Attendance PUSH Communication Protocol

PUSH SDK

Date: January 2023

Software Version: 2.4.2

Doc Version: 4.6

English

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About the Company

ZKTeco is one of the world's largest manufacturer of RFID and Biometric (Fingerprint, Facial, Finger-vein) readers. Product offerings include Access Control readers and panels, Near & Far-range Facial Recognition Cameras, Elevator/floor access controllers, Turnstiles, License Plate Recognition (LPR) gate controllers and Consumer products including battery-operated fingerprint and face-reader Door Locks. Our security solutions are multi-lingual and localized in over 18 different languages. At the ZKTeco state-of-the-art 700,000 square foot ISO9001-certified manufacturing facility, we control manufacturing, product design, component assembly, and logistics/shipping, all under one roof.

The founders of ZKTeco have been determined for independent research and development of biometric verification procedures and the productization of biometric verification SDK, which was initially widely applied in PC security and identity authentication fields. With the continuous enhancement of the development and plenty of market applications, the team has gradually constructed an identity authentication ecosystem and smart security ecosystem, which are based on biometric verification techniques. With years of experience in the industrialization of biometric verifications, ZKTeco was officially established in 2007 and now has been one of the globally leading enterprises in the biometric verification industry owning various patents and being selected as the National High-tech Enterprise for 6 consecutive years. Its products are protected by intellectual property rights.

About the Manual

This manual introduces the **Attendance PUSH Communication Protocol**.

All figures displayed are for illustration purposes only. Figures in this manual may not be exactly consistent with the actual products.

Document Conventions

Conventions used in this manual are listed below:

GUI Conventions

For Software	
Convention	**Description**
Bold font	Used to identify software interface names e.g. **OK**, **Confirm**, **Cancel.**
>	Multi-level menus are separated by these brackets. For example, File > Create > Folder.
For Device	
Convention	**Description**
< >	Button or key names for devices. For example, press <OK>.
[ ]	Window names, menu items, data table, and field names are inside square brackets. For example, pop up the [New User] window.
/	Multi-level menus are separated by forwarding slashes. For example, [File/Create/Folder].

Symbols

Convention	Description
	This represents a note that needs to pay more attention to.
	The general information which helps in performing the operations faster.
	The information which is significant.
	Care taken to avoid danger or mistakes.
	The statement or event that warns of something or that serves as a cautionary example.

Edit history

Date	Version	Description	Modifier	Note
2023/01/07	V4.6	1. Add the visible light palm bit in the MultiBioDataSupport and MultiBioPhotoSupport examples in 3.1 Specification of Hybrid Identification Protocol. 2. Add description of type=10 visible light palm in 11.12 Uploading Unified Templates and 12.1.3 QUERY Subcommand -Unified Template. 3. Add biometric type10 visible light palm in Appendix 10.	eirc.cao	
2022/02/18	V4.5	1. Add StartDatetime and EndDatetime field descriptions, and delete Phone, Gender, Nation, IDNum fields in 12.1.1.1 User Information. 2. Add the error code -30 in Appendix 1.	eirc.cao	
2021/06/17	V4.3	1. Add special instructions for hybrid identification protocol in 3.1 Specification of Hybrid Identification Protocol 2. Add the parameter description of SupportPing/DeviceType in 5. Initialization Information Exchange 3. Modify the value range of IsSupportQRcode parameter in 8. Pushing Configuration Information 4. Modify the title of 11.6/11.7/11.8/12.1.1.2/12.1.1.18 5. Add the field description of Gender/Nation/IDNum/Phone in 12.1.1.1 6. Add the field description of Name/Gender/Nation in 12.1.1.18 7. Add protocols of 12.1.1.19/12.1.2.11/12.1.2.12	eirc.cao	
2020/11/20	V4.0	1. Add temperature measurement protocol 2. Add QR code encryption protocol	eirc.cao	
2020/07/29	V3.9	1. Add subcontracting upgrade protocol switch parameter: SubcontractingUpgradeFunOn in 8. Pushing Configuration Information 2. Add subcontracting upgrade protocol in 12.8.2 Online Upgrade 3. Update operation codes in Appendix 3 4. Add 124, 125, 126 palmprint related opcodes in Appendix 3	eirc.cao	

2020/04/14	V3.8	1. Add operation code 33: Doorbell call in Appendix 3 2. Modify the TZ format to remove the first parameter in 12.1.1.14 Access Group	eirc.cao	
2020/03/20	V3.7	1. Add hybrid identification protocol 2. Modify the initialization information exchange protocol 3. Modify the push configuration information protocol 4. Modify the protocol for issuing comparison photos 5. Add query unified template protocol 6. Add clear unified template protocol 7. Add the Heartbeat protocol	eirc.cao	
2019/08/02	V3.6	1. Add exception log protocol	darren.li	
2019/05/30	V3.5	1. Add the credentials protocol: ①Upload identity card attendance record protocol ②Upload identity card attendance record photo protocol ③Identity card blacklist issue protocol	eirc.cao	
2018/10/08	V3.4	1. Communication encryption added 2 protocols: ① Exchange public key protocol ② Exchange factor protocol 2. Support communication encryption version description: ①Attendance PUSH: 2.4.0 and above 3. Details of communication encryption are shown in appendix 8.	Yan Guangtian	
2018/8/9	V3.3	1. TransFlag added two: ①11 (Work code, WORKCODE) ②12 (Comparison photo, BioPhoto) 2. Online registration card ENROLL_MF 3. Online registration of face, palm print (unified templates) ENROLL_BIO 4. Upload unified templates to add visible light face Type=9 5. Online update 6. Background verification 7. Add the following parameters:	Yan Guangtain/ guodong.wang	

		① BioPhotoFun is used to mark comparison photo ② BioDataFun identifies visible light face templates ③ VisilightFun to identify visible light devices 8. Add comparison photo protocol		
2017/11/10	V3.2	1. Description of serial number 2. Add the initial request reply content to support the BIODATA table	darren.li	
2017/9/8	The first version	1. Perfect the list of error codes, distinguish common error codes and special command errors 2. Add unified Templates (currently applied to the palm template) 3.Add Pushing Configuration Information (to be customized) 4. Set up the new user authentication mode 5. Add data packaging and uploading agreement (for customization) 6. Extend the PUTFILE command and support synchronous data protocol 7. Modify the format of upload operation record protocol	XSEN	

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1 Overview

The Push protocol is a data protocol defined based on the Hyper Text Transmission Protocol (HTTP) established on a TCP/IP connection. The Push protocol applied to the data interchange between a server and a ZKTeco attendance device or a ZKTeco access control device defines the transmission formats of data (including user information, biological recognition templates, and attendance records) and the command format for control devices. ZKTeco supports the server like WDMS, ZKECO, ZKNET, and ZKBioSecurity3.0 and even the third-party servers like ESSL from India.

1.1 Features

- Active uploading of new data.
- Resuming transmission from breakpoint.
- The client initiates all functions such as uploading data or performing commands issued by the server.

1.2 Encoding

Most data transmitted via the protocol consists of ASCII characters, but individual fields involve coding, for example, the user's name. Therefore, the following are the rules defined for data of this type.

- GB2312 encoding for Chinese data.
- UTF-8 encoding other languages.
- Currently, the following data involves this encoding type.
- User names in a user information table
- Content of the short messages in a short message table

1.3 Introduction to HTTP Protocol

The Push protocol is a data protocol defined based on the HTTP protocol, and the following explains a brief introduction to the HTTP protocol. Skip this part if you are already familiar with this concept.

The HTTP is a request/response protocol. The format of one request sent by a client to a server is a request method, a URI, and a protocol version number, and then a MIME-like message containing modifiers, client information and a possible message body. The format of a response sent by the server to the client is a status line followed by a MIME-like message containing server information, entity meta-information and possible entity-body content. The status line the protocol version number of the message and a success code or error code.

The following is an example.

Client Request

GET http	http://113.108.97.187:8081/iclock/accounts/login/?next=/iclock/data/iclock/HTTP/1.1
User-Agent	Fiddler
Host	113.108.97.187:8081

Server Response

```
HTTP/1.1 200 OK
Server: nginx/0.8.12
Date: Fri, 10 Jul 2015 03: 53: 16 GMT
Content-Type: text/html; charset=utf-8
Transfer-Encoding: chunked
Connection: close
Content-Language: en
Expires: Fri, 10 Jul 2015 03: 53: 16 GMT
Vary: Cookie, Accept-Language
Last-Modified: Fri, 10 Jul 2015 03: 53: 16 GMT
ETag: "c487be9e924810a8c2e293dd7f5b0ab4"
Pragma: no-cache
Cache-Control: no-store
Set-Cookie: csrftoken=60fb55cedf203c197765688ca2d7bf9e; Max-Age=31449600;
Path=/
Set-Cookie: sessionid=06d37fdc8f36490c701af2253af79f4a; Path=/

0
```

Remarks

- HTTP communication usually occurs under a TCP/IP connection.
- The default port is TCP 80, and other ports also be used.
- However, the HTTP protocol also is implemented via other protocols.
- Only reliable transmission is likely to be expected from the HTTP (Note: HTTP usually is established on a transport layer protocol).
- Therefore, the user can use any protocols providing the same guarantee.

2 Definitions

In this document, the format of definition reference is **${ServerIP}**

ServerIP	The IP address of the server
ServerPort	A port of the server
XXX	An unknown value
Value 1\Value 2\Value 3\……\Value n	Value 1\Value 2\Value 3\……\Value n
Required	Mandatory
Optional	Selectable
SerialNumber	Serial number. It can be formed by characters, numbers, or combination of characters + numbers.
NUL	Null (\0)
SP	A space
LF	A line break (\n)
HT	A tab character (\t)
DataRecord	A data record
CmdRecord	A command record
CmdID	The ID of a command
CmdDesc	Command description
Pin	ID
Time	Attendance time
Status	Attendance status
Verify	Verification mode
Workcode	A workcode
Reserved	A reserved field
OpType	Operation type
OpWho	Operator
OpTime	Operation time
BinaryData	A binary data flow
TableName	The name of a data table
SystemCmd	A system command
Key	A key
Value	A value
FilePath	A file path
URL	A resource location

3 Functions

The following functions supported by the Push protocol are described from the view of a client.

- Initializing Information Exchange
- Uploading Update Information
- Uploading Data
- Downloading Command
- Command Reply
- Remote Attendance

3.1 Specification of Hybrid Identification Protocol

With more types of biometrics, the instructions issued by different types of biometrics are also different, making software docking protocols exceedingly difficult.

In order to simplify the development process, the specifications for biological template/ photo issue/ upload/ query/ delete are unified.

