. It is valid if the bit is set. Bit0：GPS； Bit1：device status
	P	OBJECT	3.4.5.27.1location information if the bit 0 of M is set.
	S	OBJECT	3.4.5.28.1 device status information if the bit 1 of M is set.

3.4.5.28.1 Device status type

Status information of the current Device	Atomic data structure	Remark
S	G3	3G Status 0: module not exist 1: No SIM card 2: No module and No SIM card 3: module exist and SIM card exist
	G3S	Signal strength of the 3G network Range:0-5 0: no signal or no connection 5: The best signal
	G4	4G status 0: module not exist 1: No SIM card 2: No module and No SIM card 3: module exist and SIM card exist
	G4S	Signal strength of the 4G network Range:0-5 0: no signal or no connection 5: The best signal

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	W	WIFI status 0: module not exist; 1: exist
	WS	Signal strength of WIFI network Range:0-5 0:no signal or no connection 5: The best signal
	V	100 times of the voltage. Range:100-7200(stand for 1.00V-72.00V)
	TD	Device temperature. 100 times of the real value. Range:0-9999 and 10000-19999(stand for -99.99° to 0° and 0° to 99.99°) E.g 3030 stand for -30.30° , 12340 stand for 23.40° 0 and 10000 stand for 0°
	TC	Temperature indoors. 100 times of the real value. Range:0-9999 and 10000-19999(stand for -99.99° to 0° and 0° to 99.99°) E.g 3030 stand for -30.30° , 12340 stand for 23.40° 0 and 10000 stand for 0°
	S	Ground speed, 100 times of the real value. Range:0~99999(stand for 0 to 999.99)
	SU	Speed unit 0：KM/H 1: MI/H
	SW	Key Ignition status: 0: Disable 1: Enable
	RE[N]	Record status of the device N stand for the channel number 0: Main stream do not record, sub stream do not record. 1: Main stream do not record, sub stream record. 2: main stream record, sub stream do not record. 3: Main stream record, sub stream record.
	ALARM	Alarm status, reference to 3.4.5.28.2

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	T	1-14 Local time in the format of yyyymmddhhmmss:20120928121212, stand for 12:12:12 at 28 of September 2012.
	STC	Total number of the storage device.
	SINFO[STC]	3.4.5.28.3 storage status information.This field may not exist or can do not parse if the STC is 0.析
	TRAFFIC[N]	3.4.5.28.4 flow rate information of the device at current time. N stand for the network type: 0: cable net 1：WIFI 2：3G 3：4G-LTE
	VS[N]	Video loss status, the sub script is channel number. Each value of the element means the status of the current channel: 0: OK 1: Video loss.

3.4.5.28.2 Alarm type

BYTE1								
BIT #	7	6	5	4	3	2	1	0
Alarm type	IO8	IO7	IO6	IO5	IO4	IO3	IO2	IO1
BYTE2								
BIT #	7	6	5	4	3	2	1	0
Alarm type	IO16	IO15	IO14	IO13	IO12	IO11	IO10	IO9
BYTE3								
BIT #	7	6	5	4	3	2	1	0
Alarm type	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Panic button	speed
BYTE4								
BIT #	7	6	5	4	3	2	1	0
Alarm	Res	Res	Res	Res	Res	Res	Res	Res

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type	erved	erved	erved	erved	erved	erved	erved	erved

3.4.5.28.3 Recording media status

SINFO parameter's JSON group	Atomic data structure	Remark
SINFO	T	Storage media type 0-HDD 1-USB 2-SD card
	O	Storage media type 0: Internal(default) 1: External
	S	Storage media status 0: Normal 1: Failure
	TS	Total capacity: 64bit integer If S=1, then value is 0
	LS	Free capacity: 64 bit integer If S=1, then value is 0

3.4.5.28.4 current flow rate of the device

TRAFFIC parameters' JSON group	Atomic data structure	Remark
TRAFFIC	T	Network type for the current flow rate. 0: Ethernet 1:WIFI 2: 3G 3: 4G-LTE
	I	The IMSI number of the current SIM card. 1~32 bytes. It is valid if the TYPE is 2 or 3.
	TS	Total flow rate of the current SIM card in this month. The time range is from the first day of the month to the current day. Stored in 8 bit long integer Unit: K bytes

	TX	Total send flow rate of the current month. Long long integer Unit: KB
	RX	Total receive flow rate of the current month. Long long integer Unit: KB

3.4.5.29 MDVR ftp upgrade （MDVR）

In order to make the management of the device simple and use the stable FTP protocol to make the development easier, the system use FTP protocol to transform the firmware to the device. There will be forespeak upgrade and direct upgrade manually two kink of upgrade ways can be choose. The upgrade status is reported to the Platform and the platform will store and analysis the log to reach the requirement of smart management.

1) choose the upgrade mode

The manager can book the upgrade to one or more device.

The device will begin to download the firmware at the time it received the upgrade command from the plant form. The device need determine if it need to upgrade the firmware immediately or upgrade it in a appointed time. If the network is disconnected and over the time quantum to upgrade, the device will upgrade in this appointed time next day.

2) Support partly upgrade

The firmware package is made up of u-boot, kernel, rootfs and app. The common modules like u-boot, kernel and rootfs is seldom need to upgrade. Just upgrade the different part module of the firmware.

3) Support resume broken downloads

The upgrade will start just at the point that broken cause of exceptional situations like network error or device reboot.

4) Failed update situation(network fault, FTP server error, device reboot)

(1) retry to connect the ftp server 3 times if the network is OK, then abort.

(2) the upgrade process will continue after the reboot of power supply error, report the upgrade at the end.

5) Hard disk error or has no hard disk

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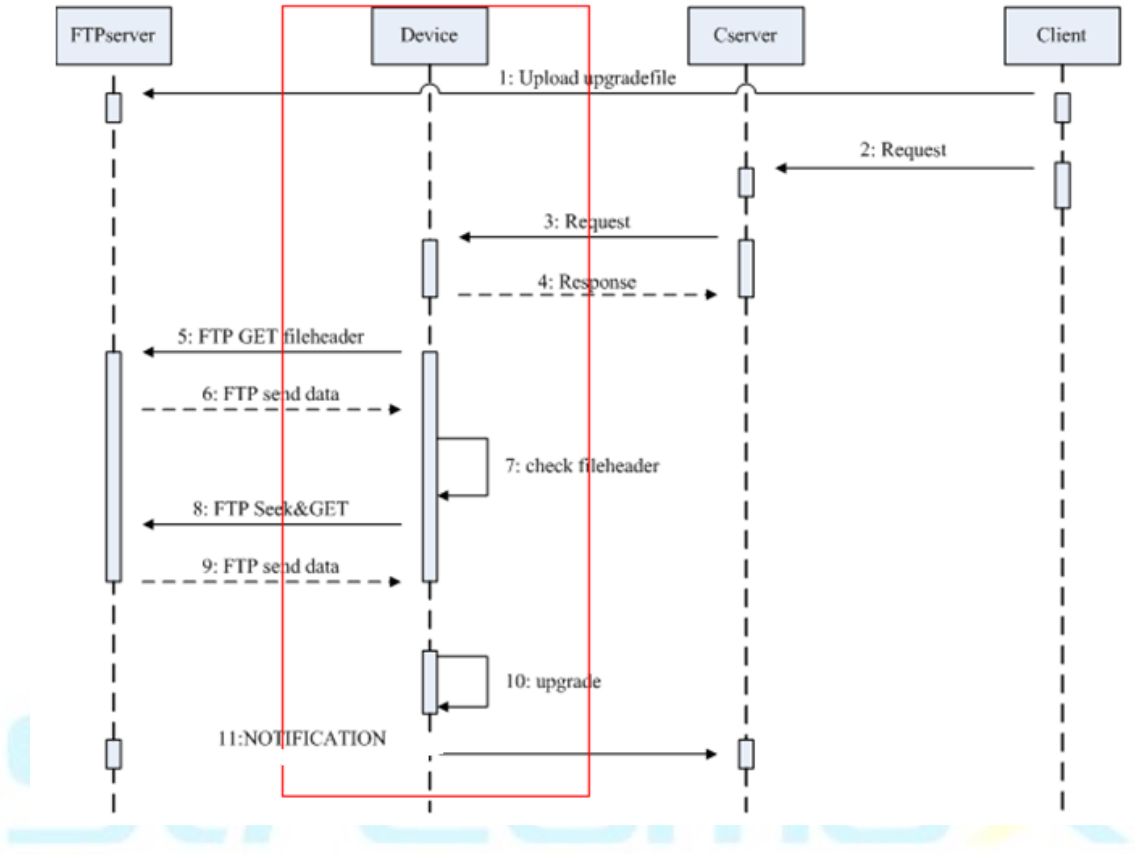
Report to platform and let the platform determine if upgrade through RAM, just make the protocol, do not implement in the first stage.



1、send the upgrade command

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	DEVUPGRADE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	MODE	ENUM	0: upgrade immediately 1: upgrade at a prebook time
	FROM	ENUM	0: hard disk upgrade(default) 1: RAM upgrade

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	SERVERADDR	STRING	Address of the upgrade server, the length can not over 256 Bytes. The firmware used for upgrade stored in this server. The format is “Potocol head(ftp:// or http://)”+“IP:PORT (Domain name)”+“ server path”. Such as:ftp://192.168.1.1:23/upgrade, http://www.streamaxtech.com/upgrade
	BAKADDR	STRING	Backup upgrade server address. Use the same format as the upgrade server. Keep blank if there is no backup upgrade server.
	STARTDAY	STRING	The day to begin upgrade. 8 byte string. Format:YYYYMMDD, such as 20140910.
	ENDDAY	STRING	The finish date of the upgrade, make a continuous time quantum with the STARTDAY. STIME and ETIME is the detail time quantum to upgrade. 8 bytes string. The format is YYYYMMDD, such as 20140918
	STIME[N][M]	STRING	The begin time of the upgrade time quantum. It is valid if the MODE is 1. N stand for one of the day from STARTDAY to ENDDAY. Count from STARTDAY, the N is 0, and the ENDDAY is N-1. M means how many time quantum are there in a day. The element pointed by M can not keep blank. The time format is STIME[0][0]=230000, it means the upgrade will begin at 23:00:00 at 10th of September, 2014.

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	ETIME[N][M]	STRING	The end time of upgrade time quantum, it is valid if the MODE is 1. N stand for one of the day from STARTDAY to ENDDAY. Count from STARTDAY, the N is 0, and the ENDDAY is N-1. M means how many time quantum are there in a day.The element pointed by M can not keep blank. The time format is ETIME[0][0]=240000, it means the upgrade will finish at 24:00:00 10th of September 2014. Noteice: the time quantum make up of STIME and ETIME can not overlapping.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	USERNAME	STRING	32 bytes, FTP user name.
	PWD	STRING	32 bytes, FTP password.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.The same as SERIAL part in request message.

0、Upgrade status upload

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	UPUPGRADESTATUS		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	MODE	ENUM	0:upgrade immediately. 1:upgrade prebook.
	ERRORCODE	ENUM	Reference the error code in 6.1

	ERRORCAUSE	STRING	1-100

3.4.5.30 Get device status

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	GETDEVINFOSTATUS		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	ERRORCODE	ENUM	Reference the error code in 6.1.
	ERRORCAUSE	STRING	1-100
	S	OBJECT	3.4.5.28.1 device status type

3.4.5.31 Monitoring Events Triggered by Network （MDVR Only）

Network does not assume the actual download task, the data stream come the the storage without the network. The network only monitoring the status as well as information and send them to the client. The download of the data stream is done by other modules, which will not spend a lot to the network bandwidth.

This function mainly suitable for operation and maintenance, such as import and export of the record file as well as the parameters, to specific storage medium, which will protect the storage medium and also easy for carrying and analysis.

MODULE	DEVEMM(DEVICEMANAGEMODEL)

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SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTCTRLEVENT		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535 Synchronization source identifier，this field is valid when applying，determining what kind of mandate issued, only mark.
	REQUESTTYPE	INTEGER	0：Start Task； 1：Stop Task；
	CMD	INTEGER	0: Download or export to the storage 1: Upload to the device from the storage
	DOWNEVENTTYPE	INTEGER	The file type for downloading, 32 bit representation,valid for 1.This field is valid when CMD is 0. bit0：Download the record file. bit1：GPS Info(Black box Info) Bit2： Alarm Info(Black box Info, Alarm log) Bit3：ACC data(Black box Info) Bit4: Device status(Black box Info) Bit5：Export the parameter Bit6：User operation log Bit7：Broadcasting file Bit8：Geo fence
	UPEVENTTYPE	INTEGER	The actual file type uploaded, 32 bit representation, valid for 1.This field is valid when CMD is 1. bit0：Import the parameters. bit1：Broadcasting file bit2：Upgrade bit3：Geo fence
	CHANNEL	INTEGER	1-32(BIT Representation，BIT0-BIT31 represent channel from 1 to 32. Valid for 1 else invalid), This field is valid in some cases: DOWNEVENTTYPE field’s bit0 valid.

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	STIME	STRING	Start time，DOWNEVENTTYPE bit0-bit4、bit6-bit7 need conditions to be exported and also the start time. Other types don't need. Format 1-14(20110928090109: Represent 2011.9.28 9:11:09
	ETIME	STRING	End time，DOWNEVENTTYPE bit0-bit4、bit6-bi7 need conditions to be exported.If there isn't this field, then it will export as the 00:00am of the day in STIME , other types don't need. Format 1-14(20110928090109: Represent 2011.9.28 9:01:09
	SID	STRING	Stream segment id；When the bit0-bit4 of the DOWNEVENTTYPE are chosen, if the exported file contains ID, then it will choose the ID first, or it will choose the ID according to the conditions of STIME and ETIME. Other types don't need this field.
	STORAGE	INTEGER	Storage Media 0：Default，as long as there is a peripheral storage 1：Thumb driver 2：SD card
	FORMAT	INTEGER	Export Format 0:h264;(Record format) 1:avi(Record format)
	STREAMTYPE	INTEGER	Stream Type； 0: Main stream； 1: Sub-stream； 2: Mirror record
	RECORDTYPE	INTEGER	Record type :bit representation，valid for 1 Bit0: Alarm record Bit1: Normal record

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	DOWNTYPE	INTEGER	Export type， it will separate the export type according to the business, if there isn't this field or it is 0, the default is processed in accordance with the above fields. Each export file is only for one specific data type. The data must be delimited if there is a same type except 0, or it will be invalid. 0: Handle according to the conditions before 1: One key export log(Alarm log and system operation log)
	IPANDPORT	STRING	Media IP 1-32(If there isn't this field, then use the IP and port provided by the service provider, e.g.58.60.231.218:5550
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

	NAME	TYPE	RANGE
RESPONSE	ERRORCODE	ENUM	If there is a SUCCESS returned then the process is successfully handled and need to get real-time schedule. If there is a 0X00000058 returned then the process is done immediately and no need to get the real-time schedule.Other returned value refer to error.
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

3.4.5.32 Task Getting Progress

After the instructions in 3.4.5.31 executed， the client would be noticed of the status of the process. This instruction is to let the client actively get the device task status in real time. The client will display the statue as a progress bar. If the size of the file is small and the client will get the file at least once.And at the last time,the value of the PRO in this protocol will be 100, which means the task has been done.If the client

doesn't actively get the state, the device will actively report the last status in 3.4.5.35.

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CTRLEVENTSTATUS		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	The same as it is applied
RESPONSE	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	The same as it is applied
	CMD	INTEGER	0: Download or export to the storage. 1: Upload from the storage to the device.
	PRO	INTEGER	Progress， use percentage to calculate and use integer. E.g. The value of PRO is 50, which representing 50% and when the progress is over the value will be 100. If the file is small enough, the value will eventually get to 100.Error code 0 is valid.
	ERRORCODE	ENUM	
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

3.4.5.33 Get Operation and Maintenance Status Information

This field is mainly for getting the operation and maintenance status information and daily fault report information. The client will actively get the information, the detailed information please refer to the operation and maintenance manual. This protocol only provides a channel and way of getting, the detailed information of operation and maintenance as well as the fault report please turn to the business handling.

MODULE	DEVEMM(DEVICEMANAGEMODEL)	
SESSION	TYPE	RANGE
	STRING	

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OPERATION	NAME		TYPE
	GETYUNWEIINFO		REQUEST-RESPONSE
PARAMETER	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.This field is used for distinguishing the client sources in transmit mode.
	DATE	INTEGER	Default is the current day when there is no value or the value is 0; 0：Current day 1：History(Only yesterday)，At present, only the current operation and maintenance(TYPE=1) Other value is for expanding.
	TYPE	INTEGER	0：Daily fault report. 1：Operation and maintenance status information.
	INFO	OBJECT	Operation and maintenance keyword，the total collection of information，reference operation and maintenance documentation. It will show all the operation and maintenance information when applying '?'.
RESPONSE	NAME	TYPE	RANGE
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.This field is used for distinguishing the client sources in transmit mode, the same as it is applied.
	TYPE	INTEGER	0：Daily fault report 1：Operation and maintenance status information.
	INFO	OBJECT	Operation and maintenance keyword，the total collection of information，reference operation and maintenance documentation.

If apply for the temperature information, then the protocol can be expressed as:

"PARAMETER":{"SERIAL":"123","TYPE":1,"T":"?"}

The reply can be expressed as:

"RESPONSE":{"SERIAL":"123","TYPE":1,"T":{"I":30,"O":30}}

3.4.5.34 Upload of the Daily Fault Report

This instruction is mainly for the actively uploading of the daily operation and maintenance information. The device will upload the daily fault report to the center server after booting. This protocol only provides a channel and a way to submission, the detail information please check the operation and maintenance document, the detailed information if the faults is dealt by the business.

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	UPDATEYWINFO		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	TYPE	INTEGER	0：Daily Fault Report
	Refer to the operation and maintenance document.		

3.4.5.35 Actively Report the Task Result

After doing the task of 3.4.5.31, the client will get the task status according to 3.4.5.33. If the task is done, but the client doesn't get the final status, then the device will report the final status.

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	UPEVENTSTATUS		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service provider)
	SSRC	INTEGER	The same as it is applied

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	PRO	INTEGER	The progress is calculated as percentage and expressed with integer. For example, if the value of PRO is 50 then the percentage is 50%, 100 means the end. Valid when the error code is 0.
	ERRORCODE	ENUM	
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

3.4.5.36Getting the Firmware Version To Be Upgraded(Realized)

MODULE	DEVEMM(DEVICEMANAGEMODEL)		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	GETVERSINFOBYSW		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	DEVINFO	OBJECT	3.4.5.10.1 Device firmware version parameters.

3.4.5.37 Network Switching Information Reporting

Report once when the device connects to the server

MODULE	DEVEMM(DEVICEMANAGEMODEL)	
SESSION	TYPE	RANGE
	STRING	

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OPERATION	NAME	TYPE
	SENDNETCHANGE	NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	TYPE	INTEGER	Current network type. 0：Wired connection 1：WIFI 2：3G 3：4G-LTE
	TIME	STRING	Network switching time. 1-14(Year, month,date,hour,minute,second:20110928090909)
	IMEI	STRING	The IMEI card number of the current network. 1-32，Valid when TYPE is 2 or 3.
	IMSI	STRING	The IMSI card number of the current network.1-32，Valid when TYPE is 2 or 3.

3.4.5.38 Passthrough Protocol

The communication protocol interface between the device and server in passing through. Note: the instructions of send and receive are the same. And the protocol layer just made and assembled outer protocol packets, do not answer the protocol layer. The passthrough business will do the answering itself and the upload and download of the passthrough will both use the instruction. This protocol only definite the standard protocol instruction, please view the<<Streamax passthrough protocol>> for more details.

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MODULE	DEVEMM		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	DISPATHERPROXYMSG	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	M	INT	Supports up to 2 categories； Bit 0 - 15 Master Class Bit 16-31 Auxiliary Class The definition please refer to Appendix 1
	A	INT	! 0 : Need to reply， 0：No need to reply Identification when sending messages.
	S	INT	Indefinite length, distinguish the repeating message. Specified by the sender. As the only sign of a single message. Recommended type： GUID，Millisecond or microsecond time.
	DT	ENUM	Extended Data Types： 1 Binary 2Ordinary strings 3 Json strings ……
	L	int	Extended data length。The extended data located behind JSON. Does not include the end character'\0'
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

Protocol Explain: M field, mainly for the device side of each module in order to quickly extract the message of interest.

Note:

Transparent transmission of data memory layout： Head+JSON+'\0'+extended data. Extended data is specified by the contents of the M field of JSON, and the extended data type is specified y the DT field, the extended data length is specified by the L field. '\0' is used for separating the Json and extended data, and there is only one of this. (Binary may also contain '\ 0', you need to pay attention to these situations when programming)

3.4.5.39 Special Instruction

When the value of PT in protocol header is 19, it means they are special instruction in direct

signaling channel between devices and server. In order to make server to process some special instruction efficiently, when the value of PT is 19 can offer a special channel. SSRC in protocol header determine different Instruction meanings and the meanings are described in the following form. Must be the only and the maximum value is 65535.

PT	SSRC	Description
19	0	Heartbeat, working in the heartbeat interaction initiation protocols between devices and signaling Server, replaces the old heartbeat initiating instruction KEEPALIVE(3.2.2).Still use KEEPALIVE in direct link. Contains only protocol header data ，no protocol body data. And heartbeat strategy does not change.
	1	Heartbeat, working in the heartbeat interaction response protocols between devices and signaling Server, replaces the old heartbeat response instruction KEEPALIVE(3.2.2).Still use KEEPALIVE in direct link. Contains only protocol header data ，no protocol body data. And heartbeat strategy does not change.
	2	GPS data uploaded，GPS data structure

3.4.5.39.1GPS data structure
Typedef struct Net_GPS
{
char viled;//
0// means the following GPS data is reliable and effective;
1// means the data is not necessarily reliable，This usually appear in the tracking number of satellites is insufficient;
2// means the equipment without GPS module
char uexpand;// means whether or not to be expanded，0 means not，according to the existing field set package.
char reserver[2];
int ulongitude;// longitude，the highest level 0 means east longitude，1 means west longitude，keep 6 decimal places，expand 1 million times, such as 150000890，means east longitude 150.00089°. Use the network byte order, range from 179999999 to 1179999999, means from east longitude 179.999999°to west longitude 179.999999°.
int ulatitude;// latitude, the highest level 0 means north latitude, 1 means south latitude，keep 6 decimal places，expand 1 million times, such as 1150089000，means south latitude 150.089°. Use the network byte order, range from 179999999 to 1179999999, means from north latitude

179.999999°to south latitude 179.999999°.
int uspeed;// The rate of the ground, indicated by positive integer, keep 2 decimal places，expand 1 million times, such as 99999 indicating the current rate is 999.99km/h，the unit is km/h，Use the network byte order, range from 0 to 99999，means rate from 0km/h to 999.99km/h.
int udirect;// course over the ground, integer, keep 2 decimal places，expand 1 million times, such as 18090 indicating 180.90°，take benchmark reference direction in due north direction clockwise rotation Angle，range from 0 to 35999，means from 0°to 359.99°，Use the network byte order.
char utime[16];//current time, with time zone, character string，for example year month, day, hour, minute and second:20120928121212，means 2012 Sep 28th 12:12:12
}

3.4.6Network Communication Configuration Module

3.4.6.2.2 Central Monitoring Server Parameters(CMS)

The JSON Combination of CMS Parameters	Atomic Data Structure	Remark
CMS	EN	Running state，1：Open，0：Shut down(This switch is used to control whether the device will use the protocol)
	CENTERIP	Central management server IP(Signaling Server), Dotted decimal string representation.
	CENTERPORT	Central management server port(1-65535)
	MEDIAIP	Media Server IP(Transmit Server), Dotted decimal string representation.
	MEDIAPORT	Media Server P(1-65535)

3.4.6.2.3 ftp Server Parameters

The JSON combination of the ftp alarm uploading service parameter	Atomic Data Structure	Remark

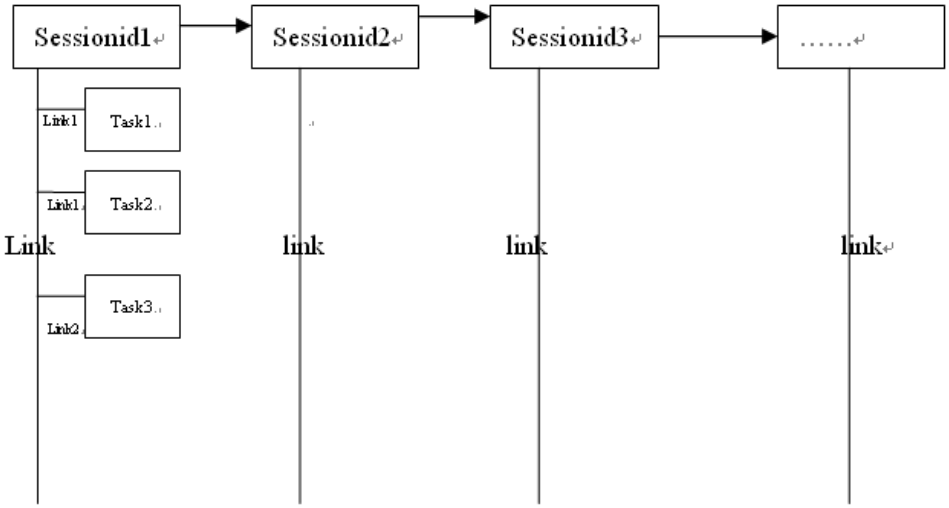
FTPS	EN	Running state，1：Open，0：Shut down(This switch is used to control whether the device will use ftp)
	PORT	ftp server port，default is 21
	SERVERIP	ftp server address，Dotted decimal string or domain name, the maximum length is 64
	LOGINUSER	Login user name，string，the maximum is 20
	LOGINPWD	Login password，string，the maximum is 20
	SUBFOLDER	ftp under a sub-code directory，string，the maximum is 32

3.4.7 Streaming Module

Whatever the connection type is directly connected to or forwarding mode, the device provides the service we call it a service provider, others are service receiver.

