

Internet Engineering Task Force (IETF)

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S. Time

Retired

R. Time

Check Point Software

May 2021

Gateway Server Protocol, Version 1 Specification

Abstract

Status of This Memo

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1. Introduction

2. Terminology

3. Topic Format

{from}/{to}/{id_gateway}/{id_protocol}/{id_service}/{type_data}/
END

<i>field</i>	<i>type</i>	<i>describe</i>	<i>remarks</i>
from	char	C:client S:server	
to	char	C:client S:server	
id_gateway	uint64	Gateway mac	uniqueness
id_protocol	string		
id_service	uint32	6:client main service 16:server main service	
type_data	string		

4. Time Syn(TIME_SYN)

4.1. Topic

S/C/{id_gateway}/V1.0/6/TIME_SYN/END

C/S/{id_gateway}/V1.0/16/TIME_SYN/END

4.2. Format

<i>field</i>	<i>type</i>	<i>describe</i>	<i>remarks</i>
DEVICE_ID	uint64	Gateway mac	
TIME			

4.3. Example

```
{  
  "DEVICE_ID":136176923508744,  
  "TIME":"2020-5-11 12:31:11"  
}
```

5. Multiple Station Configuration(MQTT_CONFIG)

5.1. Topic

S/C/{id_gateway}/V1.0/6/MQTT_CONFIG/END

C/S/{id_gateway}/V1.0/16/MQTT_CONFIG/END

5.2. Format

<i>field</i>	<i>type</i>	<i>describe</i>	<i>remarks</i>
DEVICE_ID	uint64	Gateway mac	uniqueness
GW_IP	string	Gateway ip	

QOS	uint32		
IP	string	Server ip	
PWD	string	Server service password	
PORT	string	Server service port	
FLAG_TIME_SYN	bool	1:time syn 0:Ignore the server time	
USERNAME	string	Server service username	

5.3. Example

client->server: null

client->server:

```
[
  {
    "DEVICE_ID":136176923508744,
    "GW_IP":"192.168.1.2",
    "QOS":1,
    "IP":"127.0.0.1",
    "PWD":"123456",
    "PORT":"1883",
    "FLAG_TIME_SYN":"1",
    "USERNAME":"admin"
  },
  {
    "DEVICE_ID":13617692350874,
    "GW_IP":"192.168.1.2",
    "QOS":1,
    "IP":"127.0.0.1",
```

```

        "PWD":"123456",
        "PORT":"1883",
        "FLAG_TIME_SYN":"1",
        "USERNAME":"admin"
    },
    {
        "DEVICE_ID":1361769508744,
        "GW_IP":"192.168.1.2",
        "QOS":1,
        "IP":"127.0.0.1",
        "PWD":"123456",
        "PORT":"1883",
        "FLAG_TIME_SYN":"1",
        "USERNAME":"admin"
    }
]

```

6. Point table configuration (POINT_CONFIG)

6.1. Topic

C/S/{id_gateway}/V1.0/16/POINT_CONFIG/END

S/C/{id_gateway}/V1.0/6/POINT_CONFIG/END

6.2. Format

<i>field</i>	<i>type</i>	<i>describe</i>	<i>remarks</i>
--------------	-------------	-----------------	----------------

FRAGMENT_OFFSET	uint13	The offset, in 8-octet units, of the data following this header, relative to the start of the Fragmentable Part of the original packet.	
M_FLAG	bool	1 = more fragments; 0 = last fragment.	
IDENTIFICATION	uint32_t	In order to send a packet that is too large to fit in the MTU of the path to its destination, a source node may divide the packet into fragments and send each fragment as a separate packet, to be reassembled at the receiver. For every packet that is to be fragmented, the source node generates an Identification value. The Identification must be different than that of any other fragmented packet sent recently* with the same Source Address and Destination Address	
DEVICE_ID	uint64_t	Gateway id	uniqueness
PRODUCT_ID	uint32_t	Product id	uniqueness
MFRS_ID	uint32_t	Manufacturers id	
IP	String	Product service ip	
PORT	string	Product service port	
URL	string	Product service url	
VERIFICATION_MODE	string	Verification mode	
SERIAL_PORT	string	Serial port	
BAUD_RATE	string	Baud rate	
STOP_BIT	string	Stop bit	
INTERFACE_ID	uint32_t	Interface id	uniqueness
SEND_COMMAND	string	Send command	
ACCEPT_COMMAND	string	Accept command	
IDENTIFY	uint32_t	Point id	uniqueness
BIT_FLOAT	string	Point no.	