Hybrid identification protocol docking process:

1. The server issues the following two parameters to the device through the [Initialization Information Exchange] interface: MultiBioDataSupport, MultiBioPhotoSupport.
2. The device uploads the following 5 parameters to the server through the [Pushing Configuration Information] interface: MultiBioDataSupport, MultiBioPhotoSupport, MultiBioVersion, MaxMultiBioDataCount, MaxMultiBioPhotoCount. See [Pushing Configuration Information] interface description for details.
3. Both the device and the server will determine the finally supported hybrid identification template/ photo type based on the MultiBioDataSupport and MultiBioPhotoSupport parameters pushed by each other.

For example:

DEVICE Side	SERVER Side
MultiBioDataSupport=0:1:0:0:0:0:0:0:0:1:0	MultiBioDataSupport=0:0:0:0:0:0:0:0:0:1:0
MultiBioPhotoSupport =0:0:0:0:0:0:0:0:0:1:0	MultiBioPhotoSupport= 0:0:0:0:0:0:0:0:0:1:0

The device supports fingerprint templates, visible light face templates, and visible light face photos. The software supports face templates and visible light face photos. Because the software does not support fingerprint templates, finally after the device docking with the software, it only supports visible light face templates and visible light face photos.

Hybrid identification protocol unified upload/ issue bio-templates format:

After successfully connecting to the hybrid identification protocol, a unified template format can be used for the types supported by the device and the server.

1. The server issues the templates to the device.

   Unified use of [Issue Unified Templates] interface.

2. The server issues the photos to the device.

   Unified use of [Issue Comparison Photos] interface.

3. The server queries the template data.

   Unified use of [Query Unified Templates] interface.

4. The sever queries the quantity of templates.

   Unified use of [Query the Quantity of Unified Templates] interface.

5. The device uploads the templates to the server.

   Unified use of [Upload Unified Templates] interface.

6. The device uploads the comparison photos to the server.

   Unified use of [Upload Comparison Photos] interface.

Hybrid identification protocol unified upload templates/ photos quantity interface:

1. For devices that support hybrid identification protocol, the maximum number of templates/ photos supported by the current device will be pushed to the server at the registration interface: MaxMultiBioDataCount, MaxMultiBioPhotoCount.
2. The device can upload the quantity of photos/ templates saved by the current device in real time through the [Pushing Configuration Information] interface.

Hybrid identification protocol specification real-time upload of unified templates and photos:

1. The bio-templates/ comparison photos registered by the device will be uploaded to the server in real time.

   Note: Upload interface refer to [upload unified templates] and [upload comparison photos].

2. You can use PostBackTmpFlag to specify whether you want the device to return the unified templates when the software issues the comparison photos.

   Note: For specific interface, please refer to [Issue Comparison Photos].

Hybrid identification protocol provides optimization strategies:

For devices that support both templates and photos issuing, the server can determine the device template version number based on the MultiBioVersion parameter uploaded by the device. If the server has saved the template of the current version number, the template can be issued first instead of comparison photos.

Note: To issue the comparison photos, the device needs to extract photos into templates, which is less efficient than directly issuing templates.

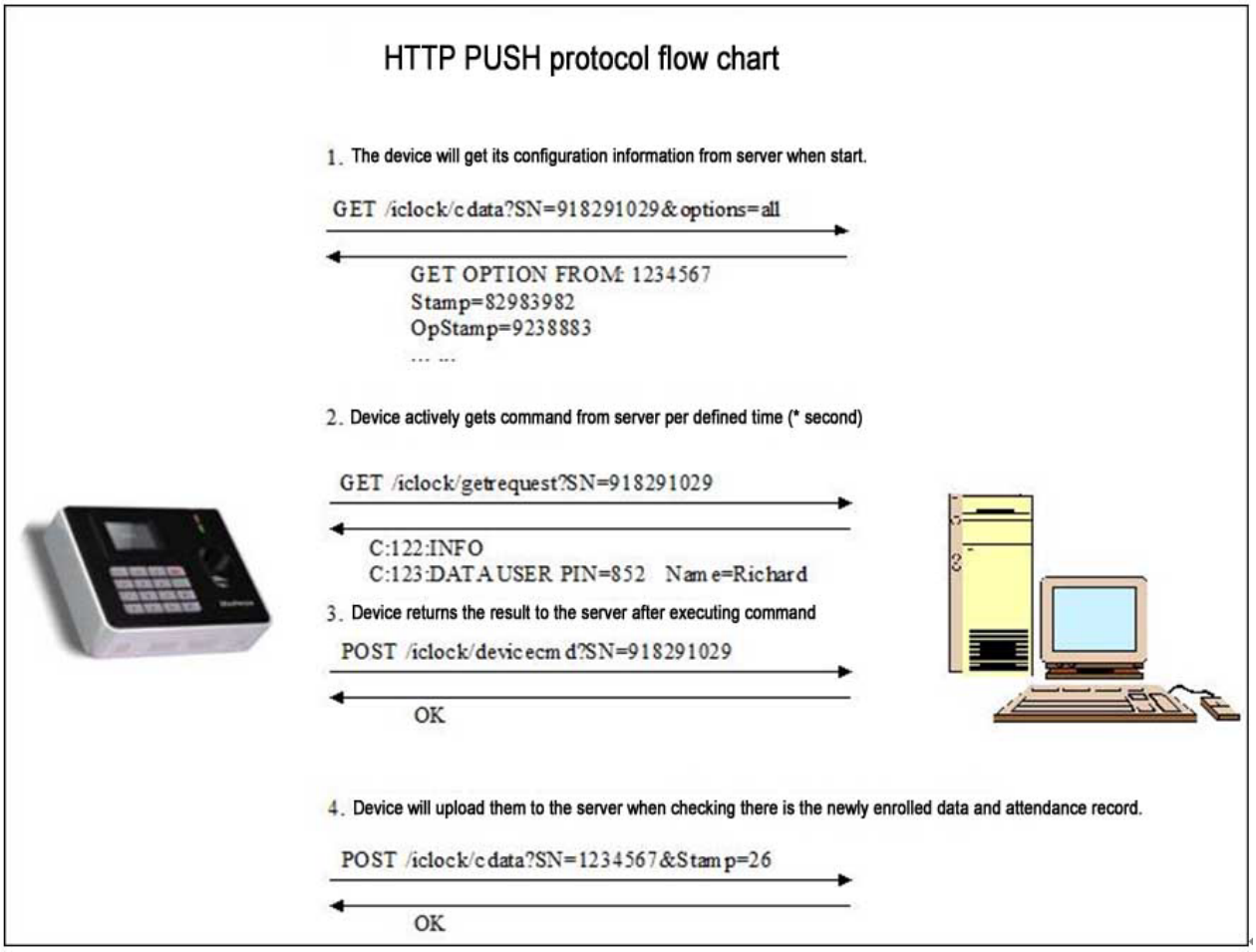
Special instructions for hybrid identification protocol:

If a template with the same algorithm version number is issued for the same type of biometric identification of the same person, the device will accept both the issued template and the issued photo. So please don't issue both the template and the photo at once. This will only add to the device's burden, which is unnecessary.

4 Process

Between a client and a server that both use the Push protocol, a request of "Initialization Information Exchange" must be firstly initiated by the client successfully and then other functions can be used, such as uploading data, obtaining server commands, uploading update information, and replying server commands.

These functions are not necessarily in order but dependent to the development of the client application, as shown in the figure below.



5 Initialization Information Exchange

The client initiates a request to and sends corresponding configuration information to the server, and the server replies to the client with corresponding configuration information after receiving the request. Only when the client obtains the corresponding configuration information, the exchange is successful.

The configuration information is exchanged in a specified format as shown below:

Client Request

GET http	GET/iclock/cdata?SN=${SerialNumber}&options=all&pushver=${XXX}&DeviceType=${XXX}&language=${XXX}&pushcommkey=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}

Annotation

HTTP Request Method	GET method
URI	/iclock/cdata
HTTP Protocol Version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Client's serial number
options	${Required}	Obtaining server configuration parameters, and only the value "all" is available currently
pushver	${Optional}	latest Push protocol version of the device supported by a newly developed client software and is of the 2.2.14 version or higher. See “Appendix 6”
DeviceType	-	Sub-protocol version. This protocol supports the docking of standard attendance protocol, personal identification protocol, and information screen protocol. Based on this parameter, the software can also determine which protocol the device uses., and the value is as follows: att: Standard attendance protocol pid: Personal identification protocol ins: Information screen protocol

language	${Optional}	languages supported by the client, better supported by a newly developed client so that the server knows the language the current equipment uses. See "Appendix 2"
pushcommkey	${Optional}	cipher text information for binding the client and the server, allowing the software to determine whether the equipment is authorized or not. The value differs for different equipment. This parameter needs to be supported by the client only when it is supported by the server.
Host header field	${Required}	-
Other header fields	${Optional}	-

Server Response

```
HTTP/1.1 200 OK
Date: ${XXX}
Content-Length: ${XXX}
……

GET OPTION FROM:
${SerialNumber}${LF}${XXX}Stamp=${XXX}${LF}ErrorDelay=${XXX}${LF}Delay=${XXX
}${LF}TransTimes=${XXX}${LF}TransInterval=${XXX}${LF}TransFlag=${XXX}${LF}Ti
meZone=${XXX}${LF}Realtime=${XXX}${LF}Encrypt=${XXX}${LF}ServerVer=${XXX}${L
F}PushProtVer=${XXX}${LF}PushOptionsFlag=${XXX}${LF}PushOptions=${XXX}
```

Annotation

HTTP Status Line	Defined according to the standard HTTP protocol
HTTP Response Header Field	-
Date header field	**${Required}** This header field is used for server time synchronization in GMT time format, for example, Date: Fri, 03 Jul 2015 06:53:01 GMT
Content-Length header field	Based on the HTTP 1.1 protocol, this header field is usually used to specify the data length of a response entity. If the entity size is uncertain, header fields Transfer-Encoding: chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of the HTTP protocol.

Server Configuration Information

The description in the first line must be **GET OPTION FROM: ${SerialNumber}**, with the **${LF}** separating the configuration information.

${SerialNumber}	It is the serial number of the request initiated by the client. The configuration information is in key=value pairs, with a ${LF} separating two configurations.