Streaming module is mainly for media task, and the media links will give the different tasks based on the role of service providers. Direct connection mode: PC will actively establish the media link, whose task will be decided by the PC, which means the PC assign the right to use this link. Forwarding mode: the service provider will establish the media link, and the task will be decided by the service provider,which means the service provider assign the right to use this link and one media link will be used by several tasks, which can save network resources and reuse of existing link resources more efficient. Under the direct connection mode, the PC establish the media link(there can be several links), then the PC will apply for the media business. Next the PC will register media business and inform the service provider which media link will be used. Under the forwarding mode, the service provider receive the application of the media business and then build the link before it is registered. Then the service provider will inform the server which link will send and receive the data, so there may be several links at the same time and alleviate the pressure of the links to

let the resources rational allocated.



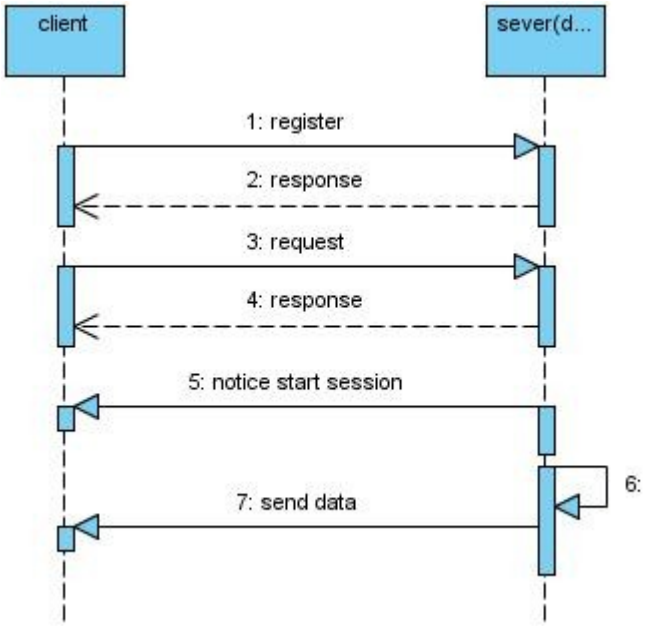
3.4.7.1 Real-time Video(Realized)

User will apply for video, if this user has a same task, then there is no need to apply again. If it is a new media task, then you need to assign the task to the appropriate thread so that it can be done. There are two situations when building the media link:

1. Direct connection mode: PC client will apply for the real-time video from the service provider directly. PC client will register the media link and choose which one to use. After the PC client sending the instructions for applying the video via the signaling link to the service provider, the client will receive the reply from the service provider successfully, or the service provider will send the error code to the PC client.

When successfully issued the instruction to apply, the service provider will inform the client to start a video call. Then the service provider will get the current format of the video and send it to the PC client, after which the provider can sen real-time video stream. If the format of the video changed during this time, the provider should upgrade the format package to the PC client as it is shown below:

Streamax-N9M Network communication protocol

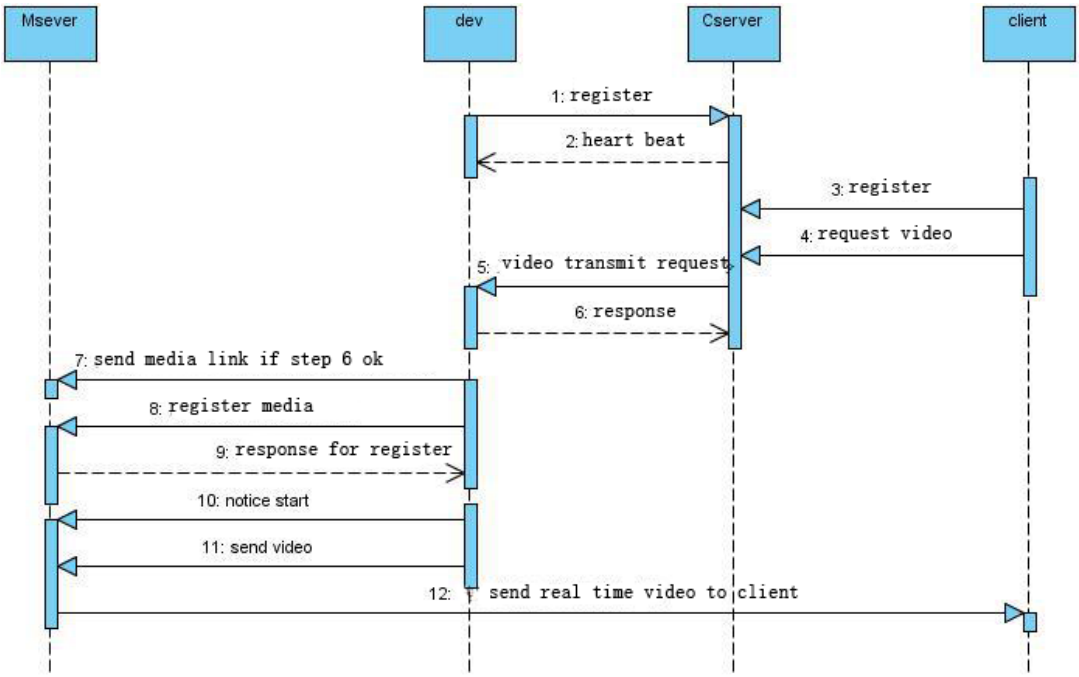


2. Forwarding mode: PC client will send the instruction of applying for the video to the central server, the central server will send the request to the service provider and wait for reply. Firstly the service provider will build the signaling link according to the central server IP and address set before. When connecting to the central server successfully, the client will send instructions to the service provider to apply for video, this instruction will be given to the service provider through the signaling channel of the signaling server. The service provider will reply the error code when the instruction is received. If the application is allowed, the provider will actively send the request to build the link.

If the central server could provide a separate server will decrease the pressure of the signaling server for the reason that the provider will report directly to the central server, and it will also provide a better forwarding for video distribution and diversion. It will decrease the pressure of visiting of the central server as well. In order to adapt to the flexibility when the server set up, the media server is also flexibility so the service provider connected to the server is not fixed, which can choose the server which is not busy to visit. So the PC client could send the application for the video as well as the media server IP and port via the signaling server, which can ether use the he media server allocated by the signaling server, or use the default server provided by the service provider.

The media link is successfully only when the service provider connect to the server, register and successfully get the reply. First, the service provider network layer initiative to get the current real-time video format packets to the service provider and also send to the media server, then it can send real-time stream. If the format changes during this time, it is required to upgrade the package.

Streamax-N9M Network communication protocol



1、Applying for real-time video

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTALIVEVIDEO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	CHAR	0-255（Here for passage comprehension）Synchronization source identifier，When applying this field is invalid, mainly in the CHANNEL fields behind, the device will insert the detailed device ID when replying and easy for analysis. And the SSRC is different from it is in the head of the protocol, and this SSRC will replace the SSRC in the protocol to be the synchronization source.
	STREAMNAME	STRING	1-100
	STREAMTYPE	INTEGER	1(Application stream type0：sub-stream, 1: main stream, 2: mobile stream)

Streamax-N9M Network communication protocol

	CHANNEL	INTEGER	1-32(BIT represent，BIT0-BIT31 represent the channel from 1 to 32,BIT is 1 valid, otherwise invalid)
	AUDIOVALID	INTEGER	(BIT represent，BIT0-BIT31 represent the channel from 1 to 32,BIT is 1 valid, otherwise invalid) should be related to the channel number of CHANNEL and the channel of CHANNEL should also be valid.
	IPANDPORT	STRING	Media IP 1-32(Without this field, use the set IP and port on the service provider side. For example: 58.60.231.218:5550)
	FRAMECOUNT	INTEGER	Frame rate required when network transmission, the default is to upload according to the actual frame rate of the device. Customers can use the frame rate depending on their requirements and the the number should be no more than 30.
	NAME	TYPE	RANGE
RESPONSE	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SSRC	CHAR	0-255（Channel）Synchronization source identifier，When applying this field is invalid, mainly in the CHANNEL fields behind, the device will insert the detailed device ID when replying and easy for analysis. And the SSRC is different from it is in the head of the protocol, and this SSRC will replace the SSRC in the protocol to be the synchronization source.
	STREAMTYPE	INTEGER	1(Application stream type 0: sub-stream，1：main stream，2：mobile stream)

Streamax-N9M Network communication protocol

4、Real-time video media link Register

MODULE	CERTIFICATE		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	CREATESTREAM	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique. **MDVR is the encryption chip number.**
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5、Real time media linkage control command

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	CONTROLSTREAM	REQUEST-RESPONSE	
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1 It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-255（Channel） It is related to the video stream uploaded to client.
	STREAMNAME	STRING	1-32

Streamax-N9M Network communication protocol

	STREAMTYPE	INTEGER	1(Application stream type 0: sub-stream, 1: main stream, 2: mobile stream)
	AUDIOVALID	INTEGER	(BIT Representation ， BIT0-BIT31 represent the channels from 1 to 32, BIT is 1 valid and open, otherwise invalid and close) should be related to the channel number of CHANNEL and the channel of CHANNEL should also be valid. If the operation need this field, then it must insert the operation towards audio, or it will be the same as the time applied.
	CMD	ENUM	Control of the media task operation (0:stop, 1: resume, 2: time out, 3: Switching stream), 4: Audio Manager, 5：set the stream frame rate need to be uploaded.
	FRAMECOUNT	INTEGER	Frame rate required for network transmission, valid when CMD is 5, default is to upload according to the device actual coding frame rate, customers can choose a suitable frame rate and the number should be no more than 30.
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SSRC	INTEGER	0-255（channel） It is related to the video stream uploaded to client.

6、Real-time video screen switching instruction

The switching here means that when visiting one device from the client, the switching between single-screen and multi-screen, and this switching mode is valid when all the channels are open.(There are data exchanging, but the client may not see the display) There are two ways to deal with the switching, one is that the customers apply for multi-screen and use the client to switch the screen. Each time the device should be noticed and the device will only record but do not exchange the stream. The detailed information will be handled by the client, we call it alarm switching here.

MODULE	MEDIASTREAMMODEL

Streamax-N9M Network communication protocol

SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CTRLSINGLEORMUL		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1 It is related to the video stream uploaded to client.
	CMD	INTEGER	0：Switch alarm Other values to be extended
	STREAMNAME	STRING	1-32
	CHMASK	INTEGER	Bit0-bit31 represent the channels from 1 to 32 and the applied channels, valid when the value is 1, otherwise invalid. SRCCH and DESCH must be valid in this field.
	SRCCH	INTEGER	Bit0-bit31 represent the channels from 1 to 32, and represent the channels in the window of SHOWING. Valid when the value is 1, otherwise invalid.
	DESCH	INTEGER	Bit0-bit31 represent the channels from 1 to 32, and represent the channels in the destination window of SHOWING. Valid when the value is 1, otherwise invalid.
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.7.2 Download the record file(Realized)

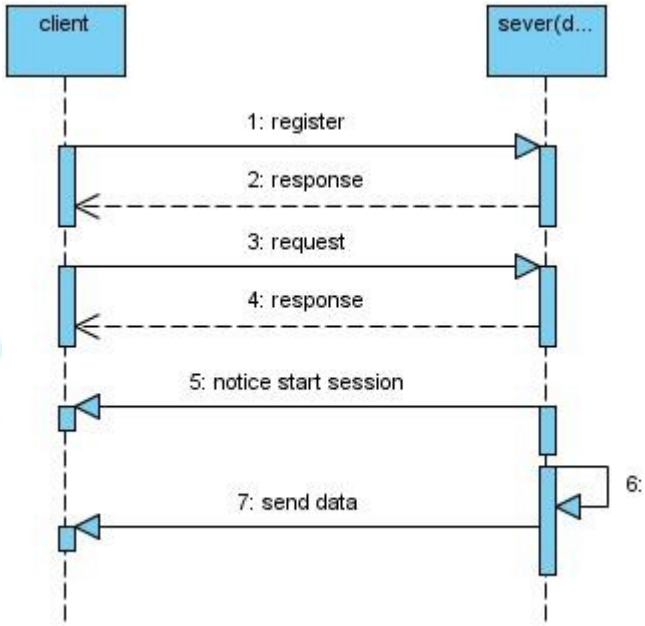
Download the record file is mainly for downloading the record file based on time period. Based on the stream type, the start and over time can determine a file which need to be download. Each period has its own ID to distinguish from others and also make it easy for downloading. What's more, it can also support multi-download mode for several users.

Streamax-N9M Network communication protocol

Note: download of the specified file should base on the time period list, which means the customers have to search the list and download according to the result.

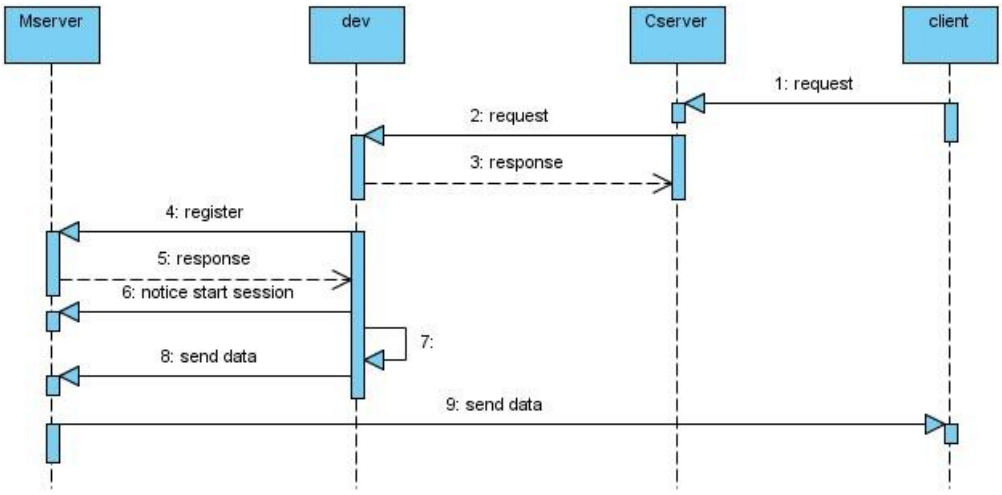
The download of the record file is also based on the instructions of the signaling, the service provider will reply once he gets the instruction, otherwise he will give the err code and then stop. The signaling server receives the reply and start to build the media link, and the service provider will be divided to two parts according to their functions.

1. PC client connect to the service provider directly: The PC client has built the media link before the instructions are sent. PC client send the requirement for media link, the provider will send a start talking instruction after the register and let the client be ready to receive the data. The provider will firstly send the video format package, and then the record file like the following picture.



2. PC client send to the service provider via the signaling server: PC will firstly connect to the signaling server and send the download instruction, then the signaling server will send the instruction to the provider. It may contain the media server IP and port during this progress, if not then use the information provided by the service provider. The service provider will start building the connection with the media server when it successfully received the applied instruction and then register the media server. After that the provider will give the talking notice and let the media server be ready to receive the record file like the following picture.

Streamax-N9M Network communication protocol



3、Apply for downloading the record file

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTDOWNLOADVIDEO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	CHAR	0-65535 Synchronization source identifier ID, this is provided by the client when applying. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-32
	STREAMTYPE	INTEGER	1(Applied stream type 0：Sub-stream ordinary file, 1: main stream, 2: mobile stream)
	RECORDID	INTEGER	Period recording video file ID, it will provide to the client when searching and need to be saved by the client. This is the only mark of a time period recording file.
	CHANNEL	INTEGER	1-32(BIT representation，BIT0-BIT31 represent the channels from 1 to 32, valid when the value is 1 otherwise invalid.)

Streamax-N9M Network communication protocol

	STARTTIME	STRING	1-14(Year,month,date,hour,minute,second: 20110928090909), If there is no start time ,then it will download from the beginning of the stream. This field cannot be empty if you want to download a period(The start is not a beginning of a stream).
	ENDTIME	STRING	1-14(Year,month,date,hour,minute,second)，If there is not a end time then it will end at the end of the period.
	OFFSETFLAG	INTEGER	Relative shift logo。 Let the STARTTIME be the relative offset when the value is 0,1,(0: A complete time period, downloading from the STARTTIME or download from the beginning of the stream with no shift. 1: The shifting value, which represent a shift from the beginning.) When the value is 2 then the beginning will be the head of the stream or the start time.The value 2 represents the relative shifting PTS towards the nearest I frame in current time period.
	OFFSET	INTEGER 64	1-64(When the value of OFFSETFLAG is 1, which represents the byte shifting the downloaded file with the STARTTIME. The value 2 represents the relative shifting PTS towards the nearest I frame in current time period.
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port set in the service provider if without this field. For example: 58.60.231.218:5550)
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	FILESIZE	INTEGER 64	The total length of the file

Streamax-N9M Network communication protocol

	LEFTSETSIZE	INTEGER 64	Length of the remaining documents
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode, the same as it is applied.

4、Register media channel

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-100
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5、Control instruction for downloading the video file media mission

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLDOWNLOADVIDEO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1 It is related to the video stream uploaded to client.
	SSRC	CHAR	0-255 Time period identification ID, the client will provide this ID when applying, the same as the application instruction.
	STREAMNAME	STRING	1-32

Streamax-N9M Network communication protocol

	CMD	ENUM	Control of the media task operation(0:Stop, 1: Resume downloading, 2: Standby)
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

Note: The download file format will manifest in the protocol header, which means the value of PT is 1 and represents METDATA. Aiming at different tasks, the type of format in METDATA is also different, which should be defined by the media task. METADATA format TBD.

6、Note for the video download media link starting to upload the data

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTDOWNLOADVIDEO		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	FILESIZE	INTEGER	The total length of the file
	LEFTSETSIZE	INTEGER	Length of the remaining documents
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode, the same as it is applied.

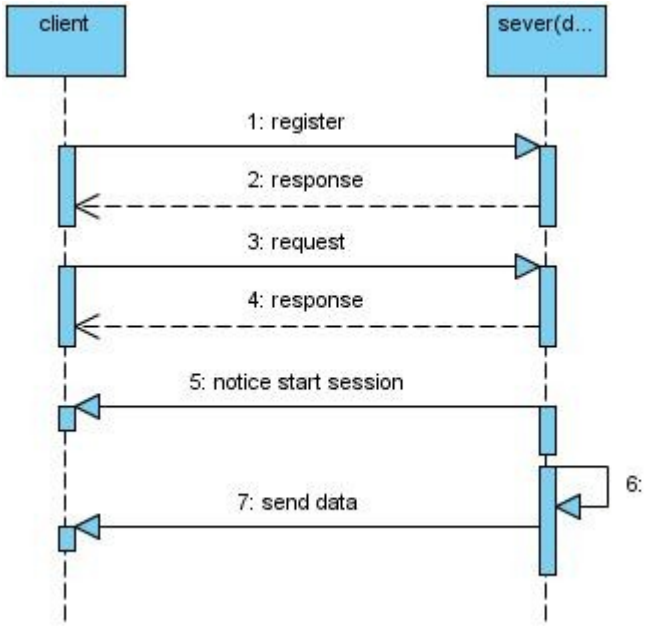
This reporting instruction is the parameters that will inform the upper layer to receive the media data in the media link, including the total length of the file and the length of remaining file. The PT in the head of the protocol is 0, SSRC and CSRC is the same in the applying instruction in order to distinguish the data sources in the media link.

3.4.7.3Download the extension file(Unrealized)

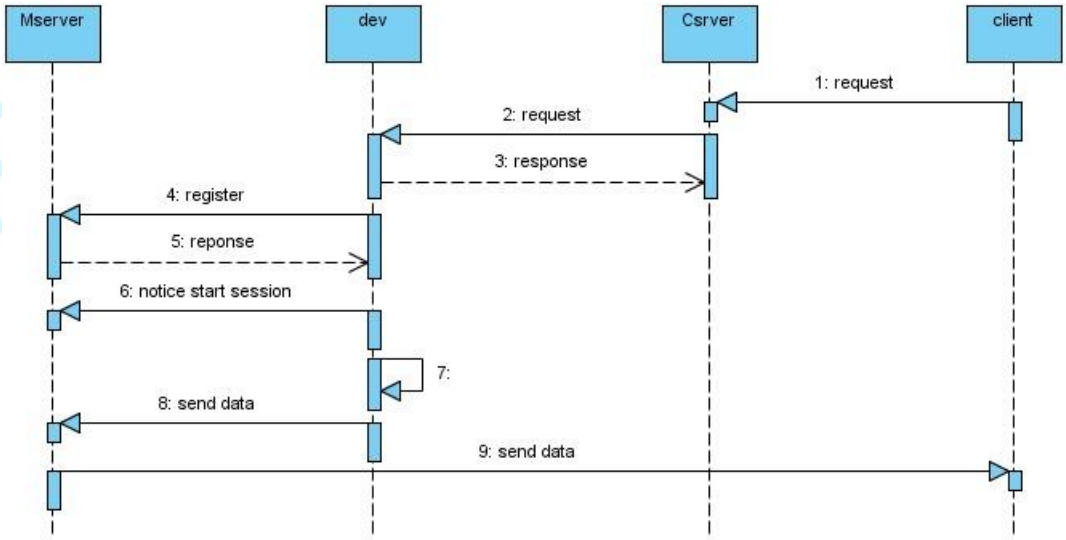
The extension file includes: log file and FILELIST file etc. And the extension file is also sending to the service provider via signaling channel, then build the media server according to the type of initiator.

1. PC connect to the service provider directly, like the following picture:

Streamax-N9M Network communication protocol



2. PC connect to the service provider via forwarding server, like the picture below:



3. Application for downloading the extension file

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME		TYPE
	REQUESTDOWNLOADEXPAND		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(service provider)

Streamax-N9M Network communication protocol

	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this is provided by the client when applying. It is different from the ssrc in the head of the protocol, and will replace the ssrc to be the ssrc and the value will be the synchronization source identifier.
	STREAMNAME	STRING	1-32
	FILENAME	STRING	1-100
	EXPANDTYPE	ENUM	(Expansion File Type) 0：Log File 1：
	OFFSETFLAG	INTEGER	1(Relative shift logo 0: Complete file, 1: Size Shift)
	OFFSET	INTEGER64	1-32(The shifting bytes when OFFSETFLAG is 1)
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	FILESIZE	INTEGER	The total length of the file
	LEFTSETSIZE	INTEGER	Length of the remaining documents

4、Register the media link

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32

	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5. The control instruction for downloading the extension file media task

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLDOWNLOADEXPAND		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1 It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-255 Time period identification ID. The identification ID will be provided by the client when applying, and it is the same with the apply instruction.
	STREAMNAME	STRING	1-32
	CMD	INTEGER	Control of the media task operation (0: Stop, 1: Resume downloading, 2: Standby)
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

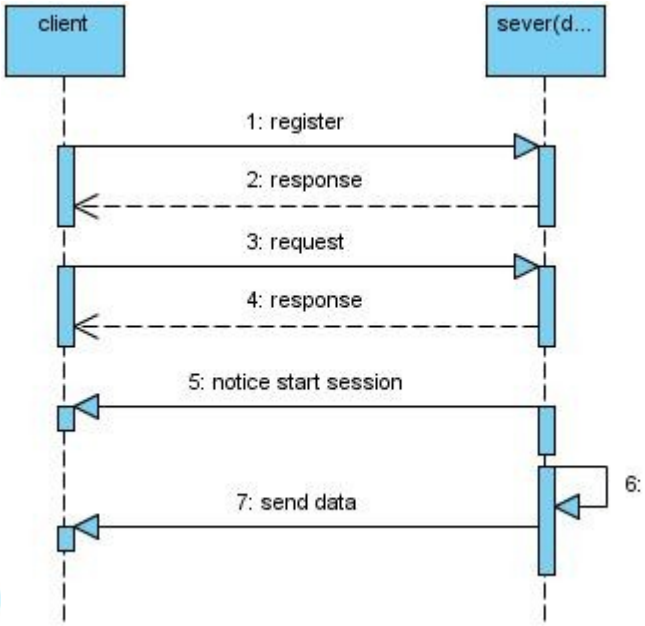
Note: The format of the download file will represent at the head of the protocol, which means the PT is 1 and represents METADATA. METADATA stands for different format type based on the different media task, which need to be defined by the media task. METADATA format TBD.