TYPE	string	Point type	
INDEXES	string	indexes	
LIMITS	string	The limit	
MULTIPLE	string	mutiple	

6.3. Example

client->server: null

client->server:

```
{
  "IDENTIFICATION":1,
  "M_FLAG":1,
  "FRAGMENT_OFFSET":1,
  "DATA":{
    "DEVICE_ID":136176923508744,
    "PRODUCTS":[
      {
        "PRODUCT_ID":1,
        "MFRS_ID":5,
        "PARAM_CONTENT":{
          "IP":"","
          "PORT":"","
          "URL":"","
          "VERIFICATION_MODE":"0",
          "DATA_BITS":"8",
          "SERIAL_PORT":"485-1",
          "BAUD_RATE":"9600",
          "STOP_BIT":"1"
```



```

},
"INTERFACE_CONFIG":[
{
  "INTERFACE_ID":1,
  "SEND_COMMAND":"99 09 32 233",
  "ACCEPT_COMMAND":"99 09 32 233",
  "POINT_CONFIG":[
    {
      "IDENTIFY ":1,
      "BIT_FLOAT ":"1.1 ",
      "TYPE":"122",
      "INDEXES":"232-1",
      "LIMITS":"1.3",
      "MULTIPLE":"0.01"
    }
  ]
}
]
}
]
}
}
}

```

7. Mutation Point Value(POINT_MUTATION)

7.1. Topic

S/C/{id_gateway}/V1.0/6/POINT_MUTATION/END

C/S/{id_gateway}/V1.0/16/POINT_MUTATION/END

7.2. Format

<i>field</i>	<i>type</i>	<i>describe</i>	<i>remarks</i>
DATA -1	uint32	Point id	
DATA -2	Char *	value	
DATA-3	bool	1 = online; 0 = off-line.	
TIME_DEV		Product time	

7.3. Example

```
{  
  "DEVICE_ID": 136176923508744,  
  "DATA": [  
    [1, "1", 0],  
    [12, "1", 1],  
    [3, "1", 0],  
    [4, "0", 1],  
    [5, "1", 1]
```

```

],
"TIME": "2020-5-11 12:31:11",
"TIME_DEV": "2020-5-11 12:31:11"
}

```

8. Interrogation command(ALL_CMD)

8.1. Topic

S/C/{id_gateway}/V1.0/6/ALL_CMD/END

C/S/{id_gateway}/V1.0/16/ALL_CMD/END

8.2. Format

DATA format:

<i>field</i>	<i>type</i>	<i>describe</i>	<i>remarks</i>
1	uint32	inode	
2	Char *	value	
3	bool	1 = online; 0 = off-line.	

8.3. Example

```

{
  "DEVICE_ID": 136176923508744,
  "DATA": [
    [1, "1", 0],

```

```

[12, "1", 1],
[3, "1", 0],
[4, "0", 1],
[5, "1", 1]
],
"TIME": "2020-5-11 12:31:11"
}

```

9. Special Equipment(SE)

9.1. Topic

S/C/{id_gateway}/V1.0/6/SE/END
C/S/{id_gateway}/V1.0/16/SE/END

9.2. Format

<i>field</i>	<i>type</i>	<i>describe</i>	<i>remarks</i>
DEVICE_ID	uint64	Gateway mac	
POINT_ID	uin32		
DATA_TYPE	uint32	Can be null	
DATA	json		