${XXX}Stamp	Timestamps for all kinds of data types, currently supporting the following; ${XXX} = Data type ATTLOG = Attendance record OPERLOG = Operation log ATTPHOTO = Attendance photo BIODATA = Unified Templates IDCARD = Identity card information ERRORLOG = Error log **Purpose of timestamp mark design:** • When the client uploads data, the corresponding timestamp mark is uploaded. • The server is responsible for recording this mark. • When the equipment reboots, the client initiates a request for initialization of information exchange, and the server sends a series of marks to the client, realizing the function of resuming transmission from breakpoint. **Timestamp mark flaw:** • As time modification is permitted and the uncertainty of time change is possible, the client may not correctly determine which data has been uploaded to the server and which has not, and this leads to server data loss. **Application of timestamp on server:** • Currently, the server has only one application of the timestamp mark. • When the server needs to reupload all corresponding data, it sets the corresponding timestamp mark to 0. • See this function at "Get Command – Control Command – Check Data Update". **Timestamp discard at client side:** • In the Push design for new framework firmware, no timestamp is used to mark a cut-off point of data uploading. • However, for compatibility with old servers, timestamp marks are also sent. • Actually, it realizes only the function of data reuploading when the mark is set to 0, so the server does not need to differentiate whether the client has discarded a timestamp or not.
ErrorDelay	Interval time for the client to reconnect to the server after networking connection failure, and the recommended value is 30~300s
Delay	Interval for the client to connect to the server when the networking is normal (s), that is, the function of requesting "Get Command" by client. The recommended value is 2~60s. When a rapid response is required, a

	smaller value can be set, but this will increase the pressure on the server.
TransTimes	Time at which the client checks for and transmits new data regularly (in a 24-hour format: hour: minute) and multiple times are separated by semicolons. Up to 10 times are supported. For example, TransTimes=00: 00;14: 00
TransInterval	Interval for the client to check and transmit new data (in minute), and no check is performed when it is set to 0. For example, TransInterval=1
TransFlag	Identifying the data to be uploaded by the client automatically to the server, and two formats are supported

Format I:

TransFlag=1111000000, each digit representing a data type. 0 for forbidding automatic uploading of this data type, 1 for allowing automatic uploading of this data type.

Data type on each digit

1	Attendance record
2	Operation log
3	Attendance photo
4	Enrolling a new fingerprint
5	Enrolling a new user
6	Fingerprint image
7	Changing user information
8	Changing a fingerprint
9	New enrolled face
10	User picture
11	Work code
12	Comparison photo

Format II:

TransFlag=TransData AttLog${HT}OpLog${HT}AttPhoto;

Data types marked by strings,

AttLog	Attendance log
OpLog	Operation log
AttPhoto	Attendance photo
EnrollUser	Enrolling a new user
ChgUser	Changing user information
EnrollFP	Enrolling a new fingerprint
ChgFP	Changing a fingerprint
FPImag	Fingerprint image
FACE	New enrolled face
UserPic	User picture

WORKCODE	Work code
BioPhoto	Comparison photo

During new client development:

- Please support both formats simultaneously.
- When the server sends data in format I with all values set to 0 (TransFlag=0000000000), only uploading attendance photos is supported.

During new server development:

- Only format II needs to be supported.

TimeZone	Specify the time zone where the server is located, primarily for server time synchronization. See the Date header field in [Get Command](#downloadcmd). This value is an integer and designed to support a whole time zone, half time zone and 1/4 time zone.

For -12 < TimeZone < 12, it is a whole time zone in the unit of hour. For example, TimeZone=4 means the East 4 zone.

For TimeZone > 60 or TimeZone < -60, it can mean a half time zone or 1/4 time zone in the unit of minute. For example, TimeZone=330 means a half of the East 5 time zone.

Realtime	Whether the client transmits new records in real time. **1** means that data is transmitted to the server as soon as it is generated, while **0** means data is transmitted at the time defined by the TransTimes and TransInterval
Encrypt	Whether to transmit data after encryption, to support the occasion of communicationencryption, this parameter should be set to 1.

EncryptFlag: The identity of data encryption.

Example: EncryptFlag = 10000000

Bit	Date type
1	attendance record

Currently, only version 2.3.0 of this protocol is supported, and only the encryption of attendance records is supported. Rc4 is used for encryption.

ServerVer	Protocol version and time (format to be determined), which are supported by the server, and it must be set to 2.2.14 or above for a newly developed server
PushProtVer	The server is developed according to which protocol version, please refer to (appendix 6).
PushOptionsFlag	Whether the software supports the device push configuration parameter request, where 0 is not supported, 1 is supported, and it is not supported by default when it is not set

PushOptions	The software requires the device to push the parameter list, format: PushOptions=key1,key2,key3……,keyN, such as PushOptions=FingerFunOn,FaceFunOn
ATTPHOTOBase64	Attendance photo base64 identity. 1: base64 encoding, other occasions is not base64encoding.
MultiBioDataSupport	Supports multi-modal biometric template parameters. The type is defined bit by bit. Different types are separated by colons, 0 means not supported, 1 means supported. The supported version number, such as: 0: 1: 1: 0: 0: 0: 0: 0: 0: 0, indicating support for fingerprint template and near-infrared face template.
MultiBioPhotoSupport	Supports multi-modal biometric photo parameters. The type is defined bit by bit.Different types are separated by colons, 0 means not supported, 1 means supported. The supported version number, such as: 0: 1: 1: 0: 0: 0: 0: 0: 0: 0, indicating support for fingerprint photo and near-infrared face photo.
IRTempUnitTrans	Specifies the unit of temperature upload (specifies the temperature unit of the ConvTemperature field of ATT_LOG). 0 The temperature is uploaded in Celsius 1 The temperature is uploaded in Fahrenheit
QRCodeDecryptType	QR code decryption method currently supports three methods, value 1, 2, 3. 1 Use scheme one, use today's date as the key and use AES256 algorithm to encrypt (the key is fixed) 2 Use scheme two, the system randomly generates a key and uses AES256 algorithm for encryption (the key is not fixed) 3 Use scheme three, the system randomly generates a key and uses RSA1024 algorithm for encryption (public and private keys are not fixed)
QRCodeDecryptKey	QR code key
SupportPing	Specifies that the server supports the ping protocol. When the device cannot send getrequest during the command processing, it will maintain the heartbeat with the server through Heartbeat.

Example

Client Request

GET http	GET/iclock/cdata?SN=0316144680030&options=all&pushver=2.2.14&language=83&pushcommkey=4a9594af164f2b9779b59e8554b5df26 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Fri, 03 Jul 2015 06: 53: 01 GMT
Content-Type: text/plain
Content-Length: 190
Connection: close
Pragma: no-cache
Cache-Control: no-store

GET OPTION FROM: 0316144680030
ATTLOGStamp=None
OPERLOGStamp=9999
ATTPHOTOStamp=None
ErrorDelay=30
Delay=10
TransTimes=00: 00;14: 05
TransInterval=1
TransFlag=TransData AttLog  OpLog   AttPhoto    EnrollUser  ChgUser EnrollFP
ChgFP   UserPic
TimeZone=8
Realtime=1
Encrypt=None
```

6 Exchange of Public Keys (where encryption of communications is supported)

The functional device pushes the public key of the device and receives the public key of the server returned by the server.

Client Request

POST http	POST /iclock/exchange?SN=$(SerialNumber)&type=publickey
Host	${ServerIP}:${ServerPort}
Content-Length	${XXX}
PublicKey	${XXX}

Annotation

HTTP request method	POST method
URI	/iclock/ exchange
HTTP protocol version	1.1
Host header field	${Required}
Other header fields	${Optional}
PublicKey	The device PublicKey returned by calling the encryption library

Server Response

```
HTTP/1.1 200 OK Server: ${XXX}
Set-Cookie: ${XXX}; Path=/; HttpOnly
Content-Type: application/push;charset=UTF-8
Content-Length: ${XXX}
Date: ${XXX}

PublicKey=${XXX}
```

Annotation

PublicKey	The server PublicKey returned by the server

7 Exchange Factor (where communication encryption is supported)

This function pushes the device factor and receives the server factor returned by the server.

Client Request

POST http	POST /iclock/exchange?SN=$(SerialNumber)&type=factors
Host	${ServerIP}:${ServerPort}
Content-Length	${XXX}
Factors	${XXX}

Annotation

HTTP request method	POST method
URI	/iclock/ exchange
HTTP protocol version	1.1
Host header field	${Required}
Other header fields	${Optional}
Factors	The device factor returned by calling the encryption library

Server Response

```
HTTP/1.1 200 OK Server: ${XXX}
Set-Cookie: ${XXX}; Path=/; HttpOnly
Content-Type: application/push;charset=UTF-8
Content-Length: ${XXX}
Date: ${XXX}
Factors=${XXX}
```

Annotation

Factors	The server factor returned by the server

8 Pushing Configuration Information

The functional device proactively pushes relevant configuration information, which can be designated by the device or the server (see "PushOptions" in "Exchanging Initialization Information" for more information). Any change to configuration information is proactively pushed to the server.

Client Request

POST http	POST /iclock/cdata?SN=${SerialNumber}&table=options HTTP/1.1
Host	${ServerIP}:${ServerPort}
Content-Length	${XXX}
${key}=${Value},${key}=${Value},${key}=${Value}……,${key}=${Value}	

${key}=${Value},${key}=${Value},${key}=${Value}……,${key}=${Value}	
UserPicURLFunOn	Supports issuing user photos by URL

Hybrid identification protocol adds the following **$ {key}**

MultiBioDataSupport	Supports multi-modal bio-template parameters. The type is defined bit by bit. Different types are separated by colons, 0 means not supported, 1 means supported. The supported version number, such as: 0: 1: 1: 0: 0: 0: 0: 0: 0: 0, indicating support for fingerprint template and near-infrared face template.
MultiBioPhotoSupport	Supports multi-modal biometric photo parameters. The type is defined bit by bit. Different types are separated by colons, 0 means not supported, 1 means supported. The supported version number, such as: 0: 1: 1: 0: 0: 0: 0: 0: 0: 0, indicating support for fingerprint photo and near-infrared face photo.
MultiBioVersion	The multi-modal biometric data version. Different types are separated by colons, 0 means not supported, 1 means supported. The supported version number, such as: 0: 10: 0: 7: 0: 0: 0: 0: 0: 0, indicating support for fingerprint algorithm10.0 and near-infrared face algorithm7.0.
MultiBioCount	Supports multi-modal biometric data version parameters. The type is defined bit by bit. Different types are separated by colons, 0 means not supported, 1 means supported. The supported version number, such as: 0: 100: 200: 0: 0: 0: 0: 0: 0: 0, indicating support for 100 fingerprints and 200 near-infrared faces.

MaxMultiBioDataCount	Supports maximum number of multi-modal bio-templates. The type is defined bit by bit. Different types are separated by colons, 0 means not supported, 1 means supported. The supported maximum number of templates, such as: 0: 10000: 2000: 0: 0: 0: 0: 0: 0: 0, indicating support for the maximum number of fingerprint templates is 10000 and the maximum number of near-infrared face templates is 2000.
MaxMultiBioPhotoCount	Supports maximum number of multi-modal biometric photos. The type is defined bit by bit. Different types are separated by colons, 0 means not supported, 1 means supported. The supported maximum number of photos, such as: 0: 10000: 2000: 0: 0: 0: 0: 0: 0: 0, indicating support for the maximum number of fingerprint photos is 10000 and the maximum number of near-infrared face photos is 2000.
SubcontractingUpgradeFunOn	Subcontract upgrade protocol function switch parameter
UserPicURLFunOn	Whether to use url mode for user photo delivery
IRTempDetectionFunOn	The infrared temperature detection function is turned on
MaskDetectionFunOn	Mask detection function is on
IsSupportQRcode	Whether the device supports the QR code function, the value is as follows; 0 QR code is not supported 1 QR code is supported
QRCodeEnable	Whether to enable the QR code function (0: off, 1: on)
QRCodeDecryptFunList	QR Code Decryption Function Parameter. This parameter is used to determine which decryption methods the device specifically supports, and the function support parameters are obtained according to the bits (the parameter cannot be modified in software). If it is not transmitted, it is not supported by default

The position value refers to the string position of the **QRCodeDecryptFunList** parameter value, starting from 0 and from left to right, as follows:

Position value	Meaning	Remarks
0	Device supports scheme 1 decryption	0 not supported; 1 supported
1	Device supports scheme 2 decryption	0 not supported; 1 supported
2	Device supports scheme 3 decryption	0 not supported; 1 supported

Remarks

- **Scheme 1**: Use the date of the day as the key and use the AES256 algorithm for encryption (the key is fixed)

- **Scheme 2**: the system randomly generates a key and encrypts it with the AES256 algorithm (the key is not fixed)
- **Scheme 3**: The system randomly generates a key and encrypts it with the RSA1024 algorithm (public andprivate keys are not fixed)

For example:

- **QRCodeDecryptFunList=101**, which means that the device supports scheme one and three decryption methods.

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

table=options	
Host Header Field	${Required}
Other Header Field	${Optional}

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}
……
OK
```