3.4.7.4 Remote Multi-channel synchronous playback(Realized)

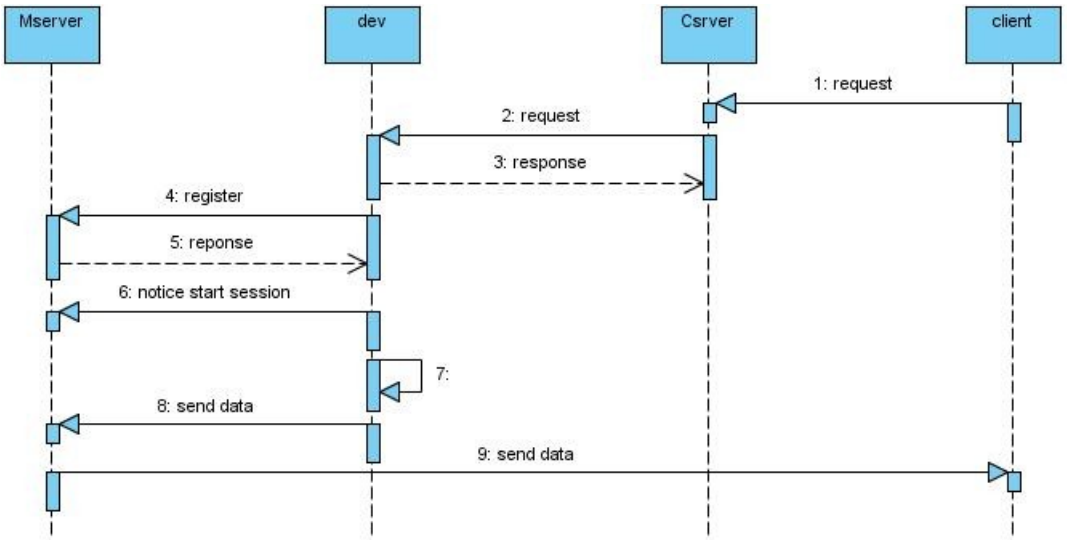
Remote Multi-channel synchronous playback requires that all channels can achieve synchronized video playback, and also support Drag, pause, stop, fast

forward, rewind, etc. And when the drag operation service providers have to respond in time, finding the time point and upload the record data. This will be divided into two kinds according to the service provider:

1). PC direct connection mode: PC client will send the remote Multi-channel synchronous playback instruction to the service provider. Build the media link and register the media link before the PC issued instructions, then issue the application to the service provider.



2). Forward Mode: The application of the remote multi-channel synchronous playback instruction will be sent to the service provider via the signaling server. The media link will be built only when the signaling server send the instruction to the service provider.



1. Remote synchronous playback application

When applying for remote synchronous playback, the media link will firstly send a ready

for uploading notice if success.(6. Media link start talking notice.) This instruction is a marking instruction for remote synchronous playback, and will be used to distinguish the time point of the different task of playback and drag operation. When receiving this instruction, the client should actively lose the data which is gong to be deal with before receiving the instruction and ready to handle new data.

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTREMOTEPLAYBACK		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535（channel）Synchronization source identifier. This field is invalid when applying and based on the CHANNEL field. In the remote synchronous playback progress, the device will provide the channel number so that it is easier for the upper layer to resolve, It is different from the SSRC in the head of the protocol when applying, and will replace the SSRC to be the SSRC and the value will be the synchronization source identifier.
	STREAMNAME	STRING	1-32
	STREAMTYPE	ENUM	1(Applied stream type 0: sub-stream, 1: main stream, 2. Mobile stream)
	VIDEOTYPE	ENUM	Record file type(0:Common file,1:Alarm file,2:Common and alarm file)
	CHANNEL	INTEGER	1-32(BIT representation, BIT0-BIT31 represent the channels from 1 to 32, displayed as hexadecimal, Valid when BIT is 1 , otherwise invalid)
	STARTTIME	STRING	1-14(20110928090109:represents 2011.9.28 9:01:09)
	ENDTIME	STRING	1-14(20110928090109:represents 2011.9.28 9:01:09)

Streamax-N9M Network communication protocol

	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
	PLAYTYPE	ENUM	Special environment need to be handled specially, so if there is no this field or the value is 0, which represents no special requirements and there is o data processing requirements . 1: Abandon P frame and the audio frame 2: Abandon P frame and keep the audio frame and I frame. Other values to be extended
	FRAME	INTEGER	The playback device's frame rate, video frame rate is less than the device, ipad can be used first.
	REQ	ENUM	0-cif; 1-hd1; 2-d1; 3-Qcif; 4-QVGA; 5-VGA; 6-720P; 7-1080P, 10-wqcif, 11-wcif, 12-whd1, 13-wd1, 15-540p
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	PASSCHANNEL	INTEGER	Limit the number of playback devices. Returns the successful number of channels.

4、Register Media Link

MODULE	CERTIFICATE	
SESSION	TYPE	RANGE

Streamax-N9M Network communication protocol

	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5、Control instructions for media link

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLREMOTEPLAYBACK		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client.
	STREAMNAME	STRING	1-100
	PALYBACKCMD	INTEGER	Control of the media task operation 0:Stop, 1: From standby to normal, 2: Standby, 3: Drag, 4: Throw all the P frames and audio frames, 5: Playback as normal 6: Set the frame rate for playback, 7: Throw away the P frame and keep the I frame and audio frame.

Streamax-N9M Network communication protocol

	STREAMTYPE	ENUM	1(Applied stream type 0: Sub-stream, 1: Main stream, 2: Mobile stream) Valid when PALYBACKCMD is 3.
	STARTTIME	STRING	1-14(20110928090109:represents 2011.9.28 9:01:09) Valid when PALYBACKCMD is 3.
	ENDTIME	STRING	1-14(20110928090109:represents 2011.9.28 9:01:09) Valid when PALYBACKCMD is 3.
	CHANNEL	INTEGER	BIT representation, BIT0-BIT31 represents the channels from 1to 32, valid when the value is 1, the same channel number with the PC client.
	OFFSET	INTEGER	The PTS of the nearest I frame when SEEK, seek the current time when it is invalid or the value is 0. If the value is not 0 or valid, then seek the current I frame of the current time.
	FRAME	INTEGER	The playback device's frame rate, video frame rate is less than the device, iPad can be used first.
	REQ	ENUM	0-CIF; 1-HD1; 2-D1; 3-QCIF; 4-QVGA; 5-VGA; 6-720P; 7-1080P, 10-WQCIF, 11-WCIF, 12-WHD1, 13-WD1, 15-540p
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

Note: There may be other instruction data containing during the remote synchronous

playback, including the channel status instruction data, which means the PT is 0.

6. Media Link Data span session start notification(towards media link)

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REMOTEPLAYBACKSTART		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CSRC	STRING	0-64BYTE(Service provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.

Streamax-N9M Network communication protocol

	REST	ENUM	This field shows the status of the current task and determines the meaning of the instruction. Value: 1: All channels throw away the old data in order to receive the new data, which is mainly for the client to send the application instruction and the seek instruction. It means a new task has begun before the link send the first package of data. The CHANNEL and CHANNELMASK will be invalid at this time. 2: Represents the status of the time period file of the current and normal playback progress(As long as there is a channel playbacking, then it is normal.). CHANNEL, CHANNELMASK are valid at this time. When sending the instruction between the two files, and the bit of the channel in the CHANNELMASK field is valid means the beginning of a new field.(This is mainly for the client to package the record file when playback.) Other values to be expanded.
	CHANNEL	INTEGER	BIT representation, BIT0-BIT31 represents the channels from 1 to 32, valid when the value is 1, the same as the current channel which is doing playback.
	CHANNELMASK	INTEGER	BIT representation, BIT0-BIT31 represents the channels from 1 to 32. It means the chosen channel starts to receive new data when the value is 1 and still receive the old data when the value is 0. This field is correspond to the channel number that CHANNEL applied.
	STREAMNAME	STRING	1-32

Streamax-N9M Network communication protocol

	STREAMTYPE	ENUM	1(Applied stream type 0: Sub-stream, 1: Main stream, 2: Mobile stream) Valid when PALYBACKCMD is 3,4.

7、Media Link Data span session completion notification(Towards media link)

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REMOTEPLAYBACKSTOP		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	REST	ENUM	This field represents the current status of the task and detemines the meaning of this instruction. Value: 1: Stop the current task. 2: Represents the status of the time period file of the current and normal playback progress(As long as there is a channel play backing, then it is normal.). CHANNEL, CHANNELMASK are valid at this time. Send this instruction when the current time period file is over and the bit of the channel in CHANNELMASK is 0 represents that this channel has finished receiving for this period and waiting for the data from the new time period. (This is mainly for the client to package the record file when playback.) Other values to be expanded.

Streamax-N9M Network communication protocol

	CHANNEL	INTEGER	BIT representation, BIT0-BIT31 represent the channels from 1 to 32, valid when the value is 1, the same as the current channel which is doing playback.
	CHANNELMASK	INTEGER	BIT representation, BIT0-BIT31 represent the channels from 1 to 32, thechannel will stop sending data if the value is 0. This field is correspond to the channel number that CHANNEL applied.
	STREAMNAME	STRING	1-32
	STREAMTYPE	ENUM	1(Applied stream type 0: Sib-stream, 1. Main stream, 2: Mobile stream) Valid when PALYBACKCMD is 3,4.

8. Media link status report

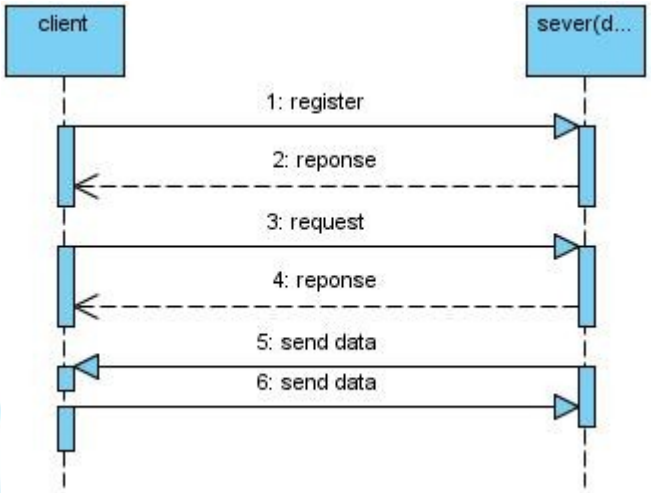
The PT contained in thehead of the protocol is 0, and will be reported when the status changes.

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REMOTECHANNELSTATUS		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	PT when applying
	CHANNEL	INTEGER	The same as the channel number in PC, BIT representation and BIT0-BIT31 represent the channels from 1 to 32, valid when the value is 1.
	CHANNELMASK	INTEGER	Which channels have stream, BIT representation, BIT0-BIT31 represent the channels from 1 to 32, valid when the value is 1. There are no data when the value is 0 and easy for the PC to . This field is correspond to the channel number that CHANNEL applied.

3.4.7.5 Intercom Audio(Realized)

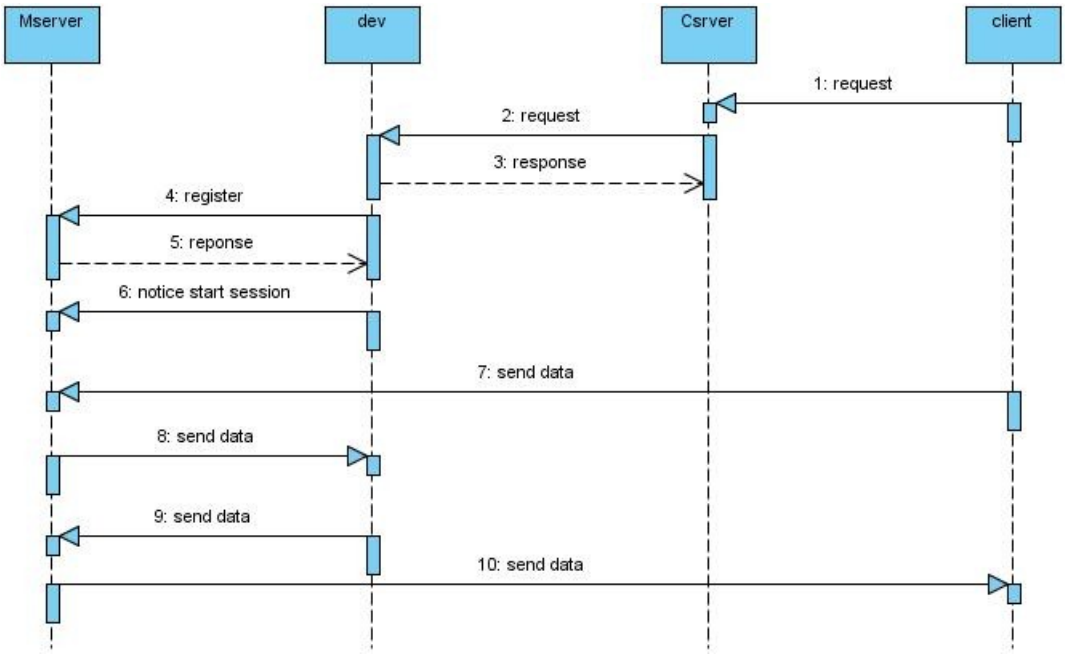
At present the talkback function is mainly for one to one mode, which is started by the client. It is devided into two modes, which are exclusive.

1. PC direct connection mode: The PC will send the intercom instruction to the service provider. The media link will be built before the instruction is sent, and the client is not only for the provider to receive from the PC, but also for the PC to receive from the service provider. The instruction will be sent after the link is succeddfully built.



2. Forward mode: The instruction sent from the PC will come to the service provider via the sigaling server. Theservice provider will receive the instruction and register eht media link at the same time. The sending and receiving date will at the same link if the media link is successfully built.

Streamax-N9M Network communication protocol



3. Intercom application

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTTALK		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the ssrc in the protocol, then the ssrc will replay the ssrc and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-32
	CHANNEL	INTEGER	1-32(BIT representation and BIT0-BIT31 represent the channels from 1 to 32, valid when the value is 1 otherwise invalid.)
	SOUNDMODE	ENUM	0：mono(Mono) 1: stereo(Stereo) (Client encoding parameters)

Streamax-N9M Network communication protocol

	CHANNELTOTAL	INTEGER	1-32(Number of channels)(Client encoding parameters)
	SAMPLINGRATE	INTEGER	Sample rate and the actual sample rate (Positive integer) For example: 8000、11025、22050、44100(Client encoding parameters)
	SAMPLINGFIGURE	ENUM	Sampling digits(Client encoding parameters) 0: 8 1: 16 2: 32

Streamax-N9M Network communication protocol

	AUDIOFORMAT	ENUM	Encoding format(Client encoding parameters) AudioFormat_PCMU = 0, AudioFormat_1016 = 1, AudioFormat_G721 = 2, AudioFormat_GSM = 3, AudioFormat_G723 = 4, AudioFormat_DVI4_8K = 5, AudioFormat_DVI4_16K = 6, AudioFormat_LPC = 7, AudioFormat_PCMA = 8, AudioFormat_G722 = 9, AudioFormat_S16BE_STEREO = 10, AudioFormat_S16BE_MONO = 11, AudioFormat_QCELP = 12, AudioFormat_CN = 13, AudioFormat_MPEGAUDIO = 14, AudioFormat_G728 = 15, AudioFormat_DVI4_3 = 16, AudioFormat_DVI4_4 = 17, AudioFormat_G729 = 18, AudioFormat_G711A = 19, AudioFormat_G711U = 20, AudioFormat_G726 = 21, AudioFormat_G729A = 22, AudioFormat_LPCM = 23, AudioFormat_CelB = 25, AudioFormat_JPEG = 26, AudioFormat_CUSM = 27, AudioFormat_NV = 28, AudioFormat_PICW = 29, AudioFormat_CPV = 30, AudioFormat_H261 = 31, AudioFormat_MPEGVIDEO = 32, AudioFormat_MPEG2TS = 33, AudioFormat_H263 = 34, AudioFormat_SPEG = 35, AudioFormat_MPEG2VIDEO = 36, AudioFormat_AAC = 37, AudioFormat_WMA9STD = 38, AudioFormat_HEAAC = 39, AudioFormat_PCM_VOICE = 40, AudioFormat_PCM_AUDIO = 41, AudioFormat_AACLC = 42,

Streamax-N9M Network communication protocol

	AUDIOSOURCE	ENUM	(Client encoding parameters) 1：Camera: Camera pickups 2：MicroPhone: Microphone
	AUDIOFRAMELEN	INTEGER	Audio frame length(Client encoding parameters)
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	The following field will be valid when the error code is success.
	ERRORCAUSE	STRING	1-100
	CHANNEL	INTEGER	1-32(BIT representation and BIT0-BIT31 represent the channels from 1 to 32, valid when the value is 1 otherwise invalid.)
	SOUNDMODE	ENUM	0：mono(Mono) 1: stereo(Stereo) (Device-side encoding parameters)
	CHANNELTOTAL	INTEGER	1-32(Number of channels)(Device-side encoding parameters)
	SAMPLINGRATE	INTEGER	Sample rate and the actual sample rate (Positive integer) For example: 8000、11025、22050、44100(Device-side encoding parameters)
	SAMPLINGFIGURE	ENUM	Sampling digits(Device-side encoding parameters) 0: 8 1: 16 2: 32
	AUDIOFORMAT	ENUM	Encoding format(Device-side encoding parameters)
	AUDIOSOURCE	ENUM	(Device-side encoding parameters) 1：Camera: Camera pickups 2：MicroPhone: Microphone
	AUDIOFRAMELEN	INTEGER	Audio frame length(Device-side encoding parameters)

4、Register the media link

Streamax-N9M Network communication protocol

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5、Instructions for controling the media link

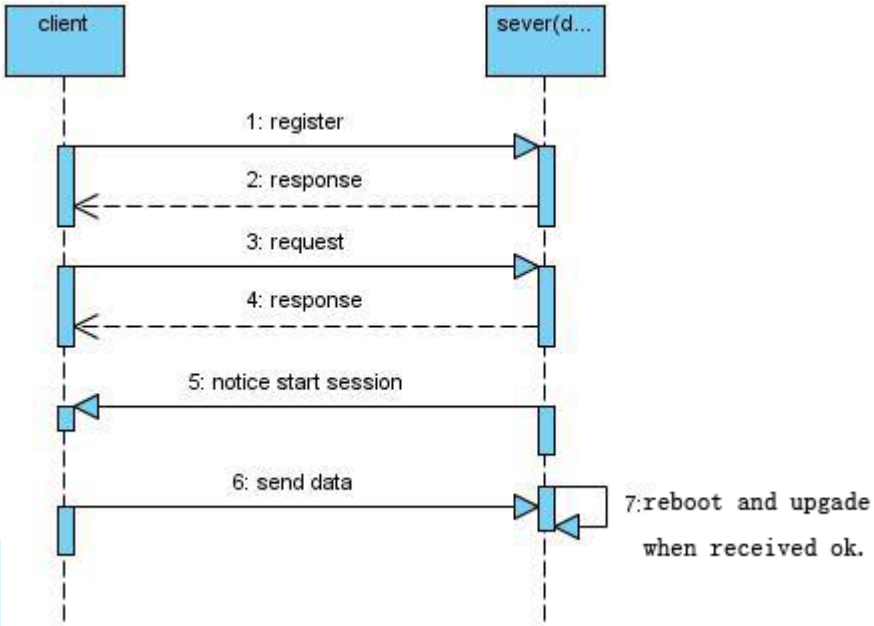
MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLTALK		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-255（Channel）
	STREAMNAME	STRING	1-32
	CMD	INTEGER	Control of the media task operation(0:Stop)
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.7.6 Upgrade(Realized)

The service provider should not have other business while upgrading, and the instruction could only be carried out by one user of the service provider for this function is independent and exclusive with other business. The upgrade function also belongs

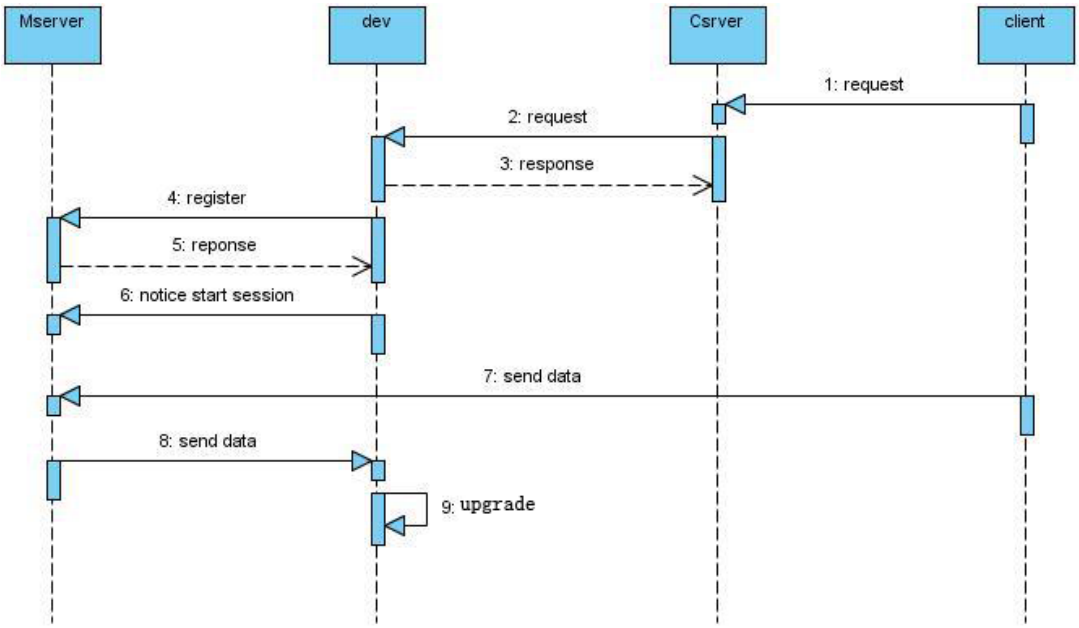
to media business of the service provider, which need the support of the media link and have two forms.

1. PC direct connection mode: The PC will send the upgrade instruction to the ser vice provider directly. PC will build the media link while sending the instructions and register the media link. Then send the upgrade instruction . The service provider will stop all the network business especially the upgrade competence of other users, and the service provider will reboot after receiving the upgrade file.



2. Forward mode: PC will send the instructions to the service provider via the signaling server. The media link is built after the instructions have been sent in this mode. When the link is successfully built the service provider will be ready to receive the upgrade data from the network and store it to the specific folder. The service provider will reboot after receiving the upgrade file.

Streamax-N9M Network communication protocol



3. Upgrade application

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTUPGRADE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-32
	FILENAME	STRING	1-128 File name
	FILESIZE	INTEGER	File total length

	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
	SWVER	INTEGER	This field is only for the upgrading from NVR to IPC, because there are many versions of IPC, so this field is used to check the version. It means that need to be checked if the value is 1,otherwise do not need to check.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-100

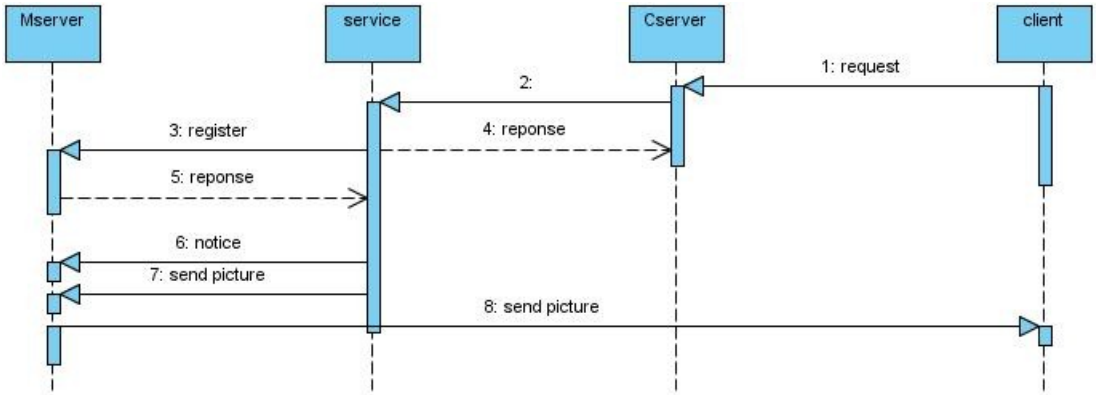
4、Register the media link

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.7.7 Snapshot(Being realized[Currently only achieved Type 0])

The snapshot will only report to the media server and stored in the media server. The client will get the snapshots from the media server, which will decrease the pressure of the store for server provider. The center will control the snapshot

function to snapshot in time, automatically and also historically . We deal with different mode and uploading type with different logical type.



Remote manually capture: The remote client will send the capture instruction to the device and the device will capture as soon as it receives the instruction. It may capture several pictures and store in the cache, and then upgrade according to the upgrading methods. If it is real-time upload, then it will upload upload one picture once and upload all the pictures meet the requirements one by one. If it is package upload, then the device will package the pictures and send the package one by one.

Note, if choose the singal picture to upload, each picture will have a data head beside the protocol head, the structure of the description of the SnapHead is as following:

```
struct SnapHead
{
    unsigned long long SnapTime;// Start time, Milliseconds
    char Channel;
    Unsigned char Snapcmdtype;// Capture instruction type
    //0:Snapshot manually,1:Alarm capture,2:Timing capture,3:Network instruction capture
    char resever[2];
    unsigned int PicDataLen;
    char PicData[0];// Image type
}__attribute__((packed));
```

In order to make it easy, we use the one package with one picture to upload.