9.3. 机械特性 Example

field	type	describe
-------	------	----------

REPORT_NUMBER	string	报告编号（站室编号+间隔号+时间 yyyyMMddHHmmss）
SYS_CODE	string	接入编号
DEVICE_CODE	string	间隔号
REPORT_TYPE	string	报告类型（0 - 晨操，1 - 动作）
REPORT_TIME	string	报告时间（yyyy-MM-dd HH:mm:ss）
FRACTURE_MAP	string	断口图谱
STANDARD_MAP	string	标准图谱
CURRENT_MAP	string	本次图谱
MAP_ADDRESS	string	图谱图片地址
ACTION_TYPE	string	动作类型（0 - 分闸，1 - 合闸，2 - 保护跳 3-手动）
ALARM_TYPE	string	是否有报警（0 - 没有报警，1 - 有报警）
CHARACTERISTIC_VALUE	string	特征值
REPORT_VALUE1	string	铁芯启动卡涩
REPORT_VALUE2	string	铁芯启动位置不复归
REPORT_VALUE3	string	铁芯运动卡涩
REPORT_VALUE4	string	铁芯触碰脱扣器位置变化
REPORT_VALUE5	string	脱扣器卡涩
REPORT_VALUE6	string	线圈匝间绝缘
REPORT_VALUE7	string	跳闸类型判定（0 - 机械，1 - 保护，2 - 指令）
REPORT_VALUE8	string	储能机构异常
REPORT_VALUE9	string	控制电压变化
HEALTH_DEGREE	string	健康度

```

{
  "DEVICE_ID": 136176923508744,
  "POINT_ID": 23,
  "DATA_TYPE": 33,
  "DATA": {
    "REPORT_NUMBER": "2",
    "SYS_CODE": "2",
    "DEVICE_CODE": "2",
    "REPORT_TYPE": "2",
    "REPORT_TIME": "2",
    "FRACTURE_MAP": "0,0,1",
    "STANDARD_MAP": "0,0,1",
    "CURRENT_MAP": "0,0,1",
    "MAP_ADDRESS": "2",
    "ACTION_TYPE": "2",
    "ALARM_TYPE": "2",
    "CHARACTERISTIC_VALUE": "2",
    "REPORT_VALUE1": "2",

```

```

        "REPORT_VALUE2": "2",
        "REPORT_VALUE3": "2",
        "REPORT_VALUE4": "2",
        "REPORT_VALUE5": "2",
        "REPORT_VALUE6": "2",
        "REPORT_VALUE7": "2",
        "REPORT_VALUE8": "2",
        "REPORT_VALUE9": "2",
        "HEALTH_DEGREE": "2"
    },
    "TIME": "2020-5-11 12:31:11"
}

```

9.4. 保定嘉诚、陕西公众局放 example

field	data_format	describe
data	String;string	Angle;discharge capacity

```

{
    "DEVICE_ID": 136176923508744,
    "POINT_ID": 23,
    "DATA_TYPE": 33,
    "DATA": ["3;4", "2;12", "6;32"],
    "TIME": "2020-5-11 12:31:11"
}

```

9.5. 迈内局放 example

field	data_format	describe
AV_DSCH	string	局放均值(mV)
MAX_DSCH	string	局放峰值(mV)
DSCH_CNT	string	放电频次(次/秒)
DSCH_PHASE	string	放电相位(°)
DSCH_ALARM_STATUS	string	局放报警状态

MAX_TEMP	string	最高温度(°C)
MIN_TEMP	string	最低温度(°C)
IR_ALARM_STATUS	string	红外报警状态
CAMERA_IMG	base64(jpg)	可见光图
IR_OV_IMG	base64(png)	红外热图
JF_PRPD_IMG	base64(png)	PRPD 图
JF_PRPS_IMG	base64(png)	PRPS 图
STATUS	int	在线状态突变(0 离线,1 在线)

```

{
  "DEVICE_ID": 136176923508744,
  "POINT_ID": 23,
  "DATA_TYPE": 33,
  "DATA": {
    "AV_DSCH": "2",
    "MAX_DSCH": "2",
    "DSCH_CNT": "2",
    "DSCH_PHASE": "2"
  },
  "TIME": "2020-5-11 12:31:11"
}
{
  "DEVICE_ID": 136176923508744,
  "POINT_ID": 23,
  "DATA_TYPE": 33,
  "DATA": {
    "MAX_TEMP": "2",
    "MIN_TEMP": "2"
  },
  "TIME": "2020-5-11 12:31:11"
}
{
  "DEVICE_ID": 136176923508744,
  "POINT_ID": 23,
  "DATA_TYPE": 33,
  "DATA": "dfsfiyihvxz0fs32d",
  "TIME": "2020-5-11 12:31:11"
}

```