Example

Client Request

POST http	POST /iclock/cdata?SN=0316144680030&table=options HTTP/1.1
Host	58.250.50.81:8011
Content-Length	26
User-Agent	iClock Proxy/1.09
Connection	close

Accept	*/*
FingerFunOn=1,FaceFunOn=1	

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Tue, 30 Jun 2015 01:24:26 GMT
Content-Type: text/plain
Content-Length: 2
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK
```

9 Uploading Update Information

This function multiplexes the Download Command (#downloadcmd) request and adds parameters in its URL to mainly upload the client's firmware version number, number of enrolled users, number of enrolled fingerprints, number of attendance records, IP address of equipment, fingerprint algorithm version, face algorithm version, number of faces required for face enrollment, number of enrolled faces, and marked information about functions supported by the equipment.

Client Request

Get http	Get/iclock/getrequest?SN=${SerialNumber}&INFO=${Value1},${Value2},${Value3},${Value4},${Value5},${Value6},${Value7},${Value8},${Value9},${Value10}
Host	${ServerIP}:${ServerPort}

Annotation

HTTP request method	Get method
URI	/iclock/getrequest
HTTP protocol version	1.1

Client Configuration Information

SN	${Required} Client's serial number
${Value1}	Firmware version number
${Value2}	Number of enrolled users
${Value3}	Number of enrolled fingerprints
${Value4}	Number of attendance records
${Value5}	IP address of Equipment
${Value6}	Version of fingerprint algorithm
${Value7}	Version of face algorithm
${Value8}	Number of faces required for face enrollment
${Value9}	Number of enrolled faces
${Value10}	Identifier of functions supported by the equipment in the format of 101 with every digit representing a function. **0** Not supporting this function **1** Supporting this function Description of function on each digit;

	<table><tr><td>1</td><td>Fingerprint function</td></tr><tr><td>2</td><td>Face function</td></tr><tr><td>3</td><td>User photo function</td></tr><tr><td>4</td><td>Comparison photo function (comparison photo function is supported, the parameter BioPhotoFun needs to be set to 1)</td></tr><tr><td>5</td><td>Visible light face template function (face template function is supported, the parameter BioDataFun needs to be set to 1)</td></tr></table> **Remarks:** (Push the first 3 digits by default and push 5 digits when VisilightFun is set to 1). <table><tr><td>**Host header field**</td><td>${Required}</td></tr><tr><td>**Other header fields**</td><td>${Optional}</td></tr></table>

Remarks

For server responses, see Download Command.

Example

Client Request

Get http	GET /iclock/getrequest?SN=0316144680030&INFO=Ver%202.0.12-20150625,0,0,0,192.168.16.27,10,7,15,0,111 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Tue, 30 Jun 2015 01: 24: 26 GMT
Content-Type: text/plain
Content-Length: 2
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK
```

10 Heartbeat

Used to maintain a heartbeat with the server. When processing big data upload, use ping to keep the heartbeat. When big data is processed, use get request to keep the heartbeat.

Client Request

Get http	GET /iclock/ping?SN=$(SerialNumber) HTTP/1.1
Cookie	token=${XXX}
Host	${ServerIP}:${ServerPort}
Content-Length	${XXX}

Server Response

```
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Content-Length: ${XXX}
Date: ${XXX}
OK
```

Annotation

```
HTTP request method: POST method
URI: /iclock/ping
HTTP protocol version: 1.1
```

Example

Client Request

Get http	GET /iclock/ping?SN=3383154200002 HTTP/1.1
Cookie	token=cb386eb5f8219329db63356fb262ddff
Host	192.168.213.17:8088
User-Agent	iClock Proxy/1.09
Connection	starting
Accept	application/push
Accept-Charset	UTF-8
Accept-Language	zh-CN
Content-Type	application/push;charset=UTF-8
Content-Language	zh-CN

Server Response

```
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Content-Length: 2
Date: Tue, 10 Jan 2017 07:42:41 GMT
OK
```

11 Uploading Data

The data to be uploaded automatically can be set on the server. (For details, see the "TransFlag" parameter in "Initialization Information Exchange".)

11.1 Uploading Mode

- Realtime uploading.
- Interval uploading.
- Timed uploading.

Real-time \ interval \ timed three upload modes. Please note if real-time is supported, then interval and timed mode does not work.

Realtime uploading	This is supported by the equipment by default and can be controlled by the server. (For details, see the "Realtime" parameter in "Initializing Information Exchange").
Interval uploading	The server can control specific interval time. (For details, see the "TransInterval" parameter in "Initializing Information Exchange".)
Timed uploading	The server can control specific upload timing. (For details, see the "TransTimes" parameter in "Initializing Information Exchange".)

11.2 Uploading Attendance Record

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=ATTLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
Used URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

<table>
<tr><th>Parameter</th><th>Required/ Optional</th><th>Description</th></tr>
<tr><td>SN</td><td>${Required}</td><td>Serial number of the client</td></tr>
<tr><td>table=ATTLOG</td><td>${Required}</td><td>Indicating that the uploaded data is attendance records</td></tr>
<tr><td>Stamp</td><td>${Optional}</td><td>Latest timestamp at which the attendance record is uploaded to the server. (For details, see the "Stamp" or "ATTLOGStamp" parameter in "Initializing Information Exchange".)</td></tr>
<tr><td>Host header field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Request entity</td><td>${DataRecord}</td><td>Attendance record data in the following format:

${Pin}${HT}${Time}${HT}${Status}${HT}${Verify}${HT}${Workcode}${HT}${Reserved1}${HT}${Reserved2}${HT}MaskFlag${HT}Temperature${HT}ConvTemperature

<table>
<tr><td>${Time}</td><td>Verification time
In the format of XXXX-XX-XX XX: XX: XX. For example, 2015-07-29 11: 11: 11</td></tr>
<tr><td>MaskFlag</td><td>Value 0 or 1;
1 means wearing a mask
</td></tr>
<tr><td>Temperature</td><td>The value is the temperature data with a decimal point, for example: 36.2
</td></tr>
<tr><td>ConvTemperature</td><td>The value is the temperature data with a decimal point. If the server does not send the IRTempUnitTrans parameter, then the unit of the temperature upload is subject to the IRTempUnit parameter</td></tr>
</table>
</td></tr>
<tr><td colspan="3">Use ${LF} to connect between multiple records</td></tr>
</table>

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}
……

OK: ${XXX}
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Content-Length header field	According to the HTTP 1.1, this header field is generally used to specify the data length of the response entity. If the response entity size is uncertain; **Header fields of Transfer-Encoding:** chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here.
Response entity	When the server normally receives data and successfully processes data, **OK:** ${XXX} is replied. **${XXX}** represents the number of records successfully processed. When an error occurs, the error description is replied.

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=ATTLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	315

```
1452    2015-07-30 15: 16: 28 0   1   0   0   0
1452    2015-07-30 15: 16: 29 0   1   0   0   0
1452    2015-07-30 15: 16: 30 0   1   0   0   0
1452    2015-07-30 15: 16: 31 0   1   0   0   0
1452    2015-07-30 15: 16: 33 0   1   0   0   0
1452    2015-07-30 15: 16: 34 0   1   0   0   0
1452    2015-07-30 15: 16: 35 0   1   0   0   0
8965    2015-07-30 15: 16: 36 0   1   0   0   0
8965    2015-07-30 15: 16: 37 0   1   0   0   0
```

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
```

```
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK: 9
```

11.3 Uploading Attendance Photo

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equal to version 2.2.14.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=ATTPHOTO&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/fdata or /iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Serial number of the client
table=ATTPHOTO	${Required}	
Stamp	${Optional}	Latest timestamp at which the attendance photo is uploaded to the server. (For details, see the "ATTPHOTOStamp" parameter in "Initializing Information Exchange".)
Host header field	${Required}	

<table>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Request entity</td><td>${DataRecord}</td><td>Attendance photo data, in the following format;

PIN=${XXX}${LF}SN=${SerialNumber}${LF}size=${XXX}${LF}CMD=uploadphoto${NUL}${BinaryData}

<table><tr><td>PIN=${XXX}</td><td>Filename of the attendance phot with only the jpg format support currently</td></tr><tr><td>SN=${XXX}</td><td>Serial number of the client</td></tr><tr><td>size=${XXX}</td><td>Original size of the attendance photo</td></tr><tr><td>${BinaryData}</td><td>Binary dataflow of the original photo</td></tr></table>
Transmission of multiple records is not supported in attendance photos.</td></tr>
</table>

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}

OK
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Content-Length header field	According to the HTTP 1.1, this header field is usually used to specify the data length of the response entity. If the response entity size is uncertain; **Header fields of Transfer-Encoding:** chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here.
Response entity	When the server normally receives data and successfully processes data, OK is replied. When an error occurs, the error description is replied.

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=ATTPHOTO&Stamp=9999 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	1684
PIN=20150731103012-123.jpg SN=0316144680030 size=9512 CMD=uploadphoto${NUL}${BinaryData}	

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 2
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK
```