1: Capture applied instruction

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTCATCHPIC		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE

Streamax-N9M Network communication protocol

	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-32
	CMDTYPE	INTEGER	0:Remote manually capture 1:Butt capture(STREAMTYPE is uncertain and need to be determined by the instructions of NVR. And support the alarm main stream capture of rm.) 2:Timing capture(Main stream) 3:History Snapshot(Main stream) 4:Continuous capture(Need to support the CIF capture of the platform of ShengGuang, and need to meet the requirements that the capture within 1s combining withe the manually capture.)
	STREAMTYPE	INTEGER	If the field does not exist, the default is main stream 0: Sub-stream 1: Main stream
	IPANDPORT	STRING	1-32(Use the configuration in the service provider if there is no this field.)
	CHANNEL	INTEGER	(BIT representation and BIT0-BIT31 represent the channels from 1 to 32, valid when the value is 1 otherwise invalid)
	COUNT	INTEGER	Capture times，Valid 1-5 times when CMDTYPE is 0,the default time is 1.
	PRETIME	INTEGER	Appointment capture time (Butt capture valid)
	INTERVAL	INTEGER	Capture interval period, 0~300. In seconds. The number stands for the period of capture.
	SNAPPRI	INTEGER	Capture Priority（Butt capture valid）
	DELAYD	INTEGER	Capture error time（Butt capture valid）

Streamax-N9M Network communication protocol

	SEGMENTCOUNT	INTEGER	The number of the time period for time capture, ranging from 1-5, 5 represents that there are 5 time periods in the list. The list should be showing in order and each time period should not have the time crossed, and the time period should be in the same day. The time period list will not exist if there is no number.
	SEGBEGIN1	STRING	Time format YYMMDD HHMMSS（There are blacks between the time），Such as 110928 152130 represents 2011.09.28 15:21:30（24-hour system.)
	SEGEND1	STRING	Time format HHMMSS, such as 202145 represents 21:21:45（24-hour system.)
	…		
	SEGBEGINN	STRING	
	SEGENDN	STRING	
	FREAMCOUNT	INTEGER	Ranging from1-10, represents the foundation of the interval of the continuous frames and the number of the pictures you will capture. For example, the start time is 14:00:00 and the capture interval time is 20s, the number of the continuous frames is 2, the interval time of the continuous frame is 3s, which means it will start capturing from 14:00:00, and capture two picture2 every 20s and the interval time between the two pictures is 3s. Note: the interval time of the continuous frame must less than the interval time of capturing.
	FREAMINTERVAL	INTEGER	Ranging from 1-10 in seconds. The interval time of the continuous frame must less than the interval time of capturing.
	SENDMODE	INTEGER	0:Real-time upload 1:Timing package upload 2:FTP upload
	FORMAT	INTEGER	1：JPGE

Streamax-N9M Network communication protocol

			2：BMP 3：GIF 4：H264（I frame）
	OSD	INTEGER	Bit representation, valid when bit is 1, use the default OSD if the field doesn't exist. bit0:Time bit1:Vehicle number bit2:Speed bit3:GPS information bit4:Channel number bit5:Self-number Bit6:User-defined 1 Bit7:User-defined 2
	UD[N]		1.1 OSD Use self-defined information, the current value is 2. Subscript 0 corresponds to the OSD bit4,Subscript 1 corresponds to the OSD bit 5.
	R	INTEGER	Snapshot picture resolution 0-CIF 1-HD1 2-D1 3-QCIF 4-QVGA 5-VGA 6-720P 7-1080P 8-3MP(2048*1536) 9-5MP(2592*1920) 10 WQCIF，11 WCIF，12 WHD1，13 WD1(960H) 14-960P 15-Q1080P
	Q	INTEGER	Capture picture quality 1-Best 2-Good 3-Normal 4-Worse 5,6,7，8-Worst
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

OSD overlay the self-defined the combination of JSON	Atomic data structure	Remark
UD	X	X coordinate in the upper left corner, ranging from 0-1024

Streamax-N9M Network communication protocol

	Y	Y coordinate in the upper left corner, ranging from 0-768
	C	Overlay information, 32bytes string.

1.1 OSD Overlay self-defined information

2 Register media server

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3、Capture media task control instructions

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLCATCHPICTURE		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-32

	CMDTYPE	BIT	0:Remote manually capture 1:Timing capture 2:History Snapshot 3:Alarm trigger
	CMD	ENUM	Control of the media task operation (0:Stop)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3.4.7.8 Download log(not realized)

The file system doesn't support the download of the log file as the form of document, so the downloading of the log is independent. The logs are located in different places and need to be re-segmentated and then download. Because the quantity of the log file every day is uncertain, so the logs need to be divided into parts in case that there are too many logs and cause a system mess.

1、Apply for downloading log

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTLOG		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535（Channel）Synchronization source identifier, valid when applying, unique
	STREAMNAME	STRING	1-32
	LOGTYPE	INTEGER 64	(64 bit)Log type bit representation, valid when the value is 1. bit0:Alarm log bit1:Operation log Other values determined

Streamax-N9M Network communication protocol

	ALARMTYPE	INTEGER 64	Alarm log details(64 bit)bit representation bit0:Self-defined alarm bit1:Video loss bit2:Blind alarm bit3:Motion detection bit4:HDD bit5:IP conflict The rest TBD This field can exist with ALARMID and also separated, but must based on the ALARMTYPE if together with ALARMID. For example, if it is the self-defined alarm, then the ALARMIF is invalid if it represents the channel number.
	ALARMID	INTEGER	Operation log will be invalid without this field. And it represents the number when the bit of ALARMTYPE is valid. Represent the HDD logical number when bit4 is valid. This field will be invalid when bit5 is valid, and others TBD.
	STARTT	STRING	1-14(Year,month,day,hour,minute,second: 20120928000000, represents starting at 2012.9.28). Start from the earliest logo record if not exist or is empty.
	ENDT	STRING	1-14(Year,month,day,hour,minute,second: 20120928235959, represents end at 2012.9.28 23:59:59). It is the lastest logo record if not exist or is empty.
	IPANDPORT	STRING	1-32(Use the provided by the service provider if there is no this field.)
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32

Streamax-N9M Network communication protocol

	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	TOTAL	INTEGER	The total number of the logs searched

2. Register media channel

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-100
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3、Control instruction for downloading the media task log

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLDOWNLOADLOG		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	CHAR	0-65535 Time period identification ID. The time period identification ID is provided bu the client when applying here, and is the same as it is applied.
	STREAMNAME	STRING	1-32

Streamax-N9M Network communication protocol

	CMD	ENUM	Control of the media task operation (0:Stop)
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

Note: the format of the logs are shown in the head of the protocol, the value of PT is 1 and represent METADATA. The foramt of METADATA is different according to the detailed media task. METADATA format TBD.

4. The note for log downloading link to start uploading

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	DOWNLOGSTART		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	TOTAL	INTEGER	The total number of the log searched

5. The note for log downloading link to finish uploading

MODULE	MEDIASTREAMMODEL	
SESSION	TYPE	RANGE
	STRING	
OPERATION	NAME	TYPE
	DOWNLOGSTOP	REQUEST-RESPONSE

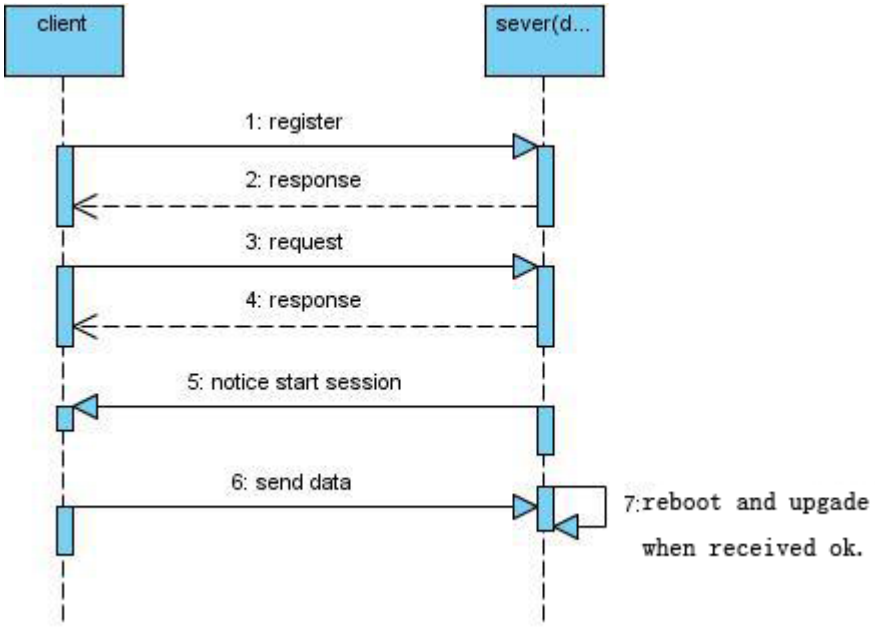
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	Normal end when the error code is 0
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	TOTAL	INTEGER	The total number of the logs searched

This reporting instruction is the parameters which need to be reported every time the link start or end reporting the media data for the upper layer to record. The PT in the protocol is 0, SSRC and CSRC is thecorresponding SSRC and CSRC in the instruction, which are used to distinguish the data source in the media link.

3.4.7.9 Import parameters(Realized)

The service provider should not have other business while importing, and there should be one user to do the importing operation for this function is independent and exclusive with other business. The import of the parameters belongs to the media business and need the support of the media link, which also have two forms.

1. PC direct connection mode: PC will send the import instruction directly. The PC will build the media link first when sending the instruction, after successfully register the media link, it will send the instruction. The service provider will start receiving the data after getting the instruction and save to the flash when finish receiving and checking.



2. Forward mode: PC will send the instruction to the service provider through the signaling server. The media link will be built after the application instruction is sent.

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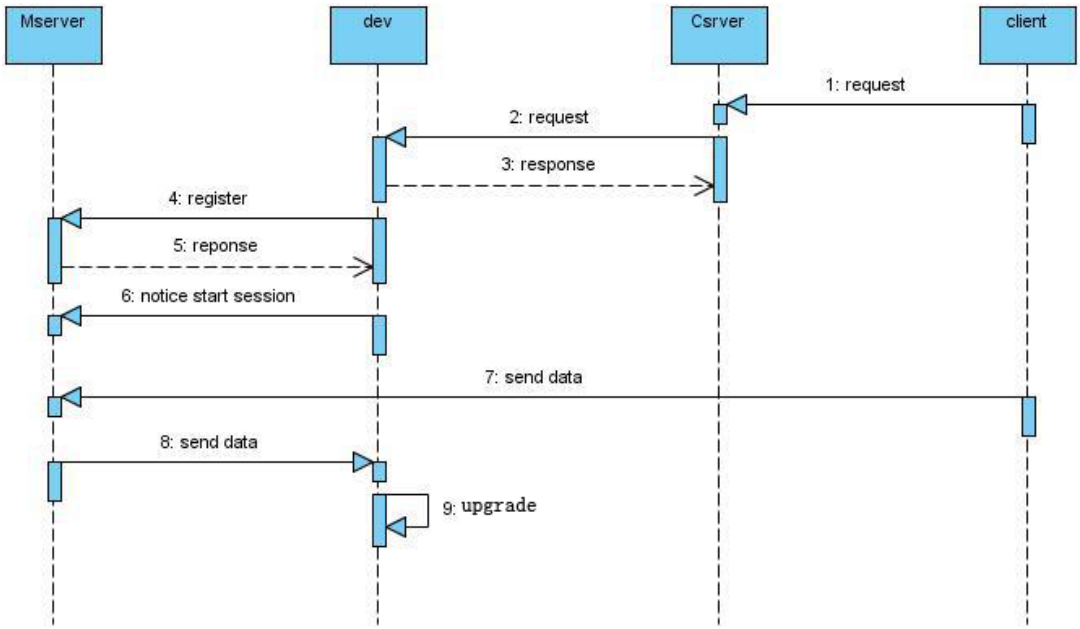
The media link will be ready to receive the parameter file when it is built, and the file will be saved in the specific folder, and finally be saved to the flash when finish receiving and checking.



3. Import parameter application

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTUPDATEPARAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)

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	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-32
	FILENAME	STRING	1-128 File name
	FILESIZE	INTEGER	File total length
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-100

4、Register the media link

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5、Import parameters control instruction

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLUPDATEPARAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1 It is related to the video stream uploaded to client.
	SSRC	CHAR	0-65535 Time period identification ID. The time period identification ID is provided by the client when applying, and it is the same as the application instruction.
	STREAMNAME	STRING	1-32
	CMD	ENUM	Control of the media task operation (0:Stop)
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

3.4.7.10 Export Parameters(Realized)

The service provider should not have other business while exporting, and there should be one user to do the exporting opration for this funtion is independent and exclusive with other business. The export of the parameters belongs to the media business and need the support of the media link, which also have two forms.

1. PC direct connection mode: PC will send the import instruction directly. The PC will build the media link first when sending the instruction, after successfully register the media link, it will send the instruction. The service provider will start receiving the data after getting the instruction and save to the flash when finish receving and checking.

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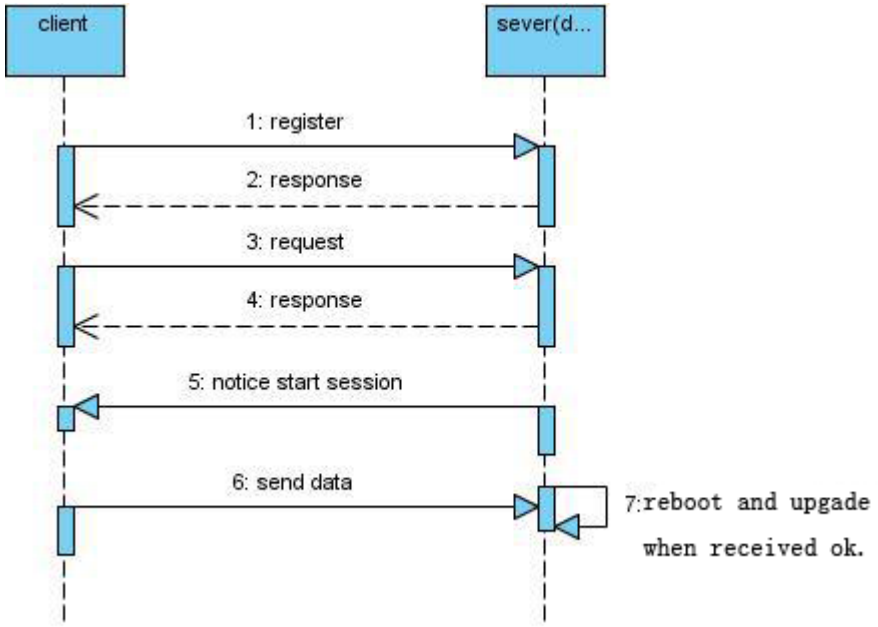
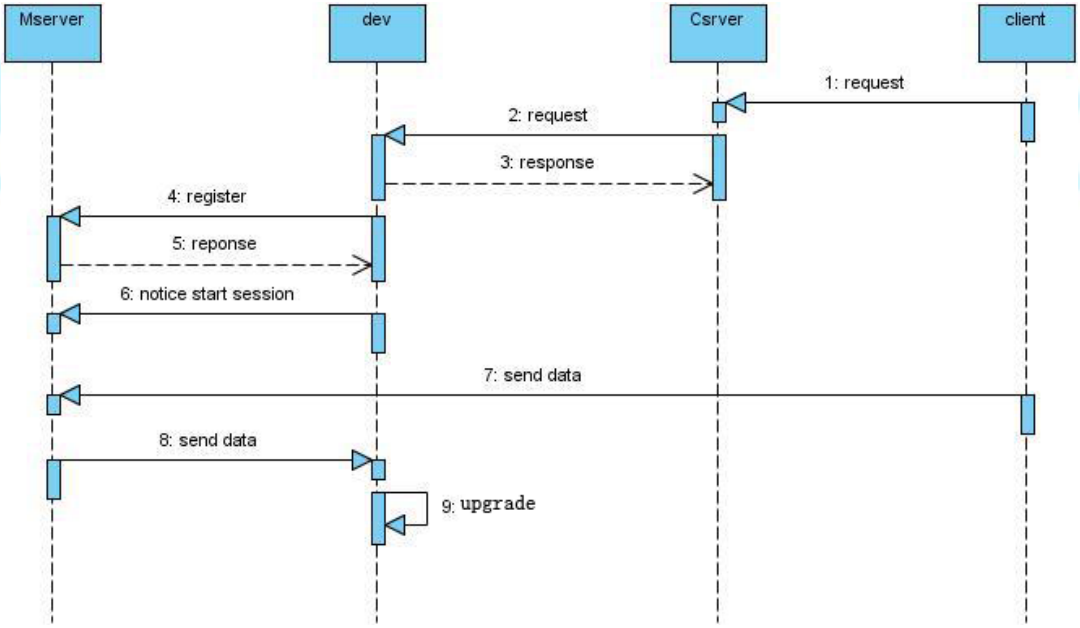


2. Forward mode: PC will send the instruction to the service provider through the signaling server. The media link will be built after the application instruction is sent. The media link will be ready to report the parameter file when it is built, and it will finish exporting when the service provider finish receiving the parameter file.



3、Parameter import application

MODULE	MEDIASTREAMMODEL	
SESSION	TYPE	RANGE
	STRING	
OPERATION	NAME	TYPE
	REQUESTDOWNPARAM	REQUEST-RESPONSE

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PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-100
	FILENAME	STRING	1-128 File name
	FILESIZE	INTEGER	File total length
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode, the same as it is applied.

4、Register the media link

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPON	NAME	TYPE	RANGE

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SE	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5、Note for the parameter export link starting to upload data

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTDOWNPARAM		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	FILESIZE	INTEGER	The total length of the file
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode, the same as it is applied

This report instruction is the parameters of the media data which will inform the upper layer to receive in the media link, including the total length of the parameter file. The PT in the head of the protocol is 0, and SSRC and CSRC are the correspoding parameters in the instruction in order to distinguish the data resource in the media link.

6、Instruction for exporting the parameter

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLDOWNPARAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1 It is related to the video stream uploaded to client.
	SSRC	CHAR	0-65535 Time period identification ID. The time period identification ID is provided bu the client when applying here, and is the same as the application instruction.

	STREAMNAME	STRING	1-32
	CMD	ENUM	Control of the media task operation (0:Stop)
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

3.4.7.11Single-channel audio transmission(Unrealized)

In order to solve the special application of DVR and ensure the audio handling, this instruction is only for a specific system of single-channel audio transmission. The export of the parameters belongs to the media business and need the support of the media link, which also have two forms. When applying for the real-time video then it will apply for the audio needed at the same time, and the audio if for the client decoding, the audio in the composite video stream is used for user recording but not for audio encoding. If you need to switch the audio at real-time, then you should send the audio swith instruction, and close the existed channel to resend the new audio.

1. PC direct connection mode: PC will send the import instruction directly. The PC will build the media link first when sending the instruction, after successfully register the media link, it will send the instruction. The service provider will send the corresponding audio data of the channel when received the instruction and successfully handled.

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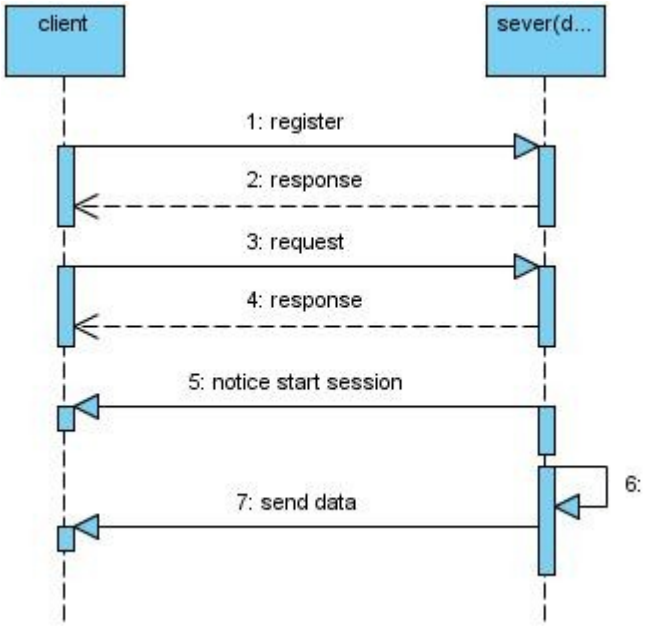
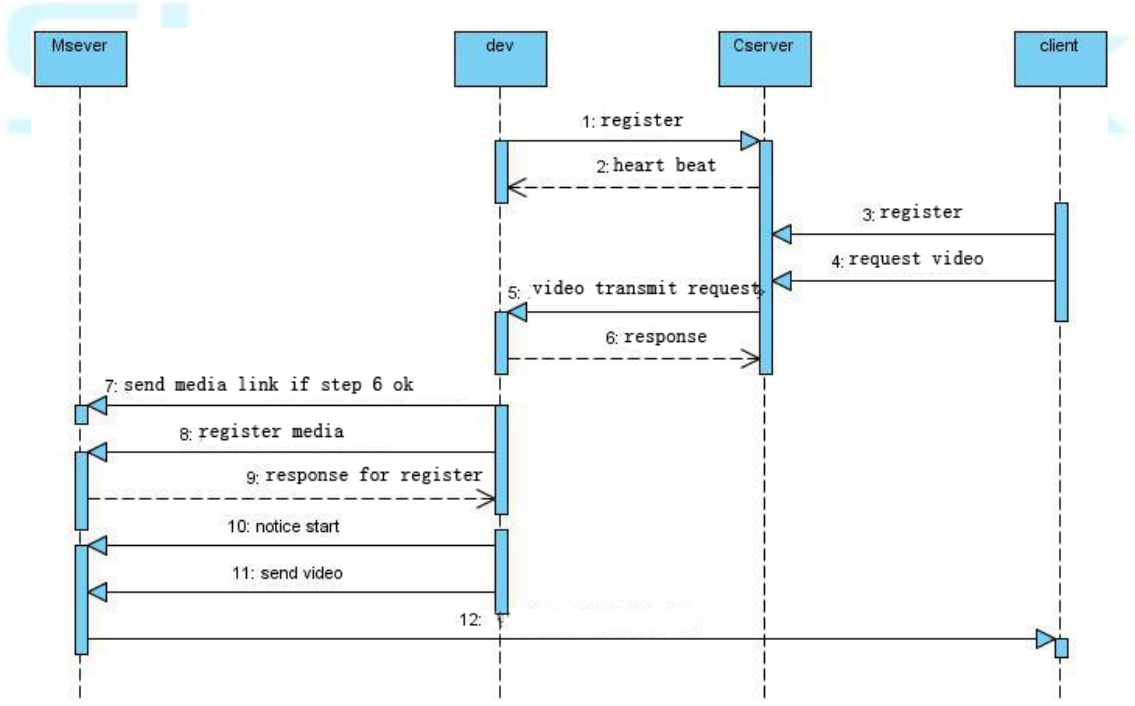


2. Forward mode: PC will send the instruction to the service provider through the signaling server. The media link will be built after the application instruction is sent. The media link will be ready to send the audio date after the media link is built and wait for the service provider to receive the audio data.



3、Audio application

MODULE	MEDIASTREAMMODEL	
SESSION	TYPE	RANGE
	STRING	

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OPERATION	NAME		TYPE
	REQUESTAUDIO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-32
	CHANNEL	INTEGER	1-32(BIT representation, BIT0-BIT31 represent the channels from 1-32. Valid when BIT is 1 otherwise invalid.) Audio
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-100
	SSRC	CHAR	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.

4、Register the media link

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32

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	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5、Audio control command

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLAUDIO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client.
	STREAMNAME	STRING	1-32
	CHANNEL	INTEGER	1-32(BIT representation, BIT0-BIT31 represent the channels from 1-32. Valid when BIT is 1 otherwise invalid.) Audio, control which channel need to be trnasmitted.
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client. It is the same as the ssrc in th instruction, when CHANNEL changes, the ssrc in the head of the audio also changes to

			ensure the channel is the current applied channel.

3.4.7.12 Passthrough data stream(Realized)

Add the passthrough protocol is to let the upper layer communicate with the standard layer more easily, reduce the participation of the sdk so that the time period of investigation will be shorter, and also provide a efficient channel for the data provider. In order to deal with different kinds of passthrough data, we define a dead of the passthrough protocol here.

```
typedef struct _TRANS_HEAD
    {
    int    nType;// Represent the date type of the passthrough.
    int    nReserve;// Extend
    }TRANS_HEAD;
```

Each package of protocol data must has a head, which we call it the data head of the passthrough. This structure is at the first place of each passthrough data, following the protocol head. Among this ,the definition if the nType please refer to 6.2.5.