11.4 Uploading Operation Record

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equivalent to version 2.2.14.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=OPERLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Serial number of the client
table=OPERLOG	${Required}	
Stamp	${Optional}	Latest timestamp at which the attendance record is uploaded to the server. (For details, see the "OPERLOGStamp" parameter in "Initializing Information Exchange".)
Host header field	${Required}	
Content-Length header field	${Required}	
Other header fields	${Optional}	
Request entity	${DataRecord}	Operation record data, in the following format; OPLOG${SP}${OpType}${HT}${OpWho}${HT}${OpTime}${HT}${Value1}${HT}${Value2}${HT}${Value3}${HT}${Reserved} ${OpType}: Operation code. See Appendix 3 ${Value1}, ${Value2}, ${Value3}, ${Reserved}: Operand 1, 2, 3 and 4. See Appendix 4
${LF} is used to connect multiple records		

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}
OK: ${XXX}
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Content-Length header field	According to the HTTP 1.1, this header field is generally used to specify the data length of the response entity. If the response entity size is uncertain; **Header fields of Transfer-Encoding:** chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here.
Response entity	When the server normally receives data and successfully processes data, OK: ${XXX} is replied. ${XXX} represents the number of records successfully processed. When an error occurs, the error description is replied

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=OPERLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	166
OPLOG 4 14 2015-07-30 10: 22: 34 0 0 0 0	

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 3
Connection: close
Pragma: no-cache
Cache-Control: no-store
```

```
OK: 1
```

11.5 Uploading User Information

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equals to version 2.2.14.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=OPERLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Serial number of the client
table=OPERLOG	${Required}	
Stamp	${Optional}	Latest timestamp at which user information is uploaded to the server. (For details, see the "OPERLOGStamp" parameter in "Initializing Information Exchange".)
Host header field	${Required}	
Content-Length header field	${Required}	
Other header fields	${Optional}	
Request entity	${DataRecord}	Fingerprint template data, in the following format; USER${SP}PIN=${XXX}${HT}Name=${XXX}${HT}Pri=${XXX}${HT}Passwd=${XXX}${HT}Card=${XXX}${HT}Grp=${XXX}${HT}TZ=${XXX}${HT}Verify=${XXX}${HT}ViceCard=${XXX} Name=${XXX}: User name. When the equipment is in

			Chinese, the GB2312 code is used. When the equipment is in another language, the UTF-8 code is used.
		Card=${XXX}	User card number (main card), supporting only two formats. a. hexadecimal data, in the format of [%02x%02x%02x%02x], representing the first, second, third and fourth digit from left to right. For example, if the card number is 123456789, this is Card=[15CD5B07]. b. string data. If the card number is 123456789, this is: Card=123456789
		TZ=${XXX}	Information on number of the time period used by the user, in the format of XXXXXXXXXXXXXXXX. Digits **1-4** describe whether the group time period is used, Digits **5-8** description use personal time period **1**, Digits **9-12** description use personal time period **2**, Digits **13-16** description use personal time period **3**. **<u>For example</u>**: **0000000000000000** represents use of the group time period. **0001000200000000** represents using personal time period, with personal time period 1 using the time information of time period numbered 2. **0001000200010000** represents using personal time period, with personal time period 1 using the time information of time period numbered 2 and personal time period 2 using the time information of time period numbered 1.
		Verify=${XXX}	User verification mode, does not contain the field, is null, or is set to -1(use group verification mode, if there is no access group,

			group verification mode is 0), otherwise see (appendix 7).
		ViceCard=${XXX}:	User card number (secondary card), string data. If the card number is 123456789, ViceCard=123456789.
${LF} is used to connect multiple records			

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}

OK: ${XXX}
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Content-Length header field	According to the HTTP 1.1, this header field is generally used to specify the data length of the response entity. If the response entity size is uncertain; **Head fields of Transfer-Encoding**: chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here.
Response entity	When the server normally receives data and successfully processes data, **OK**: ${XXX} is replied. **${XXX}** represents the number of records successfully processed. In case of an error, an error description is replied

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=OPERLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*

Content-Length	166
USER PIN=36234 Name=36234 Pri=0 Passwd= Card=133440 Grp=1 TZ=0001000000000000 USER PIN=36235 Name=36235 Pri=0 Passwd= Card=133441 Grp=1 TZ=0001000000000000	

Server Response

```
HTTP/1.1 200 OK
Server:  nginx/1.6.0
Date:  Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type:  text/plain
Content-Length:  4
Connection:  close
Pragma:  no-cache
Cache-Control:  no-store

OK: 2
```

11.6 Uploading Identity Card Information (only supported by personal identification protocol)

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equals to version 2.3.0.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=IDCARD&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

<table>
<tr><th>Parameter</th><th>Required/ Optional</th><th>Description</th></tr>
<tr><td>SN</td><td>${Required}</td><td>Serial number of the client</td></tr>
<tr><td>table=IDCARD</td><td>${Required}</td><td></td></tr>
<tr><td>Stamp</td><td>${Optional}</td><td>Latest timestamp at which the identity card information is uploaded to the server. (not used).</td></tr>
<tr><td>Host header field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Request entity</td><td>${DataRecord}</td><td>User information data, in the following format;

IDCARD${SP}PIN=${XXX}${HT}SNNum=${XXX}${HT}IDNum=${XXX}${HT}DNNum=${XXX}${HT}Name=${XXX}${HT}Gender=${XXX}${HT}Nation=${XXX}${HT}Birthday=${XXX}${HT}ValidInfo=${XXX}${HT}Address=${XXX}${HT}AdditionalInfo=${XXX}${HT}Issuer=${XXX}${HT}Photo=${XXX}${HT}FPTemplate1=${XXX}${HT}FPTemplate2=${XXX}${HT}Reserve=${XXX}${HT}Notice=${XXX}

<table>
<tr><td>PIN=${XXX}</td><td>User ID. If the user's information is not bound to the identity card, then the value of PIN is 0 .</td></tr>
<tr><td>SNNum=${XXX}</td><td>Physical card number of identity card.</td></tr>
<tr><td>IDNum=${XXX}</td><td>Citizen id number</td></tr>
<tr><td>DNNum=${XXX}</td><td>Identity card serial number (card body management number)</td></tr>
<tr><td>Name=${XXX}</td><td>Id Name, using utf-8 encoding</td></tr>
<tr><td>Gender=${XXX}</td><td>Gender code.

<table>
<tr><td>1</td><td>" male "</td></tr>
<tr><td>2</td><td>" female"</td></tr>
</table>
</td></tr>
<tr><td>Nation=${XXX}</td><td>Ethnic code.

<table>
<tr><td>0</td><td>”Decoding error”</td></tr>
<tr><td>1</td><td>” Han”</td></tr>
<tr><td>2</td><td>” Mongol”</td></tr>
<tr><td>3</td><td>”Hui”</td></tr>
<tr><td>4</td><td>” Tibetan”</td></tr>
<tr><td>5</td><td>” Uighur”</td></tr>
</table>
</td></tr>
</table>
</td></tr>
</table>

					6	"Miao"		
					7	"Yi"		
					8	"Zhuang"		
					9	"Buyi"		
					10	"Korean"		
					11	"Manchu"		
					12	"Dong"		
					13	"Yao"		
					14	"Bai"		
					15	"Tujia"		
					16	"Hani"		
					17	"Kazakh"		
					18	"Dai"		
					19	"Li"		
					20	"Lisu"		
					21	"Wa"		
					22	"She"		
					23	"Gaoshan"		
					24	"Lahu"		
					25	"Shui"		
					26	"Dongxiang"		
					27	"Naxi"		
					28	"Jingpo"		
					29	"Kirghiz"		
					30	"Du"		
					31	"Daur"		
					32	"Mulam"		
					33	"Qiang"		
					34	"Blang"		
					35	"Salar"		
					36	"Maonan"		
					37	"Gelao"		
					38	"Xibe"		
					39	"Achang"		
					40	"Pumi"		
					41	"Tajik"		
					42	"Nu"		
					43	"Uzbek"		
					44	"Russian"		

				45 ″Evenki″ 46 ″De'ang″ 47 ″Bonan″ 48 ″Yugur″ 49 ″Gin″ 50 ″Tatar″ 51 ″Drung″ 52 ″Oroqin″ 53 ″Hezhen″ 54 ″Menba″ 55 ″Lhoba″ 56 ″Jino″ 57 ″Coding error″ 97 ″Other″ 98 ″ Foreign origin″
			Birthday=${XXX}	Date of birth (format: yyyyMMdd)
			ValidInfo=${XXX}	Period of validity, start date and end date (format: yyyyMMddyyyyMMdd)
			Address=${XXX}	Address, encoded in UTF-8
			AdditionalInfo=${XXX}	Machine read appends address, encoded in UTF-8
			Issuer = ${XXX}	Issuing authority, use UTF-8 encoding.
			Photo=${XXX}	Photo data stored by identity card, which is encrypted and converted into base64 data content for transmission.
			FPTemplate1=${XXX}	Fingerprint 1_ fingerprint characteristic data, and converted into base64 data content for transmission.
			FPTemplate2=${XXX}	Fingerprint 2_ fingerprint characteristic data, and converted into base64 data content for transmission.
			Reserve=${XXX}	Reserve field
			Notice=${XXX}	Note information, encoded in UTF-8.
${LF} is used to connect multiple records.				

Server Response

```
HTTP/1.1 200 OK
Content-Length:  ${XXX}


OK: ${XXX}
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Content-Length header field	Based on HTTP 1.1, this header field is usually used to specify the data length of the response entity. If the response entity size is uncertain; **Head fields of Transfer-Encoding**: chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here
Response entity	When the server normally receives data and successfully processes data, **OK**: ${XXX} is replied. **${XXX}** represents the number of records successfully processed. In case of an error, an error description is replied

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=IDCARD&Stamp=9999 HTTP/1.1
Host	58.250.50.81:8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	658

IDCARD PIN=2 SNNum=xxxxxxxx460088xxxxxx IDNum=xxxxxx19911218xxxx DNNum= Name=Zhang San Gender=1 Nation=1 Birthday=19911218 ValidInfo=2017091520270915 Address = Province xx City xx County xxx Village xxx Group xx AdditionalInfo= Issuer= County xxx public security bureau Photo=V0xmAH4AMgAA/4UYUV+sjnpymK1Boqvz3UCBevbbHnYikGyH1XA7Emt2agF0HFhDc4Bxzeg/jH0Yp8Ngl1861Y812K1AOUIRgy1Z5TEuSG1GV4MwlAB3qY0tKqWNPzyEd8Pn0EhRsgAAjeWPxiUzLaPU1w FPTemplate1=QwGIEgELUQAAAAAAAAAAAAAC9AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA


```
AAAAAAAAAAAAAAAAAAAAA4 FPTemplate2=QwGIEgEQUAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAD8 Reserve= Notice=
```