In order to solve the special condition of NAT,we use the protocol module agent in the parameter storage, and use the IE to visit the parameter part of the client. This instruction is to let the server be a special client and visit the device as a client, and build a special media link, which will let the device communicate with the server without the head of the protocol. In order to ensure the device could handle the data at the same time, the server should add a ssrc to each instruction to distinguish different instructions. The device will decide the web visit according to the ssrc. Each time the device receives a requirement that contains a http format requirement, then the device will do the web visiting when it handled the requirement, and then the device will send the data which is required in the http requirement directly to the server or web.The data will be rebuilt by the server according to the ssrc when the requirement is applied and the send back to the client.

Note: the requirements of http basically are: get, set, post, and in the protocol these requirements are not distinguished.

1. PC direct connection mode: PC will send the import instruction directly. The PC will build the media link first when sending the instruction, after successfully register the media link, it will send the instruction. The service provider will send the corresponding audio data of the channel when received the instruction and successfully handled.

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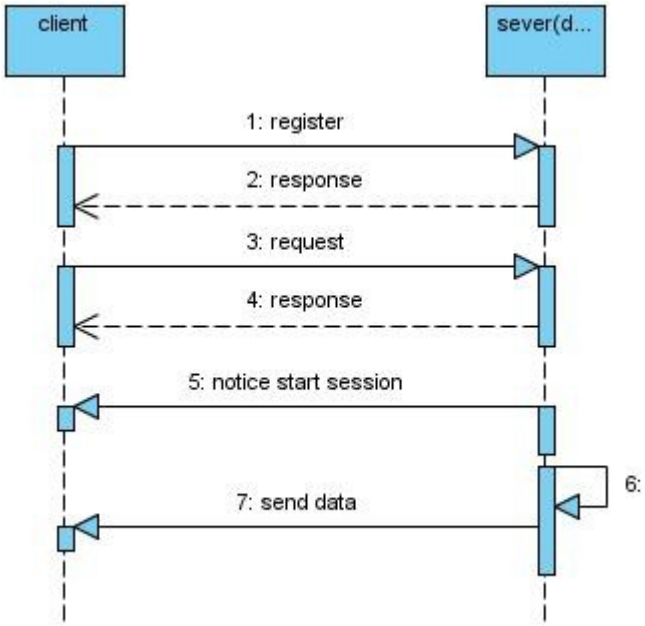
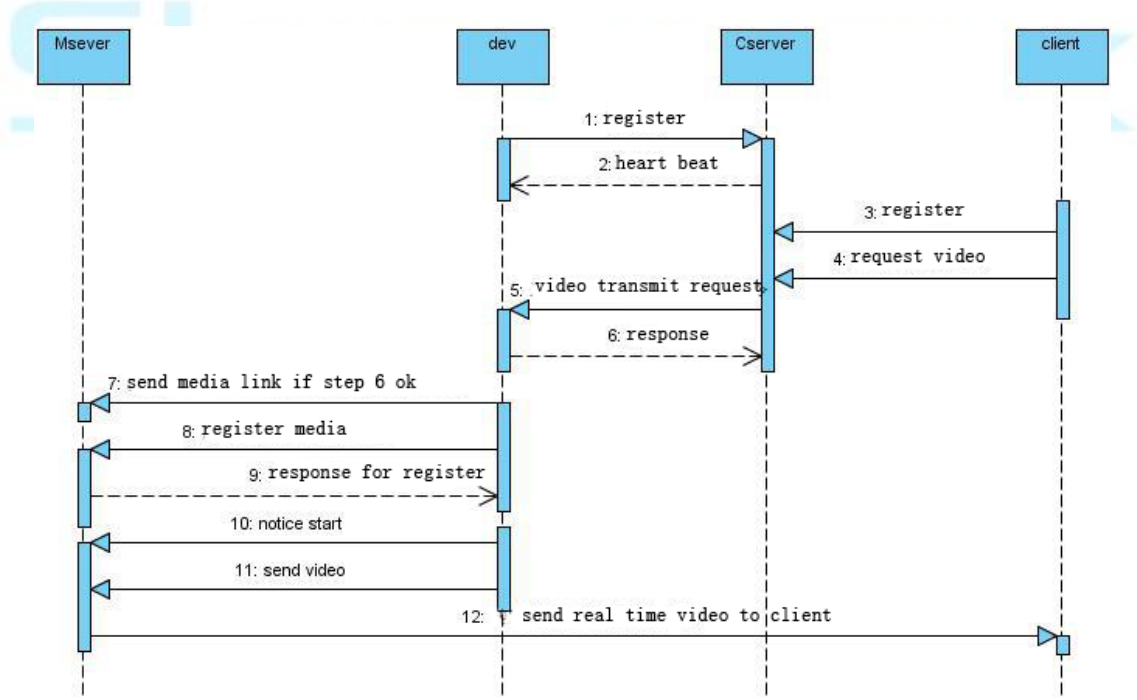


2.Forward mode: PC will send the instruction to the service provider through the signaling server. The media link will be built after the application instruction is sent. The media link will be ready to send the audio date after the media link is built and wait for the service provider to receive the audio data.



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3、Application

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTTRANS		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	New mode：SSRC set as -1。
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-100
	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be provided by the client when applying. It is different with the ssrc in the protocol, then the ssrc will replay the ssrc and be the synchronization source identifier in the protocol.

Design for client（Transmit server design）Note:

Service on:

1 Finish the login and media link progress.

2 The media link finish the sending and receiving of the date.

3 Back to step 1 when there is something wrong with the media link.

The device use the link timeout detection mechanism and will actively disconnect the media link.

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4、Register the media link

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

5、Control instructions

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLTRANSLINK		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client.
	STREAMNAME	STRING	1-32
	CMD	INTEGER	0: Close all the media link regardless of whether there is a IE request 1: Close one of the IE requirement according to the ssrc.
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32

	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client. It is the same as the ssrc in th instruction, when CHANNEL changes, the ssrc in the head of the audio also changes to ensure the channel is the current applied channel.

3.4.7.13 Real-time video sub-stream application（Realized）

This instruction is mainly for one user to apply for several stream and prevent the streams from producing mutually exclusive. The instruction 3.4..7.1 can only support one user to use one stream, so here is mainly for the application of the sub-stream. The PT of the type for sub-stream transmission is 15.

1、Real-time video applications

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTNEWALIVEVIDEO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	CHAR	0-255（Here for channel comprehension）Synchronization source identifier ID, this will be invalid and is base on the CHANNEL field behind when applying, and the device will insert the channel number os that it is easy for the upper layer to resolve. It is different with the ssrc in the protocol, then the ssrc will replay the ssrc and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-100
	STREAMTYPE	INTEGER	1(Applied stream type 0: Sub-stream, 1: Main stream, 2: Mobile stream)

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	CHANNEL	INTEGER	1-32(BIT representation, BIT0-BIT31 represent the channels from 1-32. Valid when BIT is 1 otherwise invalid.)
	AUDIOVALID	INTEGER	(BIT representation, BIT0-BIT31 represent the channels from 1-32. Valid when BIT is 1 otherwise invalid.) CHANNEL must be corresponding withe the channel number, and the CHANNEL must be valid.
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SSRC	CHAR	0-255（Channel）Synchronization source identifier ID, this will be invalid and is base on the CHANNEL field behind when applying, and the device will insert the channel number os that it is easy for the upper layer to resolve. It is different with the ssrc in the protocol, then the ssrc will replay the ssrc and be the synchronization source identifier in the protocol.
	STREAMTYPE	INTEGER	1(Applied stream type 0: Sub-stream, 1: Main stream, 2: Mobile stream)

2、Real-time video media link register

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32

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	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3、Real-time video media link control instruction

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLNEWSTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	Refer to PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client.
	STREAMNAME	STRING	1-32
	STREAMTYPE	INTEGER	1(Applied stream type 0: Sub-stream, 1: Main stream, 2: Mobile stream)
	AUDIOVALID	INTEGER	(BIT representation, BIT0-BIT31 represent the channels from 1-32. Open when BIT is 1 otherwise close) CHANNEL must be corresponding withe the channel number, and the CHANNEL must be valid. If the operation need this field then you must insert the operation towards the audio, or it will be the same with the default.
	CMD	ENUM	Control of the media task operation(0: Stop, 1: Resume, 2: Standby: 3: Change the stream, 4: Audio management.)
RESPONSE	NAME	TYPE	RANGE

	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client.

3.4.7.14 Auxiliary sub-stream real-time video applications（Realized）

This instruction is mainly for one user to apply for several stream and prevent the streams from producing mutually exclusive. The instruction 3.4..7.1 can only support one user to use one stream, so here is mainly for the application of the auxiliary sub-stream. The PT of the type for auxiliary sub-stream transmission is 16. Auxiliary sub-stream is one type of the sub-stream, we call it mobile stream here, and it has independent coding.

1、Real-time video applications

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	REQUESTMOBILEALIVEVIDEO		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)

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	SSRC	CHAR	0-255（Here for channel comprehension）Synchronization source identifier ID, this will be invalid and is base on the CHANNEL field behind when applying, and the device will insert the channel number os that it is easy for the upper layer to resolve. It is different with the ssrc in the protocol, then the ssrc will replay the ssrc and be the synchronization source identifier in the protocol.
	STREAMNAME	STRING	1-100
	STREAMTYPE	INTEGER	1(Applied stream type 0: Sub-stream, 1: Main stream, 2: Mobile stream)
	CHANNEL	INTEGER	1-32(BIT representation, BIT0-BIT31 represent the channels from 1-32. Valid when BIT is 1 otherwise invalid)
	AUDIOVALID	INTEGER	(BIT representation, BIT0-BIT31 represent the channels from 1-32. Valid when BIT is 1 otherwise invalid) CHANNEL must be corresponding withe the channel number, and the CHANNEL must be valid.
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SSRC	CHAR	0-255（Channel）Synchronization source identifier ID, this will be invalid and is base on the CHANNEL field behind when applying, and the device will insert the channel number so that it is easy for the upper layer to resolve. It is different with the ssrc in the protocol, then the ssrc will replay the ssrc and be the synchronization source identifier in the protocol.
	STREAMTYPE	INTEGER	1(Applied stream type 0: Sub-stream, 1: Main stream, 2: Mobile stream)

2、Real-time video media link register

Streamax-N9M Network communication protocol

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-32
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3、Real-time video media link control instruction

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLMOBILESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	PT	CHAR	见 PAYLOAD TYPE2.1.1It is related to the video stream uploaded to client.
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client.
	STREAMNAME	STRING	1-32
	STREAMTYPE	INTEGER	1(Applied stream type 0: Sub-stream, 1: Main stream, 2: Mobile stream)
	AUDIOVALID	INTEGER	(BIT representation, BIT0-BIT31 represent the channels from 1-32. Open when BIT is 1 otherwise close) CHANNEL must be corresponding withe the channel number, and the CHANNEL must be valid. If the operation need this field then you must

			insert the operation towards the audio, or it will be the same with the default.
	CMD	ENUM	Control of the media task operation(0: Stop, 1: Resume, 2: Standby: 3: Change the stream, 4: Audio management.)
RESPONSE	NAME	TYPE	RANGE
	STREAMNAME	STRING	1-32
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	SSRC	INTEGER	0-255（Channel）It is related to the video stream uploaded to client.

3.4.7.15 Download the data file （MDVR Only）

1. Apply for downloading file

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	DOWNLOADDATA		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)
	SSRC	INTEGER	0-65535 Synchronization source identifier ID, this will be invalid and is base on the DATATYPE field behind when applying, and the device will insert the black box type and it is the bit position of hte DATATYPE, which means that the SSRC is 1 when bit1 is 1 and is easy for the upper layer to resolve. It is different with the SSRC in the protocol, then the SSRC will replay the SSRC and be the synchronization source identifier in the protocol.

Streamax-N9M Network communication protocol

	STREAMNAME	STRING	1-32
	DATATYPE	INTEGER	File type, 32bit representation, valid when the value is 1. bit0：GPS Information bit1：Alarm logo(Information) bit2：ACC data bit3：Device status information bit4: Operation Log bit5: can Data bit6：Dial log Other extensions
	OFFSETFLAG	INTEGER	Offset flag 0：No offset without this field； 1：Offset according to the number
	OFFSET[N]	INTEGER	Let the OFFSETFLAG be the reference mark, OFFSET represents the size when OFFSETFLAG is 0 , and also represent the total size of the downloading file in the download time. And it will start to re-download if the OFFSET is 0. Otherwise represents HTTP. N represents that the total types of black box data, N should be corresponding with the bit of BBOXTYPE.
	STARTT	STRING	1-14(Year, month, day, hour, minute, second: 20120928000000, represents 2012.9.28 start.) It represents that start from the earliest black box record.
	ENDT	STRING	1-14(Year, month, day, hour, minute, second: 20120928000000, represents 2012.9.28 end.) It represents that end at the latest black box record.
	IPANDPORT	STRING	Media IP 1-32(Use the IP and port given by the service provider if there is no this field. For example; 58.60.231.218:5550)

Streamax-N9M Network communication protocol

	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

2. Register Media Link

MODULE	CERTIFICATE		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CREATESTREAM		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	VISION	STRING	1-32(Protocol Version)
	DEVTYPE	INTEGER	1-32
	STREAMNAME	STRING	1-100
	IPANDPORT	STRING	1-32
	DSNO	STRING	Device serial number, unique
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

3. Control instruction for download the media mission file

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	CONTROLDOWNLOADDATA		REQUEST-RESPONSE
PARAMETER	NAME	TYPE	RANGE
	CSRC	STRING	0-64BYTE(Service Provider)

Streamax-N9M Network communication protocol

	PT	CHAR	Refer to PAYLOAD TYPE2.1.1 It is related to the video stream uploaded to client.
	SSRC	CHAR	0-65535 Time period identification ID. The time period identification ID is provided bu the client when applying here, and is the same as the application instruction.
	STREAMNAME	STRING	1-32
	CMD	ENUM	Control of the media task operation (0:Stop) 1:Standby 2:Standby to resume normal download 3:Drag
	STIME	STRING	1-14(Year, month, day, hour, minute, second: 20120928000000, represents 2012.9.28 start.) It represents that start from the earliest black box record.
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.

4. The notification for Download Media Link starting uploading data

This report instruction is mainly for inform the upper layer that the device is getting a new media data file,and the instruction here represents contains the total length of the file. The PT in the head of the protocol is 0, SSRC stands for the corresponded bit the BBOXTYPE linked to when applying the black box file.

MODULE	MEDIASTREAMMODEL	
SESSION	TYPE	RANGE
	STRING	
OPERATION	NAME	TYPE

Streamax-N9M Network communication protocol

	DOWNDATASTART		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	SSRC	INTEGER	DATATYPE corresponding bit position, which means that ssrc is 1 when bit1 is 1 and is easy for the upper layer to resolve.
	TOTAL	INTEGER	The total size of the file searched.

5、Notice for download of media data finish.

This command is used to report to the up layer in the media channel, report device read parameter of the media file, this command contain the length of the file. The PT in the protocol head is 0, The SSRC is the bit position of the BBOXTYPE in the black box file when request. But this command can not be used as the finish flag for all the media data. MEDIASTOP is used to finish all the media task.

MODULE	MEDIASTREAMMODEL		
SESSION	TYPE		RANGE
	STRING		
OPERATION	NAME		TYPE
	DOWNDATASTOP		REQUEST-RESPONSE
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	Normal end when the error code is 0.
	ERRORCAUSE	STRING	1-100
	STREAMNAME	STRING	1-32
	SERIAL	INTEGER	Unsigned int, and the highest bit is 0, active in transmit mode.
	SSRC	INTEGER	DATATYPE corresponding bit position, which means that SSRC is 1 when bit1 is 1 and is easy for the upper layer to resolve.

	LAST	INTEGER	If download several types of black box data, this value represents that whether one type can be the last to read, because there may be same black box file in one time period. 0: It is not the last time to read. 1: It is the last time to read.

3.4.8 Parameter module

Parameter module is a channel that contains all the setting and getting of the parameters, and provided bu the network layer and the upper layer. The device and the upper application layer will pack and resolve the data according to the protocol. Parameter module protocol date still use the JSON format, the instructions will be different from other instructions. Parameter module contains many parameters as well as modules, which require the device to resolve parameters from several modules. So there are some changes towards the instructions before.

Examples:

Apply for getting: Apply for module CONFIGMODEL，SESSION is " 98190DC2-0890-4EF8-AC9A-5940995E6119"，operation is GET, the parameters: PARAM，PARAM may contain several modules and parameters, so it is an array type when defining. If there is one module then the array only has one element, which is PARAM[0], every element in PARAM is a whole JSON. There are parameters in MODULE1 and MODULE2 contained in the PARAM, they can be the same for it is only getting the parameters ,so there are only parameter name without the range. (This example uses "?" instead.)

{MODULE:"CONFIGMODEL",SESSION:" 98190DC2-0890-4EF8-AC9A-5940995E6119",OPERATION:"GET", PARAMETER:
[
{ " MODULE1"：{A:"?", B:{A:"?", B:{"?"}}, C:"?"}},
{ " MODULE2"： {D:"?",E:"?",F:"?"}}
]
}

Define JSON Variable

JSON::VALUE QUEST;

Streamax-N9M Network communication protocol

Request Format：

QUEST[PARAM]=”?”

Indicates a request for all parameters

QUEST[PARAM][EVENTMODEL] = “?”

Indicates a request for the full event alarm module parameters

QUEST[PARAM][EVENTMODEL][VCP] [AREA]=”?”

Indicates a request for all the parameters in the cover part of the alarm module

QUEST[PARAM][EVENTMODEL][VCP][CH][AREA][CH]=”?” If CH is 1 then it turns to

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1]=”?”

Indicates a request for all the parameters in the cover part of the alarm module channel1.

QUEST[PARAM][EVENTMODEL][VCP][CH][AREA][CH][INDEX]=”?” If both of the CH and the INDEX are 1 ,then it turns to:

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][1]=”?”

Indicates a request for all the parameters in the cover part of the alarm module channel1.

QUEST[PARAM][EVENTMODEL][VCP][CH][AREA][CH][INDEX][AREAX] = “?” If both of the CH and the INDEX are 1 ,then it turns to:

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][1][AREAX] = “?”

Indicates a request for all the parameters in the cover part of the alarm module channel 1’s part 1’s X position.

The request for parameters before and in the module can be parallel.

QUEST[PARAM][EVENTMODEL] = “?”

QUEST[PARAM][AVSTREAMMODEL] = “?”

Require all the parameters in EVENTMODEL and AVSTREAMMODEL at the same time.

Or

QUEST[PARAM][EVENTMODEL] = “?”

QUEST[PARAM][AVSTREAMMODEL][CHROMA] = “?”

Require all the CHROMA parameters in EVENTMODEL and AVSTREAMMODEL at the same time.

Example 1：

Response Format:

The respond of the request for all the parameters in the cover part of the alarm module channel1.

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1] = “?”

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][1][AREAX] = 10;

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][1][AREAY] = 10;

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][1][AREAW] = 10;

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][1][AREAH] = 10;

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][2][AREAX] = 10;

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][2][AREAY] = 10;

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][2][AREAW] = 10;

QUEST[PARAM][EVENTMODEL][VCP][1][AREA][1][2][AREAH] = 10;

Example 2：
IO port parameters
Application instruction format
Atomic element parameters
QUEST[PARAM][EVENTMODEL][IO][INDEX][NAME] = “?”//Name
QUEST[PARAM][EVENTMODEL][IO][INDEX][ENABLE] = “?”//Enable
QUEST[PARAM][EVENTMODEL][IO][INDEX][PLAN] = “?”//Plan
QUEST[PARAM][EVENTMODEL][IO][INDEX][LINK] = “?”//whether to link
QUEST[PARAM][EVENTMODEL][IO][INDEX][LEVEL] = “?”//Normally open or normally closed
QUEST[PARAM][EVENTMODEL][IO][INDEX][TIME] = “?”//Linkage output time
QUEST[PARAM][EVENTMODEL][IO][INDEX][EMAIL] = “?”//Whether to send EMAIL
QUEST[PARAM][EVENTMODEL][IO][INDEX][CH] = “?”//Linkage channel number
QUEST[PARAM][EVENTMODEL][IO][INDEX][VPRE] = “?”//Linkage alarm pre-recorded time
QUEST[PARAM][EVENTMODEL][IO][INDEX][VDELAY] = “?”//Linkage alarm delay time
When INDEX is 1, it turns to:
QUEST[PARAM][EVENTMODEL][IO][1][NAME] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][ENABLE] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][PLAN] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][LINK] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][LEVEL] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][TIME] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][EMAIL] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][CH] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][VPRE] = “?”
QUEST[PARAM][EVENTMODEL][IO][1][VDELAY] = “?”
It is for all the parameters of the IO number 1.

Response：
Insert the range of the parameter according to the instruction, use RESPONSE to respond.
{MODULE:"CONFIGMODEL",SESSION:" 98190DC2-0890-4EF8-AC9A-5940995E6119",OPERATION:"GET", RESPONSE:
[
{ "1":{A:"1", B:{A:"2", B:{"3"}}, C:"5"}},
{ "2"： {D:"6",E:"REG",F:" REG "}}
]
}

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Response Format:
QUEST[PARAM][EVENTMODEL][IO][1][NAME] = “SENSOR1”
QUEST[PARAM][EVENTMODEL][IO][1][ENABLE] = 1 //Valid
QUEST[PARAM][EVENTMODEL][IO][1][PLAN] = “000000-090909 , 090909-230156，090909-230156”
QUEST[PARAM][EVENTMODEL][IO][1][LINK] = 1//Linkage
QUEST[PARAM][EVENTMODEL][IO][1][LEVEL] = 1//Normally open (high)
QUEST[PARAM][EVENTMODEL][IO][1][TIME] = 30
QUEST[PARAM][EVENTMODEL][IO][1][EMAIL] = 1 //Yes
QUEST[PARAM][EVENTMODEL][IO][1][CH] = 3 //Linkage Channel 1 and Channel 2
QUEST[PARAM][EVENTMODEL][IO][1][VPRE] = 10
QUEST[PARAM][EVENTMODEL][IO][1][VDELAY] = 10

MODULE	CONFIGMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	GET	REQUEST-RESPONSE	
PARAMETER	NAME	NAME	VALUE
	MODULE1	PARAMETER1	
		…	…
	MODULE2	PARAMETER1	
		…	…
	……		
RESPONSE	NAME	NAME	VALUE
	MODULE1	PARAMETER1	
		…	…
	MODULE2	PARAMETER1	
		…	…
	……		

MODULE	CONFIGMODEL		
SESSION	TYPE	RANGE	
	STRING		
OPERATION	NAME	TYPE	
	SET	REQUEST-RESPONSE	
PARAMETER	NAME	NAME	VALUE
	MODULE1	PARAMETER1	

		…	…
	MODULE2	PARAMETER1	
		…	…
	……		
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100
	ERRORDESCRIPTION	STRING	1-100

3.5 Device Network Service Module

In order to let the server to deal with the requirement evenly, the uploaded data should be balanced before it is uploaded from the device through the balance server. That is to say, the balance server will distribute the devices according to the ability of the current receiving server. The device will connect according to the hosting server address sent by the balance server, and it will use the methods of 3.5.1. The device will reconnect to the hosting server if connection fail or time out.

1、The device will send a http request according to the balance server address and port according to the UI. The applying field is serversfordevice/NatServer?did=Device ID&dver=Device firmware version.(did field currently reserved.)

2、The device will send a http request according to the balance server address and port according to the UI. The applying field is serversfordevice/NatServer?did=Device ID&dver=Device firmware version.(did field currently reserved.)

3、The balance server will return a reply when it successfully receive the http request from the device:
{"nat":{"ip":"*.*.*.*","port":3478},"event":{"ip":"*.*.*.*","port":6001},"gt":{"ip":"*.*.*.*","port":5556},"msg":{"ip":"*.*.*.*","port":5556,"autoreg":1}}json string, the "*.*.*.*" support IP and domain name,"gt" represents the transmit address，"msg"represents the signaling address，autoreg"represents whether to start transmission，1represents to actively start transmission, other values meas that start the transmission according to the EVENT service.

4、The device will resolve the nat server and event server when successfully receiving the http reply and the send the address to nat service and event service.

5、This application should be finished in 5s, or it will restart from step 1. And if getting failed, the device will do the whole steps again. When one of the nat service or event service is disconnection, the device will stop the current service and restart from step 1.

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3.5.1 Set the Remark booklet of the network service information

This function is to get the parameters when it is default or the parameters when changed, which is easy for the customers to manage. This function use UDP protocol to handle, and the device will actively report the network parameter in real time, and do not deal with the pass up. The package format is as follows:

Note: this instruction is suitable for old series of devices.

MODULE	NWSM(NETWORKSERVICEMODEL)		
SESSION	TYPE		RANGE
	STRING		The range of session can be empty
OPERATION	NAME		TYPE
	UPLOADDEVINFO		NOTIFICATION
PARAMETER	NAME	TYPE	RANGE
	DSNO	STRING	Device serial number, unique
	CHANNEL	INTEGER	The total number of channels supported by the device
	MAC[N]	ARRAY	3.5.1.1 MAC address parameter
	DLIP[N]	ARRAY	3.5.1.2 DLIP address parameter
	DWIP[N]	ARRAY	Device public network IP,3.5.1.3 DWIP address parameter
	DLP[N]	ARRAY	The listening port of the device, this field includes all the listening port of the devices and it is an array. The meaning of the port is defined by the subscript. 0：web port 1：Media port
	DWP[N]	ARRAY	The corresponding port number when mapping the port of the device in public network, this field includes all the listening port of the devices and it is an array. The meaning of the port is defined by the subscript and is corresponding to the DLP.