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK: 1
```

11.7 Uploading Identity Card Attendance Record (only supported by personal identification protocol)

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equal to version 2.4.0.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=ATTLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}:${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

<table>
<tr><th>Parameter</th><th>Required/ Optional</th><th>Description</th></tr>
<tr><td>SN</td><td>${Required}</td><td>Serial number of the client</td></tr>
<tr><td>table= ATTLOG</td><td>${Required}</td><td>The uploaded data is the attendance record of identity card.</td></tr>
<tr><td>Stamp</td><td>${Optional}</td><td>Latest timestamp at which the identity card attendance record is uploaded to the server.
(For details, see the “Stamp” or "ATTLOGStamp" parameter in "Initializing Information Exchange".)</td></tr>
<tr><td>Host header field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Request entity</td><td>${DataRecord}</td><td>Upload identity card attendance record, in the following format;

${Pin}${HT}${Time}${HT}${Status}${HT}${Verify}${HT}${Workcode}${HT}${Reserved1}${HT}${Reserved2}${HT}${IDNum}${HT}${Type}

<table>
<tr><td>IDNum</td><td>Id number</td></tr>
<tr><td>Type</td><td>Record Type

<table>
<tr><td>0</td><td>Attendance</td></tr>
<tr><td>1</td><td>Verification</td></tr>
</table>

• The Type value is 0;
And the content of the attendance record is defined in accordance with the attendance agreement.
• The Type value is 1;
STATUS: 0 - success, 1 - failure, 2 – blacklist
• VERIFY :1- face, 2- face + fingerprint, 3- fingerprint + face</td></tr>
</table>
</td></tr>
<tr><td colspan="3">Other content is defined in accordance with standard protocols</td></tr>
</table>

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=ATTLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81:8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	315

```
1452    2015-07-30 15:16:28    0    1    0    0    0    210218199105072345    0
1452    2015-07-30 15:16:29    0    1    0    0    0    210218199103062104    0
1452    2015-07-30 15:16:30    0    1    0    0    0    210218199411212642    0
1452    2015-07-30 15:16:31    0    1    0    0    0    210218199207123075    0
1452    2015-07-30 15:16:33    0    1    0    0    0    210218199512012332    0
1452    2015-07-30 15:16:34    0    1    0    0    0    210218199011304365    0
1452    2015-07-30 15:16:35    0    1    0    0    0    210218199806068325    0
8965    2015-07-30 15:16:36    0    1    0    0    0    210218199310094316    0
8965    2015-07-30 15:16:37    0    1    0    0    0    210218199708167443    0
```

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK: 9
```

11.8 Uploading Identity Card Attendance Photo (only supported by personal identification protocol)

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equal to version 2.4.0.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=ATTPHOTO&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}:${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/fdata or /iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Serial number of the client
table= ATTPHOTO	${Required}	
Stamp	${Optional}	Latest timestamp at which the identity card attendance photo is uploaded to the server. (For details, see the "ATTPHOTOStamp" parameter in "Initializing Information Exchange".)
Host header field	${Required}	
Content-Length header field	${Required}	
Other header fields	${Optional}	
Request entity	${DataRecord}	Upload identity card attendance photo, in the following format PIN=${XXX}${LF}SN=${SerialNumber}${LF}size=${XXX}${LF}CMD=uploadphoto${NUL}${BinaryData} PIN: time - photo type – User ID - id number.jpg Photo type: 0 attendance successful photo 1 attendance failed photo 2 blacklist photo

			3	verification successful photo
			4	verification failed photo
		SN=${XXX}	Client series number	
		Size =${XXX}	Original size of attendance photo	
		${BinaryData}	Original image BinaryData stream	

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=ATTPHOTO&Stamp=9999 HTTP/1.1
Host	58.250.50.81:8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	1684
PIN=20160615093758-0-1457-210218199011304365.jpg SN=0316144680030 size=9512 CMD=uploadphoto${NUL}${BinaryData}	

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store
OK: 9
```

11.9 Uploading Fingerprint Template

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equal to version 2.2.14.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=OPERLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

<table>
<tr><th>Parameter</th><th>Required/ Optional</th><th>Description</th></tr>
<tr><td>SN</td><td>${Required}</td><td>Serial number of the client</td></tr>
<tr><td>table=OPERLOG</td><td>${Required}</td><td></td></tr>
<tr><td>Stamp</td><td>${Optional}</td><td>Latest timestamp at which the fingerprint template is uploaded to the server. (For details, see the "OPERLOGStamp" parameter in "Initializing Information Exchange".)</td></tr>
<tr><td>Host header field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Request entity</td><td>${DataRecord}</td><td>Fingerprint template data, in the following format;

FP${SP}PIN=${XXX}${HT}FID=${XXX}${HT}Size=${XXX}${HT}Valid=${XXX}${HT}TMP=${XXX}

<table><tr><td>Size=${XXX}</td><td>Length after base64 coding of the fingerprint template</td></tr><tr><td>TMP=${XXX}</td><td>When the fingerprint template is transmitted, base64 coding needs to be conducted for the original binary fingerprint template</td></tr></table></td></tr>
<tr><td colspan="3">${LF} is used to connect multiple records.</td></tr>
</table>

Server Response

```
HTTP/1.1 200 OK
Content-Length:  ${XXX}
……


OK: ${XXX}
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Content-Length header field	Based on HTTP 1.1, this header field is usually used to specify the data length of the response entity. If the response entity size is uncertain; **Head fields of Transfer-Encoding**: chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here.
Response entity	When the server normally receives data and successfully processes data, **OK**: ${XXX} is replied. **${XXX}** represents the number of records successfully processed. In case of an error, an error description is replied