			0：web port 1：Media port
	ONLINE	INTEGER	The online user number when visiting the device.

3.5.1.1 MAC address parameter

The JSON combination of the MAC	Atomic data structure	Remark
MAC	MT	The type of the c network card or module. E.g. "eth0"、"eth1"、"ath0"、"ppp0" etc.
	IMAC	The corresponding network card for each mac, if there are several macs towards one card, then use '|' to separate or use the big letter.

3.5.1.2 DLIP address parameter

The JSON combination of the DLIP	Atomic data structure	Remark
DLIP	MT	The type of the c network card or module. E.g. "eth0"、"eth1"、"ath0"、"ppp0" etc.
	LIP	The corresponding IP address for each network card, if there are several IP towards one card, then use '|' to separate. If there is only public IP(3G card), then use the IP of 3G.

3.5.1.3 DWIP address parameter

The JSON combination of the DWIP	Atomic data structure	Remark

DWIP	MT	The type of the c network card or module. E.g. "eth0"、"eth1"、"ath0"、"ppp0" etc.
	WIP	This field is corresponding to the DLIP, even if the public IP is the same, it should be completely insert for easy resolving.

4 Communication Mode

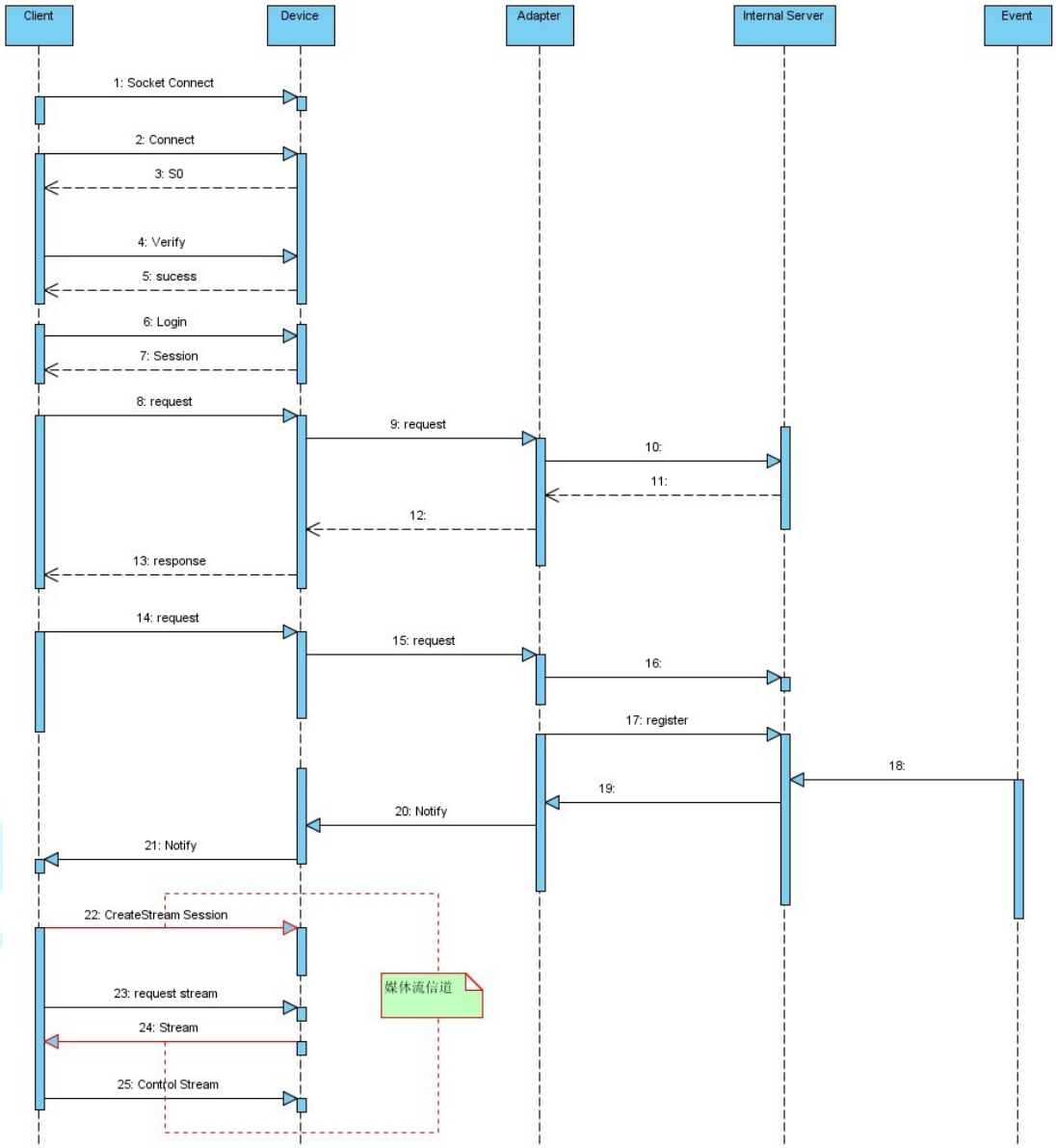
4.1 Network communication

The network control stream use the TCP long connection mode, the service provider side is divided into active and passive connector connection. After the connection is established, the process of certification and description are the same. And maintained by the heartbeat connection, and all the control signaling and event channel will communicate in the built channel.

Network media streaming uses streaming media channel, this channel can be a single channel or several channels. Each channel can use the multiplex means to transmit multiplexed stream, which is establishes by the service request side. The service request side will build the communication channel first, after that it will inform and control the streaming provider by the control channel.

Network communication flow sequence diagram

Streamax-N9M Network communication protocol

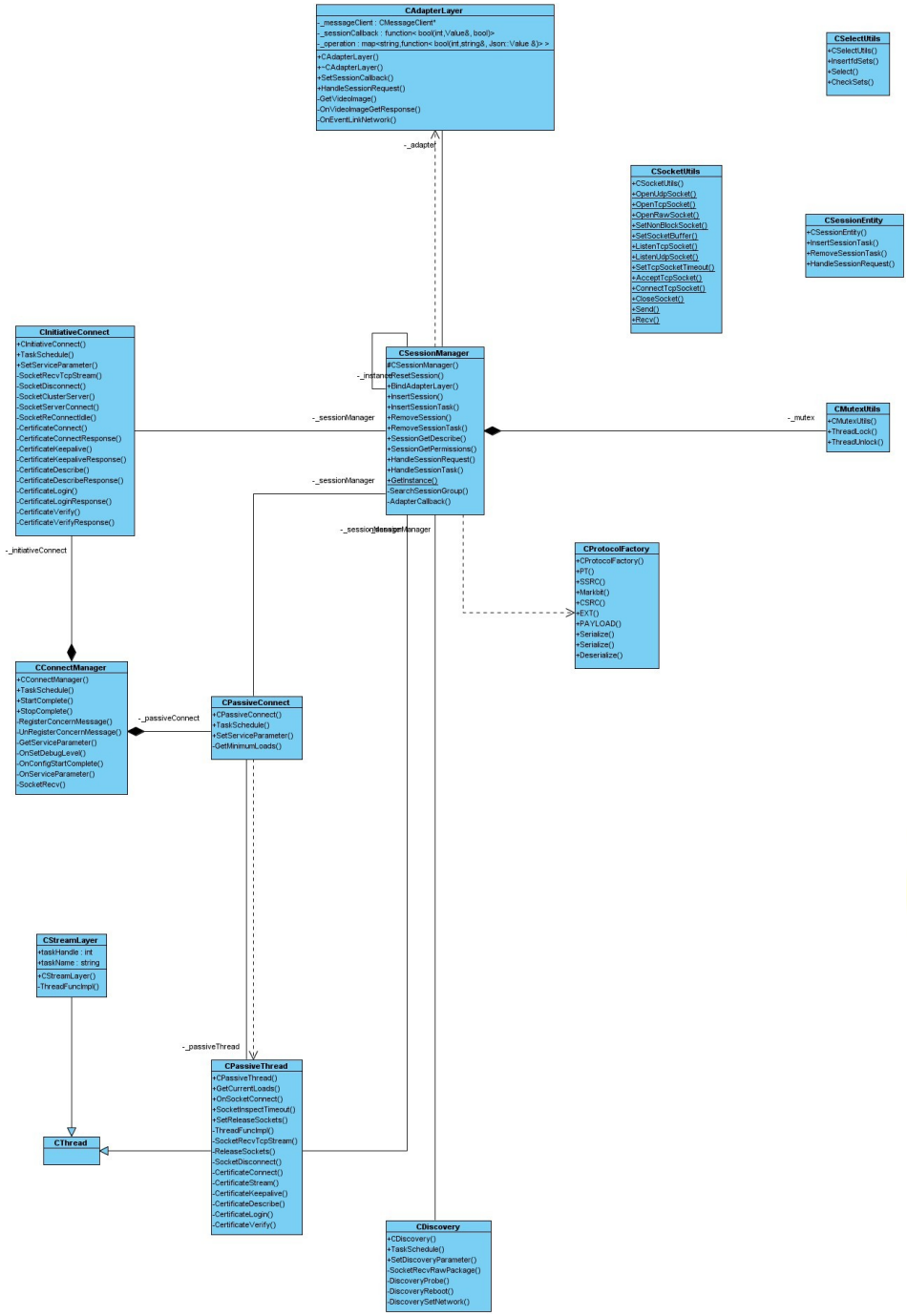


5 Layered architecture of the network module

5.1 Layered architecture

Class Diagram

Streamax-N9M Network communication protocol



Clients

Server-side

5.2 Program process

Device

Client

6 Error code table and macro definitions

6.1 Error code table

Error code	Error Code Description	Error Code Description
0X00000000	Success	SUCCESS
0X00000001	Device getting failed	GET FAILED
0X00000002	Identification failure	IDENTIFICANTION FAILURE
0X00000003	Authentication timeout	AUTHENTICATION TIMEOUT
0X00000004	Verify S0 failure	VALIDATION FAILURE
0X00000005	User name or password error	NAME OR PASSWORD FAILED
0X00000006	Execution fails	EXECUTION FAILED
0X00000007	Protocol analysis failed	ANALYZE PROTOCOL FAILED
0X00000008	Media server connecting failed	CONNECT MEDIA SERVER FAILED
0X00000009	Media link register failed	REGISTER MEDIA LINK FAILED
0X0000000A	Media Transfer Thread creation failed	CREATE MEDIA TRANSFER THREAD FAILED
0X0000000B	Protocol does not currently support this feature	NOT SUPPORT FUNCTION
0X0000000C	Memory allocation failure	ALLOCATE MEMORY FAILED
0X0000000D	No matched result	NOT MATCH RESULTS
0X0000000E	Network does not work	UNSTABLE NET
0X0000000F	EMAIL server connection failed	CONNECT EMAIL SERVER FAILED

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0X00000010	Timing failed	TIME FAILED
0X00000011	Forced offline failure	FORCE OFFLINE FAILED
0X00000012	Permission denied	NO RIGHT
0X00000013	Permissions low forced offline	FORCED OFFLINE BY LOW RIGHT
0X00000014	Add user name failed	ADD NEW USER FAILED
0X00000015	The same user name	THE SAME USER NAME
0X00000016	Edit user failed	EDIT USER FAILED
0X00000017	Delete user failed	DELETE USER FAILED
0X00000018	Too many users online	TOO MANY USERS ONLINE
0X00000019	Task exist	TASK EXIST
0X0000001A	Lack of resources or tasks full	LACK OF RESOURCE OR TASK FULL
0X0000001B	Channel illegal	CHANNEL ILLEGAL
0X0000001C	Uncoded	UNCODED
0X0000001D	Does not support the main stream	NOT SUPPORT THE MAIN STREAM
0X0000001E	Does not support the sub-stream	NOT SUPPORT THE SUB STREAM
0X0000001F	Does not support the mobile stream	NOT SUPPORT THE MOBLIE STREAM
0X00000020	Start Live preview failed	START REAL-TIME PREVIEW FAILED
0X00000021	File does not exist	FILE IS NOT EXIST
0X00000022	Get the upgrade file path fails	GET THE UPGRADE FILE PATH FAILED
0X00000023	Failure to receive the upgrade file	RECEIVE THE UPGRADE FILE FAILED
0X00000024	Check upgrade file failure	CHECK UPGRADE FILE FAILED
0X00000025	Open upgrade file failure	OPEN UPGRADE FILE FAILED
0X00000026	Failed to capture pictures	CATCH PICTURE FAILED
0X00000027	Failed to send data	SEND DATA FAILED
0X00000028	No this task	NO TASK
0X00000029	Unknown error	UNKNOW
0X0000002A	Parameter error	PARAM ERROR
0X0000002B	Time error	TIME ERROR
0X0000002C	Connection to the server timed out	LINK TIME OUT（Mainly to test the error code of the network service MAIL、DDNS、WIFI、FTP

Streamax-N9M Network communication protocol

		etc.)
0X0000002D	Other users are configuring	SOME ONE OPERTAING
0X0000002E	Frequently operation	OPERATE SO MUCH
0X0000002F	Testing	TESTING
0X00000030	Sender address error	SENDER ADDR ERROR
0X00000031	Receiver address error	RECVER ADDR ERROR
0X00000032	Sever error	SERVER PARAM ERROR
0X00000033	Fail to get the data from the device	GET DATA FAILED
0X00000034	Fail to start the remote synchronous playback	START PLAYBACK FAILED
0X00000035	Fail to end the remote synchronous playback	STOP PLAKBACK FAILEB
0X00000036	Drag failure	SEEK FAILED
0X00000037	Too many users upgrading	TOO MUCH USER UPGRADE
0X00000038	Users do not have this privilege	NO ROGHT
0X00000039	The same version for the upgrade file	VISION IS SAME
0X0000003A	System upgrading	IS UPGRADING
0X0000003B	Server port error	PORT IS ERROR
0X0000003C	Wifi module does not exist	WIFI MODE IS NOT EXIST
0X0000003D	Wifi Switch is off	WIFI IS CLOSE
0X0000003E	Connecting	LINKING
0X0000003F	Illegal MAC address	USER MAC ILLEGAL
0X00000040	Permission denied	PERMISSION DENIED
0X00000041	Media link exist	MEDIA LINK EXIST
0X00000042	Device serial number does not exist	DEV IS NOT EXIST
0X00000043	Audio encoding failure	AUDIO ENCODE FAILED
0X00000044	Audio decoding failure	AUDIO DECODE FAILED
0X00000045	Start intercom failure	START TALK FAILED
0X00000046	Download the log failed	DOWN LOG FAILED
0X00000047	Validating	TESTING
0X00000048	Validation fails	TEST FAILED
0X00000049	Validation succeed	TEST SUCCESS
0X0000004A	Getting valid IP	GET VALID IP
0X0000004B	Export parameters fail	EXPORT PARAM FAILED
0X0000004C	Import parameter fail	IMPORT PARAM FAILED
0X0000004D	Parameter validation fail	CHECK PARAM FAILED
0X0000004E	Failed to configure network	CONFIGUE NET FAILED

	parameters	
0X0000004F	Re-submitted to the server	RESUBMITTED
0X00000050	Connecting signaling server fail	CONNECT CENTER SERVER FAILED
0X00000051	Processing instructions	ANALYSING CMD
0X00000052	No remote device	NO EXIST REMOUTE DEV
0X00000053	Login to ftp server fail	LOGIN FTP SERVER FAILED
0X00000054	Download the upgrade package successfully	DOWN UPGRADE FILE SUCCESS
0X00000055	No storage space or storage media	NO ENOUGH HDD
0X00000056	Disk Protected	HDD PROTECT
0X00000057	File backup	EXPORTING
0X00000058	Task complete and end	TASK COMPLETE
0X00000059	Task is rejected	TASK REFUSED

6.2 Type Definition

6.2.1 Alarm Type

BYTE1								
BIT#	7	6	5	4	3	2	1	0
Alarm Type	Reserved	Reserved	HDD error	Infrared sensor alarm	Motion detection	User-defined	Blind	Video loss
BYTE2								
BIT#	7	6	5	4	3	2	1	0
Alarm Type	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
BYTE3								
BIT#	7	6	5	4	3	2	1	0
Alarm Type	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
BYTE4								
BIT#	7	6	5	4	3	2	1	0
Alarm Type	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

6.2.2 Memory error code type

Error code	Error Code Description
0X00000000	HDD full
0X00000001	HDD is not formatted
0X00000002	HDD read and write errors
0X00000003	HDD no video
0X00000004	HDD data loss
0X00000005	HDD is not recognized
0X00000000	
0X00000000	
0X00000000	
0X00000000	
0X00000000	

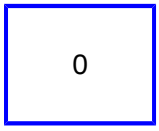
6.2.3 PTZ instruction type

Number	Keyword	Name	Explanation
1	00000001	Lens rotating up	UP，SPEED valid
2	00000002	Lens rotating down	DOWN，SPEED valid
3	00000003	Lens rotating left	LEFT，SPEED valid
4	00000004	Lens rotating right	RIGHT，SPEEDvalid
5	00000005	Large aperture	IRIS OPEN （+），SPEED valid
6	00000006	Small aperture	IRIS CLOSE （-），SPEED valid
7	00000007	Focus shrink	ZOOM IN (+)，SPEED valid
8	00000008	Focus stretch	ZOOM OUT (-)，SPEED valid
9	00000009	Focus Near	FOCUS NEAR (+)，SPEED valid
10	00000010	Focus Far	FOCUS FAR (-)，SPEED valid
11	00000011	Automatic horizontal rotation	AUTO SCAN
12	00000012	Wipers on	BRUSH ON

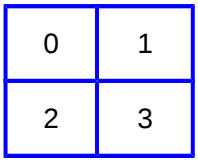
13	00000013	Wipers off	BRUSH OFF
14	00000014	Setting presets	PRESET PSP valid
15	00000015	Call presets	RECALL PSP valid
16	00000016	Start cruising	CRUISE LINE valid
17	00000017	Clear preset points	CLEAR PRESET PSP valid
18	00000018	Speed	Reserved
19	00000019	Stop Cruising	STOP CRUISE LINE valid
20	00000020	Stop	STOP
21	00000021	Clear all preset points	CLEAR ALL PRESET
22	00000022	Upper left	UP LEFT，SPEED valid
23	00000023	Upper right	UP RIGHT，SPEED valid
24	00000024	Lower left	DOWN LEFT，SPEED valid
25	00000025	Lower right	DOWN RIGHT，SPEED valid
26	00000026	Light on	LIGHT OPEN
27	00000027	Light off	LIGHT CLOSE

6.2.4 Window Mode type definition

enum= 1，Single window：



enum= 2，Four window mode：



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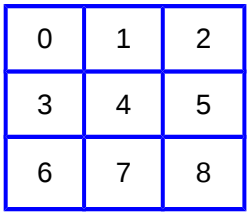
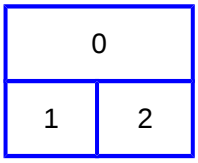
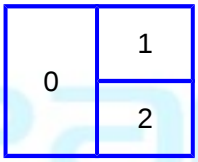
enum= 3，Nine window mode：



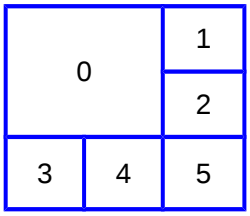
enum= 4，Three window mode：



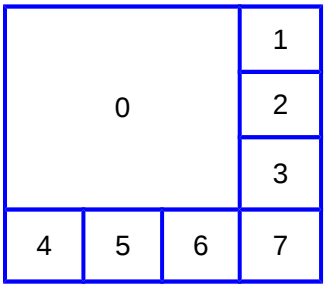
enum= 5，Three window mode：



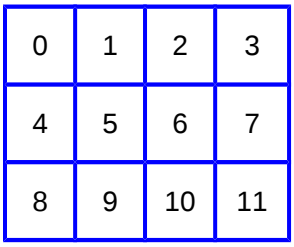
enum= 6，Five windowed mode：



enum= 7，Eight windowed mode：



enum= 8，Twelve window mode：



enum= 9，Sixteen window mode：

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

6.2.5 Passthrough data type definitions

Value	Meaning
1	Passthrough IE data

6.2.6 Time zone definitions Chart

Time zone, format is string which can contain digit, -, and letters.
-720A=(GMT-12:00)INTERNATIONAL DATE LINE WEST
-660A=(GMT-11:00)MIDWAY ISLANDS,SAMOA
-660B=(GMT-11:00)UNIVERSAL TIME-11
-600A=(GMT-10:00)HAWAII
-540A=(GMT-09:00)ALASKA
-480A=(GMT-08:00)PACIFIC TIME(US & CANADA)
-480B=(GMT-08:00)BAJA CALIFORNIA
-420A=(GMT-07:00)CHIHUAHUA,LA PAZ,MAZATLAN
-420B=(GMT-07:00)MOUNTAIN TIME(US&CANADA)
-420C=(GMT-07:00)ARIZONA
-360A=(GMT-06:00)GUADALAJARA, MEXICO CITY
-360B=(GMT-06:00)SASKATCHEWAN
-360C=(GMT-06:00)CENTRAL TIME(US & CANADA)
-360D=(GMT-06:00)CENTRAL AMERICA
-300A=(GMT-05:00)BOGOTA,LIMA,QUITO
-300B=(GMT-05:00)EASTERN TIME(US & CANADA)
-300C=(GMT-05:00)INDIANA(EAST)
-270A=(GMT-04:30)CARACAS
-240A=(GMT-04:00)ATLANTIC TIME(CANADA)
-240B=(GMT-04:00)CUIABA
-240C=(GMT-04:00)GEORGETOWN,LA PAZ,MANAUS
-240D=(GMT-04:00)SANTIAGO
-240E=(GMT-04:00)ASUNCION
-210A=(GMT-03:30)NEWFOUNDLAND
-180A=(GMT-03:00)BRASILIA
-180B=(GMT-03:00)BUENOS AIRES
-180C=(GMT-03:00)GREENLAND
-180D=(GMT-03:00)CAYENNE, FORTALEZA
-180E=(GMT-03:00)MONTEVIDEO
-120A=(GMT-02:00)UNIVERSAL TIME-02
-120B=(GMT-02:00)MID-ATLANTIC
-60A=(GMT-01:00)CAPE VERDE IS.
-60B=(GMT-01:00)AZORES
0A=(GMT)DUBLIN, EDINBURGH, LONDON
0B=(GMT)CASABLANCA
0C=(GMT)MONROVIA, REYKJAVIK
0D=(GMT)COORDINATED UNIVERSAL TIME
60A=(GMT+01:00)AMSTERDAM,BERLIN,ROME

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60B=(GMT+01:00)BELGRADE, BRATISLAVA
60C=(GMT+01:00)BRUSSELS,MADRID,PARIS
60D=(GMT+01:00)SARAJEVO,WARSAW,ZAGREB
60E=(GMT+01:00)WEST CENTRAL AFRICA
60F=(GMT+01:00)WINDHOEK
120A=(GMT+02:00)ATHENS
120B=(GMT+02:00)BEIRUT
120C=(GMT+02:00)DAMASCUS
120D=(GMT+02:00)HARARE, PRETORIA
120E=(GMT+02:00)HELSINKI,KYIV,RIGA,TALLINN
120F=(GMT+02:00)CAIRO
120G=(GMT+02:00)MINSK
120H=(GMT+02:00)ATHENS,BUCHAREST,ISTANBUL
120I=(GMT+02:00)JERUSALEM
180A=(GMT+03:00)BAGHDAD
180B=(GMT+03:00)KUWAIT,RIYADH
180C=(GMT+03:00)MOSCOW, ST.PETERSBURG
180D=(GMT+03:00)NAIROBI
210A=(GMT+03:30)TEHRAN
240A=(GMT+04:00)ABU DHABI, MUSCAT
240B=(GMT+04:00)YEREVAN
240C=(GMT+04:00)BAKU
240D=(GMT+04:00)TBILISI
240E=(GMT+04:00)PORT LOUIS
270A=(GMT+04:30)KABUL
300A=(GMT+05:00)TASHKENT
300B=(GMT+05:00)EKATERINBURG
300C=(GMT+05:00)ISLAMABAD, KARACHI
330A=(GMT+05:30)CHENNAI,MUMBAI,NEW DELHI
330B=(GMT+05:30)SRI JAYAWARDENEPURA
345A=(GMT+05:45)KATHMANDU
360A=(GMT+06:00)ASTANA, DHAKA
360B=(GMT+06:00)NOVOSIBIRSK
390A=(GMT+06:30)YANGON
420A=(GMT+07:00)KRASNOYARSK
420B=(GMT+07:00)BANGKOK, HANOI, JAKARTA
480A=(GMT+08:00)BEIJING,CHONGQING,HONGKONG,URUMQI
480B=(GMT+08:00)KUALA LUMPUR, SINGAPORE
480C=(GMT+08:00)PERTH
480D=(GMT+08:00)TAIPEI
480E=(GMT+08:00)ULAN BATOR
480F=(GMT+08:00)IRKUTSK

540A=(GMT+09:00)OSAKA,SAPPORO, TOKYO 540B=(GMT+09:00)SEOUL 540C=(GMT+09:00)YAKUTSK 570A=(GMT+09:30)ADELAIDE 570B=(GMT+09:30)DARWIN 600A=(GMT+10:00)BRISBANE 600B=(GMT+10:00)VLADIVOSTOK 600C=(GMT+10:00)GUAM. PORT MORESBY 600D=(GMT+10:00)HOBART 600E=(GMT+10:00)CANBERRA, MELBOURNE,SYDNEY 660A=(GMT+11:00)MAGADAN,SOLOMON IS. 720A=(GMT+12:00)AUCKLAND, WELLINGTON 720B=(GMT+12:00)FIJI 720C=(GMT+12:00)UNIVERSAL TME+12 780A=(GMT+13:00)NUKU'ALOFA

7.MDVR parameter

The parameter configuration format is different from other instructions and need to do the resolve and package work in the parameter module, refer to the parameter module in 3.4.8. The device will return the upper layer corresponding value according to the name which contains in the instruction. As long as the instruction contains a parameter name and the range is '?', the device will return a corresponding parameter name and range. The two fields are error code and the it will judge the error code and then to resolve the parameters.