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=OPERLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	4950

```
FP PIN=2    FID=0    Size=1124    Valid=1 TMP=SghTUzIxAAADS00ECAUHCc7QAAA
nSnkBAAAAg/YUfEsyAIEPHgH6ALFHRQBBAPkP8wBAS2UPEwBTACYPe0tYAHkIjACuAHdIeQ
BtAGwEUAB1S20DhAB+AK8EXUuPAOoPJABwANVENQDCANsPZQDbSx8PbwDeACwPz0vjAJ8Pd
wArAPFELAD5AMwPvQASSvMKMgAwAQkPSUE2DkcXQ0uCQ1B4AJT7GZuC3GyNySrvjoKT7X77
SkYkB9L6MQhMCV5G1PUR+T0FfPiGTqMABQHp+XgBhclzg397xf0iD5CkQAXvErv3q4PQZ94
0xfmXzBb5bcher2e7PQkLAXyf8gJ78nP7iwFIQmrXcwKn31LfiwoBIDQBAjrbrAdLOBFwwv
```

```
8ExVYStv7ABQBOE7+JCEt/GIBs/4SqDwPoJ4yHwMDEBcHDicB/DQCrLkbAwgnFcnwGAHn2g
4iICQCsNoPCnm4RS75CjJ0rgwFqwS4HADFDZmwEAwJcRjrABwA1jWTCtMX+whMAw4+JwYnC
+//Aw3pCwsK0wRIAxFKJB8PAsfzCw3WLwaENAz9besHBi4eqBwOPW4PBwsEoygBxKnvCwcL
Awqx4WFIB02WGwl86boCLw4b/ZMFx3ADXJ4FSi3X/wqt2whjD/wkAc261eMKKigQBG249lw
UD0nP9QxEAdbZwwYt5wcHCwME6wcMuBQCeeANl1gCQMWjC/v+DwL90UbQCAIF7cMLNAJo2C
MHA+/xTzQCCy2jA/pPABMXTh2ZXEQEfnkCn/8OLwWVdSQMB18tDiwsBF8s9RZFcFUvqza3C
/3gAwMOMw1lxZ8IaxeXM7cFyxMDCpLvAdCDD/n4HAKMcHsMH/gsAcNreO/z/tfxC/wsAdBv
k/bf9/T5KFAAM4KfPxMHFjP/CB8DDi8FzCgBs4p+EwhHBGwDr4qQEUcA2wsPBwMF4B8DCEM
L+wAQAei/wH1wB6/Gma8AFxI2IwIPAg1gYxej46Ut8n8PBwqrBbgYJEHsO4vk8/cMkBRCIF
1NpxhCGe0jBERDTMGxri4/CrGb/FBAaMqiLccDAwMTFAMLAi8PB/8HAA9WLOgj/DxDPPqtA
/8GJtcRCDBDEj55Bi/7JyZMEEdFRQ7T4
FP PIN=2    FID=1   Size=2120   Valid=1 TMP=T3dTUzIxAAAGNDsECAUHCc7QAAA
eNWkBAAAAhtlDsjQjAKIPYgDiAHo7NgA1AHAPZgBSNKQPdwBWAOAPVjRYABMPsACiADM76w
B8ALkO2QB4NFgPVQCCAP0O2TSTALoOYABeAEo7TgCdAFMPwQGmNNgNwgCiAH0PnDSpAEQPC
gFuAEI5eQCtAEcPIwCpNMoNEgGwAPkNvTSyADoP+ABxAEY/KgC1ANUPVQC/NMMP7gC8AAwN
HTTAAM0O9AAEAEc5JgDCANQO7QDKNN4OzgDOAH4OHjTQANUODgAdAMc6ZgDgAEsPNgDmNMM
OKQDiAKMOEjTlAOUOzgAhAM86QQDmAGUPRQDoNFIPaQDwAAIP6DT3AD8OBgEzALk6uAD3AM
QOCAAHNTQOPwAHAaEPDTUGAUIOtQDMAUY7oQAMAU8PEAAJNbQO8gAZAXgPxDQfATsOCgHaA
cQ63AApATYOZAAqNToMmAAvAY0M/TQuAcANyQD1AcY60gA2AT8OaAA/NcELOgA7ASYPlDQ8
AWQLJQCEAfQ7hQBEAd8OKwBCNb8ORABMASoPdDROAeUOnACUAco5Lv0jb0N/vw8xbVZpOl8
G9+JPA0Zbg6sF2hafgw2db/Kq3hanMJLdJ1p/HQLu48rxWbIqIj8Lee9U5wASmAL+8DIEdP
jjI1MEKQj1H1OD0qPInf2aGYFzANzakIW6/UoNkQruW6gFTYfW/PMF5zDAjd2O3PosZbvLG
IVugNb5YXuLNMx1+QARCTT6k7VQf7qL1IpZi2c0ufv9+NHwGXoLNOR66PcwC7wAWjsUDD0U
BfargLTBFRd1CKH4be/q65T3cYRJ+3fqD7LgB4KAmYEciic2SSdlEZmBvBIfM/iXpQJeAHu
Jr7rAC04HdXxwdkBTDH5Bglr9MH1HtmT/BYXRkmT/c7TgcsH23gAPAw2o9IWBgqaEzH27xW
gGLRFyFNOMc7QwfgGD9f4I/i+/dH0pivH+2AaHtkgGpfi9efR7vsJofaXaLA5M5Eu+oAJxB
hkGHYN3sbSN2IMdCCwHZ7FUej1fyfXU8mW17ByJhEmaQBKYMGKTkXwN/XAXnzZXgG6IPQ3n
/JE4hAmKgZ4bpGpP24wPjfRRa9Hpz8AEIEwBAungoQU0ZwUAwAwAaAcidMBEwDgKAH0IIct
EQv4SAHzOEzP0/0NAW8L9xgCfPx3/CgDDC+L/U8tKDQBnDAk4RvgMw/3AFgCNyRcwH1VYVD
yfB8XQChnBVf8SADfU/cbK/v7/O8H8BcL4y0gDAOQkLToLBgMb/TwwQQnFuCAZS1X+CwAm4
vdKyf/AKwUAX+2AdiEBUS4A/yeD/VdyZWADADMztMAeNFc1APwwMDvA+WdZW//AxQTFND9Z
ZAgApVcwOlXG9AYAelgg/ur/EzRUWRD+/v31wDEHTcE4GgADm+lV9Pz9wP0wKTpDxnhoEAA
HaOL9O/vK/v7+/jQHxAVuZ5X9wgUAsaw0TCYBCHLkR/4FISx1Oh8AAX7wBkcozy8wRTbC/j
7CQBgCARCAVsHBABy0X40EAOuAg3YANEWDaZ3CCMVYjwP6RjYEAD5KXI4wAUSPVlYFxUqJe
PxPHQAEkRL++GP8+/4j/v+O/8fK/cFW/ykOxd+QDv5Xc8DCwJULBmufSTj//cDqBQZ/nlNB
BwBQZEz4y/8yBADDpvHA+CQBl6tDUlE+wccHwfsUAJyrhVVdyv3E///9/wX7+2MCAQevRsH
DAQqbQf9SBgB4dUZD9AsAv7U3QQXAxUQEALq2QGjdAB+Jx/7///7+0vz4HcH+/8H9/wX++T
cBCL9AwQXF7cZ0/sLBCAD9AkD79Xb/IAACygUoxsvB/f/9+/04/fjK/v3AwP//Bf3E9MH9/
v3+HcUP0PfD/MD+//86/fvP/SErS//AOz74MAAS3El9BMUl510xBgD/40AH/Hk/AWfmUP5V
hCIANN3nQMDBV8AAOt5j/0AKAIA0UEV0/P0GAOv6g8RAMRE9CmLAI8EQtDhCcwkQuAzyQPv
J+/8FEJwPlf5wMxHWEzf9wgT/wjcQFRhQwQbV0xxyY/0DEMMihcEFJNwvNMEDEBY5RvUEEJ
VBVvmTBRY5Tf1RChBCpwDG9MHAwMBKAA==
FP PIN=3    FID=0   Size=1592   Valid=1 TMP=TetTUzIxAAAEqKsECAUHCc7QAAA
cqWkBAAAAhFUooagrAKAPQADpAGKnzgAuAKkPtQA1qIsPnQBGAO0PTqhKAGIPlgCrADanNw
ByAEIPngB6qDQOfgCLAGENJKiNAD0PiABTAKimdACXAB0OVgCmqKwOigCnAFgOtqi0AKsPi
AByAJimyQC3AKsPjQDEqKwPngDBAFIPrqjDAKIPaQAPABGnrwDQAIwPAQDQqJsP6wDUAF4P
XKjgAJ8PwgAhAIOm2QDrAIwPTgDrqJIPQwD8AFYPdqj/AJQP9gDBAYmnugAGAXwPrwANqZM
P6QAJAUYOWagTAYsP+AD2AWqmVAA0AX8PUQA8qYAP6ABDAbIPKdPn+18ZTgTm3GePXwtHgj
d7mih7jAplJYui+i6h1lRzIwfYrpLTDpojnwVODhLjqxleOdv2Afg5iMsIJlU6C2uTeQgwA
BW4PHhhcX2DhRNxqCgS0PMpAGTwKaDYAkEWqQB88vGuWAIdE0oIJ5kGuRof7PcJDhDuZKcU
GLX4xXs/aVLRqOyV9v326BRpuqzzQhBmApMXuSc/DZL1wezA/p1XgAbS8Jr0nANWq9IICgn
K9TsCQaxMC9kDZQxXAjeIz/Xm8gv4DABRoH8C8fiq+fcX2VDY+5L5dfoD79dIz/XX7LfvZv
OHr94H6QrL9xbvuTys+2sgRAHHpSVRDQCpBCtrlmTEpgGQBxw4/55qYK0BcQgP/zHBAIWgE
ScTAF0Jxvz7V/5HwP5rZ5QMBDYIHv5KwGKRBAQSCydZBQDDzifE7wUAtQ0nYNMAQLgBwP3+
QV6hUl30CgAlJ+D8O/3EVf4wFwAqKiL9+Vf/MThTZcAEwY+gAWwsj5LDQAYElSxndMINAG0
tI/1j/8L/XQzFbDYhwJ9pwnsFxdI2j1MJAHQzHoNU+64BRkprwsS2DwTmS/38//wwkMPGxg
wAnEorwjv/YGjAwYQOAEmKZ8ckksLBwsDAzwCxwSj/wVjCcdQAU8VWxMPCwcIHw/tqwMDC/
UsMxTlqfif9/MD9/qoMBPRuT8LDxMBYwWiuAZdwMFLAwwBl3UHDw8DDB8Uzcu6RwsIGADmz
Q8UgCQBleCfDiWEfqA6Fyf////T++VX+/f7/wP4F/8RowItvBgBaQDTGIAwAe4ipwjvIzW2
hfhUAFo8DQfpX//39/S7/7nwIqByPQ8LCiAV+xKABI489jMK2BAQdkDSDFQCIV6v7IMfHw8
TCwgb/xtTAhQUAdZvnw/poCgAVoD2SuWQDqLe5IHSFCsURv5jCacHB/sPGAKZrFsAGAEzE4
```

```
cF+rwFsyRPAhjsGBKbLKcLAiAnFa8q2wv/Cw1MGxcjSv8HCRg0AWyEXftZHSQQA3O3KWQ2o
jvADaEf/xgBDVRLABRAnAMxHArh3AAl+wATVvwKoQAUQKQgTAPzGrhFuCQZpwMgQ/7qHdsD
CQ/4FwRW4LhYJwf/COsJUaMNDQBAQOuYJdFfAZmb+YAjV/C7YM2QJEQMtk/77Vf//UgUQWf
H9UKcR9TdwLcCeUm2vEZA7fVJdyRDg7nvA/2jC/gY/Drg7XAPAbcI7/cb6QwALQwAADKcPC
Q==
```

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK: 3
```

11.10 Uploading Face Template

The configuration PushProtVer parameter sent by the server for initialization information exchange is larger than or equal to version 2.2.14.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=OPERLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

<table>
<tr><th>Parameter</th><th>Required/ Optional</th><th>Description</th></tr>
<tr><td>SN</td><td>${Required}</td><td>Serial number of the client</td></tr>
<tr><td>table=OPERLOG</td><td>${Required}</td><td></td></tr>
<tr><td>Stamp</td><td>${Optional}</td><td>Latest timestamp at which the face template is uploaded to the server.
(For details, see the "OPERLOGStamp" parameter in "Initializing Information Exchange".)</td></tr>
<tr><td>Host header field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Request entity</td><td>${DataRecord}</td><td>Face template data, in the following format;

FACE${SP}PIN=${XXX}${HT}FID=${XXX}${HT}SIZE=${XXX}${HT}VALID=${XXX}${HT}TMP=${XXX}

<table><tr><td>SIZE=${XXX}</td><td>Length after base64 coding of the face template</td></tr><tr><td>TMP=${XXX}</td><td>When the face template is transmitted, sixteen bytes (of random content) need to be added as the prefix of the original binary face template before base64 coding is conducted</td></tr></table></td></tr>
<tr><td colspan="3">${LF} is used to connect multiple records.</td></tr>
</table>

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}

OK: ${XXX}
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Content-Length header field	Based to the HTTP 1.1, this header field is generally used to specify the data length of the response entity. If the response entity size is uncertain;

	Head fields of Transfer-Encoding: chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here
Response entity	When the server normally receives data and successfully processes data, **OK** is sent: ${XXX} is replied. **${XXX}** represents the number of records successfully processed. When an error occurs, the error description is replied.

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=OPERLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	1684


```
FACE PIN=306    FID=2   SIZE=1648   VALID=1 TMP=AAAAAAAAAAAAAAAAAAAAAFp
LRmlYATFLFLToAUQBQ1Mg+fgXuia23BDrNtwSfgJ8g74H3YHmXlkFpgetB5eH5yXuBvMLoa
6wSx9HNgK7RP80v1i+LLY8nCn7PXmD7w15Bp8N1wm/A78PowejZx9jJyWnBZ88K5wVfDDcN
TjifGIvox9iD8sf1g37B70Fk4WRl5RrKq8uD2MngRexMxk5cbDiH+c3xj+CV8Zf1idaDfWb
kB8Rnwt/AV8Du0SvAddBywHMQ9MVysfFkNENfZD9FJ9jrnGeBD5Kcwp7CVySfJzOE+wZxjW
FVY6fgreXHBd6B4ov4BXBX+GuIZ4pazBTINiG8kf4h/DHxGaFxYe+yh+O1slCDsPcweuB/S
HnA+UnqwG3AvnA88DZg/vhmaaV4dsWzwerBn1jLcN8wu/ErITiR+YHVsc1wy2wdaC5uEmxK
bwZ+AGeB5fFt6WLVa8kq/gvqqv8LvwsBAACAgIHAQABAAEGAUxyAQkcIP9SAAohGhchAQAA
EAEAAQYFASBPAgYGB1YKAQEMBgAACg8HFQ0DDAoEAg8CCBQDAxtLDwM40CUFEBNVSQYDDRN
JJg8CAAcJFBMMAQQiYA8MAwhZHAcEehMCACYEAAwACQsJBQAFBAYxAAknpwQGJ6EiBAUPIx
wFBwQPOgQCBAARGz8WCAIAGUQWBggLhyMIBJQlBAIiAgUEAgMPAwUACQAFUAABE/8EBwkQE
gABCRECBwQFFEYNCAcCFiJ3YwUACTpKLgwBDn8yDApjFAIBEwAAAwACBgEAAAECAUMBAwBC
AAACAQIBAAEABAMBAQUEAQMCBR0x/z4CAhUhSk8GAAcIDhUBNgsLDQMBAQAAAAYDAAAAAAE
EAQAHBwEGQWEIAAJe/zQBAAYY/30GAAABAAICAgAABAMAAAEFFAgAAAoEAAEUAgABAQEABw
EECQMWGAIBDSIHASH/HQQIClQeBgYMCgsIAwEBDSB0IBEJAjLbQgkIB245BQYKCAAEAAEDA
wEDDgcKAQIBAhwABB+4DAQOoiAFCAgXFwMBByNDCgYBABUQGSYDAwItYhMIATG9KQwLV0oC
BBkEAQgBDggHAQADBwJDAxAS6AIGFxYXBgMiRxQNCgMXvCMOBQIXGrxABgkGJQ4YBQEQHxU
JBUgNCgggAwIBAgMKAAAAAgMCJwADAzUAAAEAAwAAAB4BAAEAAAAAAAAAA1j/JgQGAxf/fA
MBAgkLAAEEAgIAAAAEAAEAAwEAAAABAAQAAAAAAAABAAAAARgQAQABAjP/KQMAAAIDAQEBB
AIEBAoCAAoUAgMBRAYCACoBAQAAAAsDAgAAAgEJAAMDHgABEiwNAQQnRA8DAwc5lDICAQAI
ETAbAAEGM00eAQApYCIKA/81CwU5DAIGAAEEBQQABQACKAAGG2MEAxkpFQMBCTkKAAUCFSY
JAQABDByEGwIBAjUrIQUDO/8eCwSMRAQACAQABQEABgAAAAMAAA8AAAMuAAAAAwgCBQMFCQ
cCBBNECgMAAAQvZhABAAhZ/DIBACL/XQgDJiEHAgwFAQEAAAcDAAAAAQEDAAACAAAAAwEAA
gEFCQEBBAEHIAIAAQELFRQEAwICS/8rBQEDRVQUBAYODwQAAAgAAAANAAAAAAAA
```

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK: 1
```

11.11 Uploading Finger Vein Template

The configuration PushProtVer parameter sent by the server for initialization information exchange is larger than or equal to version 2.2.14.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=OPERLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Serial number of the client
table=OPERLOG	${Required}	
Stamp	${Optional}	Latest timestamp at which the face template is uploaded to the server. (For details, see the "OPERLOGStamp" parameter in "Initializing Information Exchange".)