MODULE	MDVR(MDVR PARAM MODULE)		
	NAME	TYPE	RANGE
	KEYS		7.1 The key parameter configuration
	RIP		7.2 Registration information parameter configuration
	TIMEP		7.3 Time parameter
	ATP		7.4 Device timing information parameter configuration
	SSP		7.5 On/off parameter configuration
	GSP		7.6 system parameters
	VPP		7.7 Device low-voltage protection configuration parameters
	UMP		7.8 User management parameters

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	ETHERNET		7.9 LAN parameters
	WIFI		7.10 WIFI parameters
	M3G		7.11 3G configuration parameters
	MCMS		7.12 center server parameters
	PORT		7.13 Network port
	FTPS		7.14 ftp server parameters
	PSM		7.15 The default boot output mode
	ASQ		7.16 Video automatic polling task
	SUBSTRNET		7.17 Sub-stream network parameters (network transmission stream)
	DOSD		7.18 Live-view OSD overlay is displayed
	RP		7.19 Record parameters
	AR		7.20 Secondary stream video parameters
	MAIN[N]		7.20.1 Stream encoding parameters Main stream encoding parameters. N represents the number of the channel number JSON array,e ach element is composed of a set of atomic VEC (3.4.3.1.2 coding parameters) . E.g. MAIN[0] = VEC… MAIN[15] = VEC, VEC can be same or different.
	EOSD[N]		7.21 Coding OSD parameters
	SVIP[N]		7.22 Video image display parameters
	VOP[N]		7.23 Device screen display output parameters
	IOP[N]		7.24 Switch sensor parameters
	SAP		7.25 Speed alarm parameters
	PSS		7.26 Peripheral serial port parameters
	NSW		7.27 NVR automatically assign IP parameters
	REDEV[N]		7.28 NVR Remote device parameters
	UAP		7.29 Panel alarm
	PGDSM		7.30 Network monitoring status parameters
	PSA		7.31 Speed calibration parameters
	PVLAS		7.32 video loss parameters
	PMDAS		7.33 Motion detection parameters
	PSNAP		7.34 snapshot parameters
	PCA[N]		7.35 Camera attribute parameter
	PVSAS		7.36 Video block parameters
	PGDS		7.37 Green driving parameters
	PVTSAS[N]		7.38 Vehicle attitude alarm parameters,N represents the alarm type as follows: the

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			maximum of N is 12 0:VS_BRAKE_ALARM, 1:VS_SUDDEN_TURN_ALARM, 2:VS_ACCELERATE_ALARM, 3:VS_OVER_SPEED_ALARM, 4:VS_NEUTRAL_GLIDE_ALARM, 5:VS_ENGINE_OVER_ALARM, 6:VS_IDLE_TIME_ALARM,
	PIS		7.39 Industry Parameters
RESPONSE	NAME	TYPE	RANGE
	KEYS		7.1 The key parameter configuration
	RIP		7.2 Registration information parameter configuration
	TIMEP		7.3 Time parameters
	ATP		7.4 Device timing parameter configuration
	SSP		7.5 On/off parameter configuration
	GSP		7.6 system parameters configuration
	VPP		7.7 Device low-voltage protection configuration parameters configuration
	UMP		7.8 User management parameter configuration
	ETHERNET		7.9 Wired network parameters
	WIFI		7.10 WIFI parameters
	M3G		7.11 3G parameters
	MCMS		7.12 center server parameters
	PORT		7.13 Port
	FTPS		7.14 ftp server parameter
	PSM		7.15 The default boot output mode
	ASQ		7.16 Video automatic polling task
	SUBSTRNET		7.17 Sub-stream network parameters (network transmission stream)
	DOSD		7.18 Live-view OSD overlay is displayed
	RP		7.19 recording parameters
	AR		7.20 Secondary stream video parameters

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	MAIN[N]		7.20.1 Stream encoding parameters Stream encoding parameters Main stream encoding parameters. N represents the number of the channel number JSON array,e ach element is composed of a set of atomic VEC (3.4.3.1.2 coding parameters) . E.g. MAIN[0] = VEC… MAIN[15] = VEC, VEC can be same or different.
	EOSD[N]		7.21 Coding OSD parameters
	SVIP[N]		7.22 Video image display parameters
	VOP[N]		7.23 Device screen output display parameters
	IOP[N]		7.24 Switch sensor parameters
	SAP		7.25 speed alarm parameter
	PSS		7.26 Peripheral serial port parameters
	NSW		7.27 NVR automatically assign IP parameters
	REDEV[N]		7.28 NVR Remote device parameters
	UAP		7.29 Panel alarm
	PGDSM		7.30 Network monitoring status parameters
	PSA		7.31 Speed calibration parameters
	PVLAS		7.32 video loss parameter
	PMDAS		7.33 Motion detection parameter
	PSNAP		7.34 Capture parameters
	PCA[N]		7.35 Camera attribute parameter
	PVSAS		7.36 Video block parameters
	PGDS		7.37 Green driving parameters
	PVTSAS[N]		7.38 Vehicle attitude alarm parameters,N represents the alarm type as follows: the maximum of N is 12 0:VS_BRAKE_ALARM, 1:VS_SUDDEN_TURN_ALARM, 2:VS_ACCELERATE_ALARM, 3:VS_OVER_SPEED_ALARM, 4:VS_NEUTRAL_GLIDE_ALARM, 5:VS_ENGINE_OVER_ALARM, 6:VS_IDLE_TIME_ALARM,
	PIS		7.39 Industry Parameters

The parameter configuration format is different from other instructions and need to be resolved and package in the parameter module, refer to the parameter module in 3.4.8.

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MODULE	MDVR(MDVR PARAM MODULE)		
PARAMETER	NAME	TYPE	RANGE
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	TIMEP		7.3 Time parameters
	ATP		7.4 Timing parameter configuration
	SSP		7.5 On/off parameter configuration
	GSP		7.6 System parameters
	VPP		7.7 Low voltage protection parameter configuration
	UMP		7.8 User management parameter configuration
	ETHERNET		7.9 Wired network parameters
	WIFI		7.10 WIFI parameters
	M3G		7.11 3G configuration parameters
	MCMS		7.12 Central server parameters
	PORT		7.13 Network port
	FTPS		7.14 ftp server parameters
	PSM		7.15 The default output mode when booting
	ASQ		7.16 Video automatic polling task
	SUBSTRNET		7.17 Sub-stream network parameters (network transmission stream)
	DOSD		7.18 Whether to display the live-view OSD
	RP		7.19 Recording parameters
	AR		7.20 Secondary stream video parameters
	MAIN[N]		7.20.1 Stream encoding parameters Stream encoding parameters Main stream encoding parameters. N represents the number of the channel number JSON array,each element is composed of a set of atomic VEC (3.4.3.1.2 coding parameters) . E.g. MAIN[0] = VEC… MAIN[15] = VEC, VEC can be same or different.
	EOSD[N]		7.21 Coding OSD parameters
	SVIP[N]		7.22 Video image display parameters
	VOP[N]		7.23 Device screen output display parameters
	IOP[N]		7.24 Switch sensor parameters
	SAP		7.25 Speed alarm parameters
	PSS		7.26 Peripheral serial port parameters

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	NSW		7.27 NVR Automatically assign IP parameters
	REDEV[N]		7.28 NVR Remote device parameters
	UAP		7.29 Panel alarm
	PGDSM		7.30 Network monitoring status parameters
	PSA		7.31 Speed calibration parameters
	PVLAS		7.32 Video loss parameters
	PMDAS		7.33 Motion detection parameters
	PSNAP		7.34 Capture parameters
	PCA[N]		7.35 Camera attribute parameter
	PVSAS		7.36 Video block parameters
	PGDS		7.37 Green driving parameters
	PVTSAS[N]		7.38 Vehicle attitude alarm parameters,N represents the alarm type as follows: the maximum of N is 12 0:VS_BRAKE_ALARM, 1:VS_SUDDEN_TURN_ALARM, 2:VS_ACCELERATE_ALARM, 3:VS_OVER_SPEED_ALARM, 4:VS_NEUTRAL_GLIDE_ALARM, 5:VS_ENGINE_OVER_ALARM, 6:VS_IDLE_TIME_ALARM,
	PIS		7.39 Industry Parameters
RESPONSE	NAME	TYPE	RANGE
	ERRORCODE	ENUM	
	ERRORCAUSE	STRING	1-100

7.1 Key parameter configuration

The JSON combination of the paramKeySetting_t parameters	Atomic data structure	Remark
KEYS	MAC	Mac address

7.2 Register information parameters

The JSON combination of the paramRegisterInfo_t parameters	Atomic data structure	Remark

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RIP	DEVID	Device ID, not unique, 32 bytes string
	BN	Vehicle number. 16 bytes string
	BID	Bus number, 32 bytes string
	LN	Route number, 32 bytes string
	DID	Driver ID, 32 bytes string
	DNAME	Driver name, 32 bytes string

7.3 Time parameters

The JSON combination of the paramTimeSetting_t time parameters	Atomic data structure	Remark
TIMEP	DATEM	Data format 0: MM/DD/YY 1: YY-MM-DD 2：DD-MM-YY
	TIMEM	Time format 0: 24H 1: 12H
	TIMEZ	6.2.6 Time zone definitions Chart
	OFS	Time zone shift, MSB is the sign bit, 1 is negative, 0 is positive, stored in minutes.
	DST	7.3.1 DST parameters

7.3.1 DST parameters

The JSON combination of the stuDst DST parameters	Atomic data structure	Remark
DST	SW	DST function switch 0: disabled 1: enabled
	DSTM	DST using mode 0：Default(From SMON to ES) 1：Universal Custom mode 2：The date can be customized, etc. (From STARTTIME to ENDTIME)
	DSTS	DST shifting time，hours

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	SMON	The start month, 0-11 integer.
	SWEEK	Start week, represents the starting week（0: The first week 1: The second week 2: The third week 3: The fourth week 4: The last week）
	SWIND	Represent the day（0-Monday，1-6From Monday to Saturday）Integer
	EMON	The stop month 0～11 integer
	EWEEK	End week, the first four bits represents the week（0: The first week 1: The second week 2: The third week 3: The fourth week 4: The last week）
	EWIND	Represent the day（0-Monday，1-6From Monday to Saturday）Integer
	SH	Start hour of DST
	SM	Start minute
	SS	Start second
	EH	End hour
	EM	End minitue
	ES	End second
	STARTTIME	The start date of DST and the UTC time, used to custom date mode.
	ENDTIME	The end date of DST and the UTC time, used to custom date mode.

7.4 Device timing information parameter configuration

The JSON combination of the paramAdjustTime_t parameters	Atomic data structure	Remark
ATP	GE	Whether to turn on the sign for GPS schooling, 1: On, 0: Off.

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	NE	NTP function switch 1: enabled 0: disabled
	CE	Whether to turn on the sign for N9 protocol schooling, 1; On, 0: Off.
	SID	CMS(N9 protocol) server number
	NS	NTP server address (name),64 Byte

7.5 On/off parameter configuration

The JSON combination of the paramSwitchSetting_t parameters	Atomic data structure	Remark
SSP	UPT	On/off type; 0:Ignition; 1: Time; 2: Ignition or time
	UH	Boot time clock, non-negative integer 0<=UH<=59
	UM	Boot time minute, non-negative integer 0<=UM<=59
	US	Boot time second, non-negative integer 0<=US<=59
	DH	The clock of time off , non-negative integer 0<=UH<=59
	DM	Timing shutdown of minutes, non-negative integer 0<=UM<=59
	DS	Timing shutdown of seconds, non-negative integer 0<=US<=59
	DDS	The shut-down delay, In seconds, non-negative integer.
	DR	Turn off the video delay, in seconds
	CPM	CP4 mode, 0: Normal mode, 1: Standby mode.

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7.6 System parameters

The JSON combination of the paramGeneralSetting_t parameters	Atomic data structure	Remark
GSP	SSS	In seconds, the time to exit the menu.
	VSA	/*Video format 0-PAL 1-NTSC */
	LANT	Language type 0：Chinese(Simplified) 1：English 2：Korean 3：Italian 4：German 5：Thai 6：Turkish 7：Portuguese 8：Spanish 9：Romanian 10：Greek 11：French 12：Russian 13：Dutch 14：Hebrew 15：Chinese(Traditional)
	AOPCH	Audio output channel number
	VOL	Volume (Straight volume)
	PBVOL	Device playback volume
	DDN	0--CVBS,1--VGA Parameter that display the devices
	VGA	VGA Video format RT_800x600_60 = 0, RT_1024x768_60, RT_1280x1024_60, RT_1366x768_60, RT_1440x900_60, RT_720P60, RT_1080I60, RT_1080P60, RT_480P60, RT_576P60, RT_INVALID

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	TLV	Intercom volume level from 0～63，default 50
	PAS	Preview Sound switch 0:OFF 1:ON Default:0

7.7 Low-voltage protection parameters configuration

The JSON combination of the paramVoltageProtectSetting_t parameters	Atomic data structure	Remark
VPP	SBM	The standby mode when low-voltage protection. 0-Zero-power standby 1-Standby and report GPS information
	VPS	Voltage Protection Switch; 0:Disable, 1: Enable
	LV	Minimum voltage in volts (V), a non-negative integer
	UV	Boot voltage in volts (V), a non-negative integer
	CE	Whether to turn on CMS(N9 protocol)report；0：Disable；1：Enable

7.8 User management parameter configuration

The JSON combination of the paramUserManager_t parameters	Atomic data structure	Remark
UMP	UIF[N]	7.8.1 User information parameter configuration, N represents several users.

7.8.1 User information parameter configuration

The JSON combination of the paramOneUserInfo_t parameters	Atomic data structure	Remark
UIF	UN	User name, 32-byte string
	PW	Password, 32-byte string
	UD	Whether to activate 0-No 1-Yes

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	UR	User Roles rating, 0 Super user, 1 Administrator, 2 Normal user

7.9 Wired network parameters

The wired network JSON combination of the paramEtherNetSetting_t	Atomic data structure	Remark
ETHERNET	IPMODE	IP type 0: static IP1 1: DHCP
	DNSMODE	Auto get DNS server or not 0: manually setup 1: auto get
	PIP	IP parameters, refer to 7.9.1
	DNS	DNS parameters, refer to 7.9.2

7.9.1 IP parameter

The address JSON combination of the paramIpStruct_t	Atomic data structure	Remark
PIP	IPADDR	IP address，Dotted decimal (IP4 or IP6), string
	SUBMASK	Subnet mask, in dotted decimal string
	GATEWAY	Gateway, in dotted decimal string

7.9.2 DNS parameter

The JSON combination of the paramDNSStruct_t parameters	Atomic data structure	Remark
DNS	PDNS	Main DNS, dotted decimal string
	ADNS	Alternate DNS, dotted decimal string

7.10 WIFI parameter

The JSON combination of the paramWifiSetting_t	Atomic data structure	Remark

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WIFI	ENABLE	Whether to turn on WIFI 0：OFF 1：ON
	ECRYPTTYPE	WIFI Encryption 0：WE_NONE 1：WE_WEP 2：WE_WPA
	IPMODE	Get IP address mode 0: static IP 1: DHCP
	DNSMODE	Obtaining DNS server 0：Manually set the DNS server address 1：Obtain DNS server address automatically
	ESSID	ESSID, string
	PWD	Password, string
	PIP	IP parameter, refer to 7.9.1
	DNS	DNS parameter, refer to 7.9.2

7.11 3G configuration parameter

The JSON combination of the param3GSetting_t	Atomic data structure	Remark
M3G	M3M	7.11.1 3G Dialing mode parameter
	MP	7.11.2 3G Dial-up parameters
	M4G	Represent the 4G dial-up parameters. 7.11.2 3G dial-up parameters, the same as MP and M4G=MP

7.11.1 3G Dialing mode parameter

The JSON combination of the paramBoHaoMode_t	Atomic data structure	Remark
M3M	TN1	Activation number 1,16-byte string
	TN2	Activation number 2,16-byte string
	TN3	Activation number 3,16-byte string

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	CSN	CMS(N9 protocol)Service calls, 16 bytes
	TSN	Fleet service calls, 16 bytes
	AT	Wireless module access methods: 0 - Always connected, 1 - Phone or SMS activation, 2 - I/O Activation

7.11.2 3G Dial-up parameter

The JSON combination of the paramBoHaoParam_t	Atomic data structure	Remark
MP	APN	Dial-up access point, 64-byte string
	UN	User name, 64 byte string
	PW	Password, 64-byte string
	AN	Service access point, 64-byte string
	PM	Ppp protocol 0:CHAP 1:PAP
	AM	Parameter configuration mode 0：Automatic Configuration 1：Manually Configuration
	NM	EVDO Private network selection，1-2G、2-3G、3-4G 0-Mixed

7.12 Central server parameter

The JSON combination of the paramCmsSetting_t	Atomic data structure	Remark
MCMS	SP[N]	Central server information, N represents several servers; 7.12.1 MDVR Center Server Configuration
	M	Server mask, bit representation, bit value of 1 that can be used effectively, and invalid when bit is 0 and disabled. The value correspondence of the SP index , Bit0 corresponding subscript 0 of the SP, and so on. The

		default server is bit0 = 1

7.12.1 Center Server Configuration

The JSON combination of the paramServer_t service parameters	Atomic data structure	Remark
SP	EN	Whether to turn on the server, 1: ON, 0: OFF
	NWT	Network Type; 0:Cable network, 1: wifi, 2: Mobile network
	CP	Protocol type, 0：Default N9, Other values extended
	CS	Center Signaling Server Address, 48-byte string
	MS	Media Server, 48-byte string
	CPORT	Center Signaling Server Port
	MPORT	Media server port

7.13 Network port

The JSON combination of the paramPortSetting_t set	Atomic data structure	Remark
PORT	PORTLIST[N]	There may be several ports so here use a set to represent PORTLIST, it is an array and determine the role of the port according to its index, current definition: 0：WEB(80)，1：Media (9000),2:RTSP port(554) N represents the ports number and set according to the application.

7.14 ftp server parameter

The JSON combination of the paramFtpSetting_t server parameters.	Atomic data structure	Remark
FTPS	PORT	ftp server port, default is 21

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	EN	Operating status, 1：ON, 0：OFF(This switch is used to control whether to turn on ftp)
	SERVERIP	ftp server address, dotted decimal string or domain name, the maximum length is 64
	LOGINUSER	Login User name, string, maximum 64
	LOGINPWD	Login password, string, maximum 32
	SUBFOLDER	ftp subcode head, string, maximum 32

7.15 The default output mode when booting

The JSON combination of the paramScreenMode_t parameter	Atomic data structure	Remark
PSM	MODE	/*Video output mode，0 represents 1x1 mode，1 represents 2x2 mode，2 represents 3x3 mode，3 represents 4x4 mode，4 represents 5x5, 5 represents 6x6, 6 represents 1+5, 7 represents 1+7，8 represents 1+12, 9represents 2+8*/ SCREEN_1x1 = 0, SCREEN_2x2, SCREEN_3x3, SCREEN_4x4, SCREEN_5x5, SCREEN_6x6, SCREEN_1A5, SCREEN_1A7, SCREEN_1A12, SCREEN_2A8, SCREEN_PIP, SCREEN_INVALID,

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	DCHN[N]	Video output channel, make sure the valid number according to the preview mode, each index represents one channel, invalid when the value is 1.
	EN	Enable，0：Disable，1：Enable

7.16 Video automatic polling task

The JSON combination of the paramAutoSequence_t parameter	Atomic data structure	Remark
ASQ	ASN	The effective number of polling
	ASM	/*Polling mode，0 represents a single screen template，1 represents the four-screen template，2 represents the eight screen template，3 represents sixteen screen template，4 represents user-defined */
	SW	Polling switch，0:OFF，1：ON
	BD	Polling interrupt latency time Units: seconds
	AS[N]	7.16.1 Video automatic polling parameters, polling task contains multiple polling task number

7.16.1 Video single automatic polling parameters

The JSON combination of the AutoSeq parameter	Atomic data structure	Remark
AS	UM	/*Video output mode，0 represents 1x1 mode，1 represents 2x2 mode，2 represents 3x3 mode，3 represents 4x4 mode，*/

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	DT	/*Current polling output duration*/
	CHN[N]	/*Carousel video output channel, an array subscript represents the sequence number. The value 0xFF represents invalid, 0 represents none, 1 represents channel, 2 represents channel. */ There may be several channels in one polling.

7.17 Sub-stream network parameter (network transmission stream)

The JSON combination of the paramNetTransferSetting_t Sub-stream network parameters	Atomic data structure	Remark
SUBSTRNET	TOTALBW	The total bandwidth in Kbps
	SM	Sub-stream mode,0~4 ; (MDVR) 0-Smooth 4-Clear
	NEC[N]	7.17.1 Network transmission stream encoding parameters, MDVR has specific network transmission stream, and the specific encoding parameter is separated from the sub-stream and main stream. N represents the channel number.

7.17.1 Network transmission stream encoding parameter

The JSON combination of the paramNetStreamEncoder_t encoding parameters	Atomic data structure	Remark
NEC	BR	Rate (Value) Unit:KBPS

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	VEN	Video encoding enable switch 0：OFF 1：ON
	FT	Frame Type: 0: I frame, 1: Normal frame
	FR	Frame Rate: PAL:1~25; NTSC:1~30 Special case：HD 720p PAL 和 NTSC can be 1~60
	QLT	Quality: 1-Excellent 2-Good 3-Okay 4-General
	RST	Resolution 0-CIF 1-HD1 2-D1 3-QCIF 4-QVGA 5-VGA 6-720P 7-1080P
	AEN	Audio coding enable switch
	BRM	CBR VBR： 0-CBR;1- VBR

7.18 Whether to display the live-view OSD

The JSON combination of the paramDeviceViewOsd_t PTZ parameters	Atomic data structure	Remark
DOSD	TE	Whether to display the time； 0-Do not display 1-Fixed display 2-Trigger display
	SE	Whether to display the speed 0-Do not display 1-Fixed display 2-Trigger display
	VE	Whether to display the vehicle number 0-Do not display 1-Fixed display 2-Trigger display
	GE	Whether to display the GPS 0-Do not display 1-Fixed display 2-Trigger display
	AE	Whether to display the alarm statues 0-Do not display 1-Fixed display 2-Trigger display

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	OP[N]	7.18.1 Display seat, the upper will display the parameter and each parameter corresponding to one seat according to the order given. N represents the total number of the parameters displayed. 0-Time position of the OSD，1-Speed position of the OSD 2-The vehicle ID position 3-The location of the GPS information. 4-The location of the alarm information.
	NE	Whether to display the channel name information when live-view 0-Do not display 1-Fixed display 2-Trigger display
	DE	Knowing that whether to display the device self-number information 0-Do not display 1-Fixed display 2-Trigger display
	CHN[N]	The channel name, N represents the channel number, each element is a 16-byte string.

7.18.1 Overlay the seat information

The JSON combination of the stOsdPos PTZ parameters	Atomic data structure	Remark
OP	X	Display the X coordinate
	Y	Display the Y coordinate

7.19 Recording parameter

The JSON combination of the paramRecord_t recording parameters	Atomic data structure	Remark
RP	RCP[N]	7.19.2 Single-channel recording period parameter

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		list, N represents the maximum channel numbers.
	MP[4]	7.19.3 Overwrite mode parameter maximum four recording parameters, and RM-one correspondence
	PRS	Pre-recorded time in seconds, ranging [0~3600]
	PRE	Pre-recorded switch 0-OFF 1-ON

7.19.1 Recording time parameters

The JSON combination of the paramRecordScheduleItem parameters	Atomic data structure	Remark
RSI	S	Start time of recording (Hour*3600+minute*60+second)integer, in seconds
	E	End time of recording (Hour*3600+minute*60+seconds)integer, in seconds
	T	Record type 0: General Recording, 1: Alarm Recording.

7.19.2 Single-channel recording period parameter list

The JSON combination of the stRecordChParam Single-channel recording period parameter list	Atomic data structure	Remark
RCP	RSI[7][N]	7.19.1 Recording time parameters: A two-dimensional array, the first index represents the day（0:Sunday 1:Monday 2:Tuesday 3:Wednesday 4:Thursday 5:Friday 6:Saturday）, The second index indicates the recording period, each

		section corresponds to a subscript, and the subscript must start from 0 and the maximum is 0-N periods. There are at most N recording plan each day. If there is no plan one day, then the date will be empty, if there is a plan,then the subscript should be continuous, the valid is together and also the invalid is together.
	RM	Recording Mode: 0: Record when booting, 1: Time recording , 2: Alarm recording

7.19.3 Overwrite mode parameter

The JSON combination of the paramMemoryPara_t Scheduled recording time list of parameters	Atomic data structure	Remark
MP	OLD	Hard Disk Lock number of days, a non-negative integer
	OT	Covering methods 0-By day coverage，1-By volume covering,2-Never cover
	OVD	The number of days covered by valid, non-negative integer

7.20 Secondary stream video parameters

The JSON combination of the paramAssistRecord_t parameters	Atomic data structure	Remark
AR	EN	Whether to turn on the dual-stream recording. 0-OFF 1-ON
	HID	Memory Type

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	RM	Dual streaming video type, 0-Sub-stream record 1-Mirror record 2-Alarm recording backup
	MC	If it is the mirror record, then it represents the mirror channel. Bit0 represents channel 1,bit31 represents channel 32
	MAC	If it is the alarm record, then it represents the mirror channel. Bit0 represents channel 1,bit31 represents channel 32.
	VEC[N]	7.20.1 Stream encoding parameters, N represents the max channel number.
	SSC	If it is the sub-stream record, then it represents the sub-stream channel. Bit0 represents channel 1

7.20.1 Stream encoding parameter

The JSON combination of the paramVideoEncode_t encoding parameters	Atomic data structure	Remark
VEC	BR	Rate (Value) Unit: KBPS
	VEN	Video encoding enable switch 0：OFF 1：ON
	AEN	Audio coding enable switch
	FR	Frame Rate: PAL:1~25; NTSC:1~30 Special case：HD 720p PAL 和 NTSC can be 1~60
	QLT	Quality: 1-Excellent 2-Good 3-Okay 4-General
	RST	Resolution 0-CIF 1-HD1 2-D1 3-QCIF 4-QVGA 5-VGA 6-720P 7-1080P
	BRM	CBR VBR： 0-CBR;1- VBR

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	FT	Frame type 0:I frame, 1:Normal frame
	ALT	Alarm video quality: 1-Excellent 2-Good 3-Okay 4-General

7.21 Encoding OSD parameter

The JSON combination of the paramVideoEncodeOsd_t encoding parameters	Atomic data structure	Remark
EOSD	TE	Whether to overlay time, 0: Not overlay, 1: Overlay
	SE	Whether to overlay speed, 0: Not overlay, 1: Overlay
	GE	Whether to overlay GPS, 0: Not overlay, 1: Overlay
	VE	Whether to overlay vehicle number, 0: Not overlay, 1: Overlay
	TX	X coordinate of time superposition
	TY	Y coordinate of time superposition
	SX	X coordinate of speed superposition
	SY	Y coordinate of speed superposition
	GX	X coordinate of GPS superposition
	GY	Y coordinate of GPS superposition
	VX	X coordinate of vehicle number superposition
	VY	Y coordinate of vehicle number superposition
	COSD[2]	7.21.1 OSD superimposed coding parameters, Preview 2 custom overlay parameters
	NE	Whether to overlay vehicle name information, 0: Not overlay, 1: Overlay

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	DE	Whether to overlay self-number, 0: Not overlay, 1: Overlay
	NX	X coordinate of channel name superposition
	NY	Y coordinate of channel name superposition
	DX	X coordinate of vehicle self-number superposition
	DY	Y coordinate of vehicle self-number superposition

7.21.1 OSD superimposed coding parameters

The JSON combination of the paramCommonOsd_t The combination of the	Atomic data structure	Remark
COSD	EN	Enable switch. 0：OFF，1：ON
	ID	Custom OSD overlay parameter number, 0-255
	X	X coordinate
	Y	Y coordinate
	F	Are overlays fixed, 0：Fixed, 1：Changeable
	L	Custom overlay content length, L can not exceed the maximum range of T
	T	Custom overlay content, maximum 32

7.22 Video image display parameters

The JSON combination of the paramVideoImage_t parameters	Atomic data structure	Remark
SVIP	CRM	Chroma (0-63) integer
	LUM	Brightness (0-63) integer
	CONT	Contrast (0-63) integer
	SAT	Saturation (0-63) integer
	SPN	Sharpen value (0-63) integer

7.23 Device output screen display parameters

The JSON combination of	Atomic data structure	Remark

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the paramVideoOutput_t parameters		
VOP	SM	7.23.1 Margins display device screen output parameters

7.23.1 Margins display device screen output parameter

The JSON combination of the paramScreenMargin_t parameters	Atomic data structure	Remark
SM	UL	Left Margin
	UR	Right margin
	UT	Top margin
	UB	Under Margins

7.24 Switch sensor parameter

The JSON combination of the paramIOAlarmSetting_t parameters	Atomic data structure	Remark
IOP	EN	Alarm status 0-Disable 1-Enable
	EL	Trigger Level,0:Low;1:High
	AS	0:Event，1:Alarm 2:Emergency
	VT	Image stabilization process for alarm (buttons, etc. lasted so much time before the alarm), the interface configuration temporarily
	N	Name eg: Sensor1
	S	Abbreviation
	APR	7.24.3 Alarm processing parameters
	AP	7.24.1 Alarm program parameters

7.24.1 Alarm program parameter

The JSON combination of the alarmPlan_t parameters	Atomic data structure	Remark
AP	I[7][16]	7.24.2 Alarm program list parameter, a two-dimensional array, the first index of the

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		day（0:Sunday 1:Monday 2:Tuesday 3:Wednesday 4:Thursday 5:Friday 6:Saturday），The second index indicates the recording period, each section corresponds to a lower standard, effective planning must begin storing the time period from the subscript 0, the largest segment plans can be divided into 0-15. The maximum daily video program can be divided into 16. If one day there is no plan, then the corresponding day of the week is empty, if there is video that day, the day of the video program effective period of time corresponding to the index is a continuous and effective in a invalid in one piece.

7.24.2 Alarm program parameter list

The JSON combination of the paramAlarmPlanItem parameters	Atomic data structure	Remark
I	S	Start time of recording (Hour*3600+minute*60+second)Integer, in seconds
	E	End time of recording (Hour*3600+minute*60+second)Integer, in seconds

7.24.3 Alarm processing parameters

The JSON combination of the alarmProcess_t parameters	Atomic data structure	Remark

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APR	AR	7.24.4 Alarm linkage video parameters
	SS	7.24.5 Alarm linkage capture parameters
	PS	7.24.6 Alarm linkage sensor parameters
	L	Whether to link the alarm indicator, 0：No, 1：Yes
	SU	Alarm status reporting, 0：Not reported, 1：Reported
	SM	Linkage channel mode, 0:None 1:Single screen 2:Dual screens 3:1+2 4:Four screens, default is 0
	CH[N]	Video output channel, according to the preview mode, determine the effective number of array. Each index represents one channel, invalid -1
	ST	Linkage passage duration, the default value is 0
	ET	Emergency alarm duration, unit: seconds. Defaults 10S, automatic discharge when time up
	DA	Whether dial activation, 0: Off, 1: On, the default is 0

7.24.4 Alarm linkage recording parameter

The JSON combination of the alarmProRecord_t parameters	Atomic data structure	Remark
AR	CH	Linkage channel, bit indicates, bit0- channel 1, bit31- channel 32
	P	Pre-recorded time in seconds from 0 to 10
	D	Video Delay in seconds
	L	Whether to lock the linkage video, 0: no lock, 1: lock

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7.24.5 Alarm linkage capture parameter

The JSON combination of the alarmLinkSnapShot parameters	Atomic data structure	Remark
SS	EN	Whether to enable capture; 0: Disable 1: Enable

7.24.6 Alarm linkage sensor parameter

The JSON combination of the alarmLinkOutput_t parameters	Atomic data structure	Remark
PS	ID	Associated with the sensor output ID, that association where several ID,according to the BIT bit, bit0 = 1 for the first
	T	Sensor output time, unit: second, range: 0 to 200, that is, 0: closed; 0xff: forever

7.25 Speed alarm parameter

The JSON combination of the paramSpeedAlarmSetting_t parameters SAP	Atomic data structure	Remark
	EN	Speed alarm switch 0-Disable 1-Enable
	AS	0: Event 1: Alarm 2: Emergency alarm
	SV	Over speed alarm value
	UN	Speed unit, 0: km / h; 1: mile / hour
	SF	Speed Source, 0: Satellite, 1: Pulse 2: Satellite and pulse
	AT	How long the device will consider as a speed alarm
	VT	Image stabilization process for alarm (buttons, etc. lasted so much time before the alarm), the interface configuration temporarily
	SPN	Name, 32 bytes
	OD	The alarm name displayed on the OSD , 16 bytes

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	APR	7.24.3 Alarm processing parameters
	AP	7.24.1Alarm program parameters

7.26 Peripheral serial port parameters

The JSON combination of the paramSerialSetting_t parameters	Atomic data structure	Remark
PSS	SP[4]	7.26.1 Single peripheral parameter

7.26.1 Single peripheral parameter

The JSON combination of the paramSerial_t parameters	Atomic data structure	Remark
SP	FT	Function Type: Choose what kind of peripherals
	BR	Baud Rate: 0:4800; 1:9600; 2:19200; 3:38400; 4:56000; 5:57600; 6:115200, the default is 0
	SES[N]	7.26.2 Extended Peripheral parameters, N labeled a peripheral can additionally extend multiple peripherals

7.26.2 Extended Peripheral parameters

The JSON combination of the_paramSerialExtenSerial parameters	Atomic data structure	Remark
SES	FT	Function Type: Choose what kind of peripherals
	BR	Baud Rate: 0:4800; 1:9600; 2:19200; 3:38400; 4:56000;

		5:57600; 6:115200, the default is 0

7.27 NVR Automatically assigns IP parameters

The JSON combination of the paramNvrSubNetSetting_t parameters	Atomic data structure	Remark
NSW	IP	The range of the IP when NVR give to the front devices, it is the start IP
	SUBM	Subnet Mask
	DGW	Subnet default gateway

7.28 Remote device parameter of the NVR

The JSON combination of the paramRemoteDevNodeSetting_t parameters	Atomic data structure	Remark
REDEV	EN	Active, 0: Invalid, you can not add any equipment, 1: Valid
	LOCK	The larger the value, the higher the priority, 0ff: no equipment, 0: non-POE automatically added (you can use any or replace), 1: POE automatically added, 2: Analog signal source access, 3: manually add or modify
	CHL	NVR remote device on the corresponding channel number, ranging from 1 -255
	RECHL	Front-end device channel number, ranging from 1 -255

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	ONLINE	Online, 0: offline, 1: on-line (or have data exchange), other values to be extended
	RETYPE	Remote device type, 0: Reserved, 1: DVR, 2: IPC
	PROTYPE	Remote device docking protocol type, 0: Analog signal docking, 1: onvif, 2: N9,3: I1, non-negative integer
	IPTYPE	IP type of remote devices, 0: ipv4,1: ipv6, non-negative integer
	CONTYPE	Ways to connect front-end equipment, 0: through a network link, the other values to be amplified, a positive integer
	SW	Equipment signal access, 0: Digital 1: Analog
	REPORT	The main front-end equipment (video) port, connectype valid when value is 0, not empty 1-65535
	REIP	IP of the remote device，connectype valid when value is 0, not empty
	ID	Unique identifier for the front-end devices, such as mac, a string of 32
	RENAME	The name of the front-end equipment, a string of 20
	USER	Login User name for the front-end device, a string of 20
	PWD	Password Log in front-end equipment, a string of 20
	URL	onvif link Keywords

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	CMDPORT	The minor front-end equipment (video) port, connectype valid when value is 0, not empty 1-65535,currently only supports I1 agreement

7.29 Panel emergency alarm

The JSON combination of the paramUrgentAlarmSetting_t parameter	Atomic data structure	Remark
	EN	Speed alarm switch 0-disable 1-Enable
	AS	0: Event 1: Alarm 2: Emergency alarm
UAP	T	Trigger
	VT	Image stabilization process for alarm (buttons, etc. lasted so much time before the alarm), the interface configuration temporarily
	UN	Name, 32 bytes
	UO	The alarm name displayed on the OSD , 16 bytes
	APR	7.24.3 Alarm processing parameters
	AP	7.24.1Alarm program parameters

7.30 Network monitoring state parameter

The JSON combination of the paramStatusMonitor_t parameters	Atomic data structure	Remark
PGDSM	PGPS	7.30.1 GPS (position) state parameter
	PDSM	7.30.2 Device state parameters

7.30.1 GPS (position) state parameter

The JSON combination of the paramPosMonitor_t parameters	Atomic data structure	Remark
PGPS	EN	Whether to enable real-time position monitoring 0: No 1: Yes

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<table>
<tr><td></td><td>MODE</td><td>Combination marks; real-time location monitoring methods. INTEGER, 16 hexadecimal format, BIT0-BIT31, BIT of 1 indicates valid, otherwise invalid. Such as 0x01, by distance intervals reported. Only when the corresponding effective monitoring methods, the latter monitoring parameters to use.
<table><tr><td>bit</td><td>Type</td></tr><tr><td>0</td><td>Uploaded by distance interval</td></tr><tr><td>1</td><td>Uploaded by time interval</td></tr><tr><td>2</td><td>Reserved</td></tr><tr><td>3</td><td>Reserved</td></tr><tr><td>4</td><td>Reserved</td></tr><tr><td>5</td><td>Reserved</td></tr><tr><td>...</td><td>Reserved</td></tr><tr><td>31</td><td>Reserved</td></tr><tr><td></td><td></td></tr></table></td></tr>
<tr><td></td><td>SEP</td><td>Distance interval. Automatic vehicle location reporting cycle distance, ranging from 5 to 65535.10 m units. Such as '50' represent each with 500 meters to take the initiative to report a location information.</td></tr>
<tr><td></td><td>TM</td><td>Time Interval. Automatic vehicle location reporting time period, ranging from 5 to 65,535. In seconds. Such as '300' for every 300 seconds to take the initiative to report a location information.</td></tr>
</table>

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	NUM	Upload frequency ranging from 0 to 65,535. Upload automatically stop after reaching the count. 0 or when the field is empty there is no limit to the number of times.

7.30.2 Device state parameter

The JSON combination of the paramDevStatusMonitor_t parameters	Atomic data structure	Remark
PDSM	REFER	Whether to upload together with GPS, 0: no, if not the state of independent reporting 1: Yes
	SEN	Whether to open reporting status, valid when REFER is 0. 0: Not 1: is
	STM	Time interval. Automatic vehicle status reporting time period, ranging from 5 to 65,535. In seconds. Such as '300' for every 300 seconds to take the initiative to report a status message. Valid when REFER is 0.
	SNUM	Device status upload frequency range from 0 to 65,535. Upload automatically stop after reaching the count. 0 or when the field is empty there is no limit to the number of times.Valid when REFER is 0.

7.31 Speed calibration parameter

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The JSON combination of the paramSpeedAdjust_t parameters	Atomic data structure	Remark
PSA	PC	Pulse factor, 32-bit integer. Default 0xffffffff
	LAT	The last proofing time, using UTC time format
	PCT	The total number of pulses
	AT	Speed calibration type 0: Satellite 1: Odometer 2: Comparison mileage 3: Big mileage, default: 0
	AM	Speed calibration mode 0: Primary mode 1: Advanced mode, default: 0
	AS	Speed calibration status 0: Not to start learning 1: Learning, default: 0

7.32 Video loss parameter

The JSON combination of the paramVideoLostAlarmSetting_t parameters	Atomic data structure	Remark
PVLAS	NE	Enable, 0: Disable, 1: Enable
	AS	Alarm level, 0: Important events, 1: General Alarm, 2: Emergency alarm
	VT	Image stabilization process for alarm (buttons, etc. lasted so much time before the alarm), the interface configuration temporarily
	VN	32-byte string, the name of the missing video
	LO	16-byte string, video loss initials
	APR	7.24.3 Alarm processing parameters

	CH	Channel mask,bit representation, bit0 represents channel 1, if the bit is set, the channel video loss alarm is turned on
	AP	7.24.1Alarm program parameters

7.33 Motion detection parameters

The JSON combination of the paramMDAlarmSetting_t parameters	Atomic data structure	Remark
PMDAS	NE	Enable, 0: Disable, 1: Enable
	AS	Alarm level, 0: Important events, 1: General Alarm, 2: Emergency alarm
	VT	Image stabilization process for alarm (buttons, etc. lasted so much time before the alarm), the interface configuration temporarily
	MN	32-byte string, motion detection name
	MO	16-byte string, motion detection initials
	APR	7.24.3 Alarm processing parameters
	CH	Channel mask, 1bit represents 1 ch, if the bit is set, the channel is turned on motion detection alarm
	PMD[N]	7.33.1 Detection area motion detection parameters, N represents the channel number
	AP	7.24.1Alarm program parameters
	DT	How long alarm delay in seconds

7.33.1 Motion detection area parameter

The JSON combination of the paramMotionDetect_t parameters	Atomic data structure	Remark
PMD	S	Motion detection sensitivity: 8 grades, 1-8 from high in the end (formerly divided into four levels: 0- high, 1 high, 2, and 3: Low)
	R	Locale, up to 396 regions, with 50 bytes, each represents a region

7.34 Capture parameter

The JSON combination of the paramSnapSetting_t parameters	Atomic data structure	Remark
PSNAP	NE	Enable, 0: Disable, 1: Enable
	ITN	The effective number of time periods to capture on IE add one plus one, delete one and decrease one, a positive integer (maximum of 8)
	TSP[ITN]	7.34.2 Timing capture parameters
	MSP	7.34.3 Manual capture parameters
	ASP	7.34.4 Alarm capture parameters

7.34.1 Capture common parameter

The JSON combination of the CommonSnapPara_t parameters	Atomic data structure	Remark
CSP	E	Enable, 0: Disable, 1: Enable

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	R	Capture resolution :0-CIF 1-HD1 2-D1 3-QCIF 4-QVGA 5-VGA 6-720P 7-1080P 8-3MP(2048*1536) 9-5MP(2592*1920) 10 WQCIF，11 WCIF，12 WHD1，13 WD1(960H) 14-960P 15-Q1080P
	Q	Capture quality/**< Quality： 1-Excellent 2-Good 3-Normal 4-Amid*/, positive integer
	N	The number of the pictures when capture once
	I	Time interval between each picture, in seconds, a non-negative integer
	U	Snapped pictures purposes. Is expressed by bits, bit2 represents for sending mail, bit1 represents for ftp upload, bit0 represents the local storage

7.34.2 Timing capture parameter

The JSON combination of the TimeSnapPara_t parameters	Atomic data structure	Remark
TSP	SH	Start time of capture, hour
	SM	Minute
	SS	Second
	EH	End time of capture,hour
	EM	Minute
	ES	Second
	I	Timed capture interval, two capture task interval in seconds
	CSP[N]	7.34.1 Capture common parameters, N represents the channel number

7.34.3 Manual capture parameter

The JSON combination of	Atomic data structure	Remark

the ManualSnapPara_t parameters		
MSP	CSP[N]	7.34.1 Capture common parameters, N represents the channel number

7.34.4 Alarm capture parameter

The JSON combination of the AlarmSnapPara_t parameters	Atomic data structure	Remark
ASP	CSP[N]	7.34.1 Capture common parameters, N represents the channel number
	I	Capture interval, in seconds

7.35 Camera attribute parameter

The JSON combination of the paramCameraAttribute_t parameters	Atomic data structure	Remark
PCA	W	White balance (profile) 0-Auto 1-Outdoors 2-Indoors
	F	Reversal 0-OFF 1-ON

7.36 Video block parameter

The JSON combination of the paramVideoShieldAlarmSetting_t parameters	Atomic data structure	Remark
PVSAS	NE	Enable, 0: Disable, 1: Enable
	AS	Alarm level, 0: Important events, 1: General Alarm, 2: Emergency alarm
	VT	Image stabilization process for alarm (buttons, etc. lasted so much time before the alarm), the interface configuration temporarily

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	VN	32-byte string, the name of the motion detection
	VO	16-byte string abbreviation of the name of the motion detection
	APR	7.24.3 Alarm processing parameters
	CH	Channel mask, 1bit represents 1 ch, if the bit is set, the alarm of this channel is turned on.
	PVS[N]	7.36.1 Video detection area parameters, N represents the channel number
	AP	7.24.1Alarm program parameters
	DT	How long alarm delay in seconds
	AT	How long the alarm continued in seconds

7.36.1 Regional detection parameter of video frames

The JSON combination of the paramVideoShield_t parameters	Atomic data structure	Remark
PVS	S	Sensitivity * 0-High 1-Mid 2-low

7.37 Green driving parameter

The JSON combination of the paramGreenDriverSetting_t parameters	Atomic data structure	Remark
PGDS	PSS	7.37.1 Attitude analyzer models and sensitivity parameters
	PCS	7.37.2 Load sensor parameters
	PTS	7.37.3 Tire pressure sensor parameters
	PLDS	7.37.4 Vehicle offset parameters

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	PFS	7.37.5 Oil parameters

7.37.1 Attitude analyzer models and sensitivity parameter

The JSON combination of the paramStanceSetup_t parameters	Atomic data structure	Remark
PSS	C	Models, integer
	ST	Vehicle sharp turn, integer
	SB	Brakes, integer
	SA	Hard acceleration, integer
	SCL	Quick change lanes, integer
	SS	S deformation Road, integer
	SBP	Intense turbulence, integer
	MS	Manual configuration, integer
	IV	Interval, integer

7.37.2 Load sensor parameter

The JSON combination of the paramCargoloadSetup_t parameters	Atomic data structure	Remark
PCS	AN	0:2-axis,1:4-axis2:6-axis,3:8-axis, integer
	UL	Maximum load in metric tonnes, integer

7.37.3 Tire pressure sensor parameters

The JSON combination of the paramTirepressureSetup_t parameters	Atomic data structure	Remark
PTS	T	The total number of tires, the maximum 12, at least 4
	U	Units of measurement, enumerated types: EM_PRESSURE_KGCM, EM_PRESSURE_PSI, EM_PRESSURE_KPA, EM_PRESSURE_BAR, EM_PRESSURE_INVALID

7.37.4 Vehicle offset parameter

The JSON combination of	Atomic data structure	Remark

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the paramLDWSetup_t parameters		
PLDS	VW	Vehicle width: manually enter the number, the unit mm, the default is 1250mm, integer
	CH	Camera Height: manually enter the number, the unit mm, the default is 1650mm
	CD	Distance from the camera front axle: manually enter the number, the unit mm, the default is -1500mm
	LS	Starting speed lane departure: manually enter the number, the unit follows the speed of the host entry, the default starting speed 30KM / H (20MI / H), a positive integer, the unit KM
	CS	Starting before the collision speed: manually enter the number, the unit follows the speed of the host entry, the default starting speed 30KM / H (20MI / H), a positive integer, the unit KM
	FD	Distance from the front
	CA	
	SL	Left turn: Binding select IO sensors, direct selection, the default is "Sensor 7"
	SR	Right Turn: Binding select IO sensors, direct selection, the default is "Sensor 6"
	SB	Brakes: Binding select the sensor, direct selection, the default is "Sensor 8"
	LDS	Lane departure Sensitivity: set to high, medium and low
	CSS	Front collision Sensitivity: set to high, medium and low

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7.37.5 Oil parameter

The JSON combination of the paramFuelSetup_t parameters	Atomic data structure	Remark
PFS		

7.38 Vehicle Attitude status alarm

The JSON combination of the paramVehicleStanceAlarmSetting_t parameters	Atomic data structure	Remark
PVTSAS	NE	Enable, 0: Disable, 1: Enable
	AS	Alarm level, 0: Important events, 1: General Alarm, 2: Emergency alarm
	VT	Image stabilization process for alarm (buttons, etc. lasted so much time before the alarm), the interface configuration temporarily
	AN	32-byte string, the name of the motion detection
	AO	16-byte string abbreviation of the name of the motion detection
	APR	7.24.3 Alarm processing parameters

7.39 Industry parameters

The JSON combination of the stIndustrySettings parameters	Atomic data structure	Remark
PIS	PBT	7.39.1 Public Bus
	PRT	7.39.2 Rail

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7.39.1 Public Bus

The JSON combination of the stBusTransit parameters	Atomic data structure	Remark
PBT		

7.39.2 Rail

The JSON combination of the stRailTransit parameters	Atomic data structure	Remark
PRT	PLS	7.39.2.1 Vehicle Type

7.39.2.1 Vehicle Type

The JSON combination of the paramLocationSetting_t	Atomic data structure	Remark
PLS	TY	Models, 0-25G (25G car), 1-25T (25T car), default 0
	CT	Car type, 0-YZ (seat), 1-YW (hard) 2-RW (soft) 3-CA (diner), default 0
	TN	Train number, maximum 7 byte string
	CN	Car number, a string, a positive integer, if it is greater than 10 , then use two bytes of storage; if it is an additional compartment that is represented as "+ n", n represents a positive integer.