<table>
<tr><td>Host header field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Request entity</td><td>${DataRecord}</td><td>Face template data, in the following format;

FVEIN${SP}Pin=${XXX}${HT}FID=${XXX}${HT}Index=${XXX}${HT}Size=${XXX}${HT}Valid=${XXX}${HT}Tmp=${XXX}

<table>
<tr><td>Pin=${XXX}</td><td>User ID</td></tr>
<tr><td>FID=${XXX}</td><td>Finger number, (0~9)</td></tr>
<tr><td>Index=${XXX}</td><td>One finger has multiple finger vein templates, and Index is the number of finger vein template (0~2).</td></tr>
<tr><td>SIZE=${XXX}</td><td>Length after base64 coding of the finger vein template binary data.</td></tr>
<tr><td>Valid=${XXX}</td><td>Valid identification of the finger vein template, the values are as follows;

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>invalid template</td></tr>
<tr><td>1</td><td>normal template</td></tr>
</table>
</td></tr>
<tr><td>Tmp=${XXX}</td><td>Base64 encoding of the original binary finger vein template is needed when transferring the finger vein template</td></tr>
</table>
</td></tr>
<tr><td colspan="3">${LF} is used to connect multiple records</td></tr>
</table>

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}

OK: ${XXX}
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Content-Length header field	Based to the HTTP 1.1, this header field is generally used to specify the data length of the response entity. If the response entity size is uncertain; **Head fields of Transfer-Encoding:** chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here.
Response entity	When the server normally receives data and successfully processes data, **OK** is sent: ${XXX} is replied. **${XXX}** represents the number of records successfully processed. When an error occurs, the error description is replied.

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=OPERLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81:8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	1698


```
FVEIN Pin=306    FID=2    Index=0    Size=1648    Valid=1    Tmp=AAAAAA
AAAAAAAAAAAAAAAFpLRmlYATFLFLToAUQBQ1Mg+fgXuia23BDrNtwSfgJ8g74H3YHmXlkFp
getB5eH5yXuBvMLoa6wSx9HNgK7RP80v1i+LLY8nCn7PXmD7w15Bp8N1wm/A78PowejZx9j
JyWnBZ88K5wVfDDcNTjifGIvox9iD8sf1g37B70Fk4WRl5RrKq8uD2MngRexMxk5cbDiH+c
3xj+CV8Zf1idaDfWbkB8Rnwt/AV8Du0SvAddBywHMQ9MVysfFkNENfZD9FJ9jrnGeBD5Kcw
p7CVySfJzOE+wZxjWFVY6fgreXHBd6B4ov4BXBX+GuIZ4pazBTINiG8kf4h/DHxGaFxYe+y
h+O1slCDsPcweuB/SHnA+UnqwG3AvnA88DZg/vhmaaV4dsWzwerBn1jLcN8wu/ErITiR+YH
Vsc1wy2wdaC5uEmxKbwZ+AGeB5fFt6WLVa8kq/gvqqv8LvwsBAACAgIHAQABAAEGAUxyAQk
cIP9SAAohGhchAQAAEAEAAQYFASBPAgYGB1YKAQEMBgAACg8HFQ0DDAoEAg8CCBQDAxtLDw
M40CUFEBNVSQYDDRNJJg8CAAcJFBMMAQQiYA8MAwhZHAcEehMCACYEAAwACQsJBQAFBAYxA
AknpwQGJ6EiBAUPIxwFBwQPOgQCBAARGz8WCAIAGUQWBggLhyMIBJQlBAIiAgUEAgMPAwUA
CQAFUAABE/8EBwkQEgABCRECBwQFFEYNCAcCFiJ3YwUACTpKLgwBDn8yDApjFAIBEwAAAwA
CBgEAAAECAUMBAwBCAAACAQIBAAEABAMBAQUEAQMCBR0x/z4CAhUhSk8GAAcIDhUBNgsLDQ
MBAQAAAAYDAAAAAAEEAQAHBwEGQWEIAAJe/zQBAAYY/30GAAABAAICAgAABAMAAAEFFAgAA
AoEAAEUAgABAQEABwEECQMWGAIBDSIHASH/HQQIClQeBgYMCgsIAwEBDSB0IBEJAjLbQgkI
B245BQYKCAAEAAEDAwEDDgcKAQIBAhwABB+4DAQOoiAFCAgXFwMBByNDCgYBABUQGSYDAwI
tYhMIATG9KQwLV0oCBBkEAQgBDggHAQADBwJDAxAS6AIGFxYXBgMiRxQNCgMXvCMOBQIXGr
xABgkGJQ4YBQEQHxUJBUgNCgggAwIBAgMKAAAAAgMCJwADAzUAAAEAAwAAAB4BAAEAAAAAA
AAAA1j/JgQGAxf/fAMBAgkLAAEEAgIAAAAEAAEAAwEAAAABAAQAAAAAAAABAAAAARgQAQAB
```

```
AjP/KQMAAAIDAQEBBAIEBAoCAAoUAgMBRAYCACoBAQAAAAsDAgAAAgEJAAMDHgABEiwNAQQ
nRA8DAwc5lDICAQAIETAbAAEGM00eAQApYCIKA/81CwU5DAIGAAEEBQQABQACKAAGG2MEAx
kpFQMBCTkKAAUCFSYJAQABDByEGwIBAjUrIQUDO/8eCwSMRAQACAQABQEABgAAAAMAAA8AA
AMuAAAAAwgCBQMFCQcCBBNECgMAAAQvZhABAAhZ/DIBACL/XQgDJiEHAgwFAQEAAAcDAAAA
AQEDAAACAAAAAwEAAgEFCQEBBAEHIAIAAQELFRQEAwICS/8rBQEDRVQUBAYODwQAAAgAAAA
NAAAAAAAA
```

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK: 1
```

11.12 Uploading Unified Templates

If the PushProtVer is greater than or equal to 2.2.14 in configurations distributed by the server, a unified format should be used for the uploading or downloading of new biological identification templates. The **Type** in data is used to identify the type of biological identification templates. The unified format applies to the palm template, among others.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=BIODATA&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}:${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

<table>
<tr><th>Parameter</th><th>Required/ Optional</th><th>Description</th></tr>
<tr><td>SN</td><td>${Required}</td><td>represents the series number of the client.</td></tr>
<tr><td>table=BIODATA</td><td>${Required}</td><td></td></tr>
<tr><td>Stamp</td><td>${Optional}</td><td>represents the latest time stamp for the delivery of a unified template to the server (unavailable).</td></tr>
<tr><td>Host Header Field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length Header Field</td><td>${Required}</td><td></td></tr>
<tr><td>Other Header Field</td><td>${Optional}</td><td></td></tr>
<tr><td>Request Entity</td><td>${DataRecord}</td><td>Data about the unified templates in the following data format:

BIODATA${SP}Pin=${XXX}${HT}No=${XXX}${HT}Index=${XXX}${HT}Valid=${XXX}${HT}Duress=${XXX}${HT}Type=${XXX}${HT}MajorVer=${XXX}${HT}MinorVer=${XXX}${HT}Format=${XXX}${HT}Tmp=${XXX}

<table>
<tr><td>Pin=${XXX}</td><td>Employee No.</td></tr>
<tr><td>No=${XXX}</td><td>Number of specific biological individual, 0 by default.</td></tr>
<tr><td>[Fingerprints] No</td><td>0 to 9, corresponding to the little finger/the fourth finger/the middle finger/the index finger/the thumb on the left hand, and the thumb/the index finger/the middle finger/the fourth finger/the little finger on the right hand.</td></tr>
<tr><td>[Finger Vein]</td><td>The same as [Fingerprints]</td></tr>
<tr><td>[Face]</td><td>0</td></tr>
<tr><td>[Irises]</td><td>0 for the left eye and 1 for the right eye.</td></tr>
<tr><td>[Palms]</td><td>0 for the left hand and 1 for the right hand.</td></tr>
<tr><td>[Visible Light Palm]</td><td>0 for the left hand and 1 for the right hand.</td></tr>
<tr><td>Index=${XXX}</td><td>Template No. of a specific biological individual, for example, multiple templates stored for a finger that counts from 0.</td></tr>
<tr><td>Valid=${XXX}</td><td>Identifier of validity, 0: Invalid and 1: Valid, with 1 as the default.</td></tr>
<tr><td>Duress=${XXX}</td><td>Identifier of duress, 0: Under no duress and 1: Under duress, with 0 as the default</td></tr>
<tr><td>Type=${XXX}</td><td>Type of biological identification.</td></tr>
</table>
</td></tr>
</table>

				<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Universal</td></tr><tr><td>1</td><td>Fingerprint</td></tr><tr><td>2</td><td>Face</td></tr><tr><td>3</td><td>Voiceprint</td></tr><tr><td>4</td><td>Iris</td></tr><tr><td>5</td><td>Retina</td></tr><tr><td>6</td><td>Palmprint</td></tr><tr><td>7</td><td>Finger vein</td></tr><tr><td>8</td><td>Palm</td></tr><tr><td>9</td><td>Visible light face</td></tr><tr><td>10</td><td>Visible light palm</td></tr></table>
			MajorVer=${XXX}	For example, for the fingerprint algorithm version 10.3, the major version is 10 and the minor version is 3. <table><tr><td>[Fingerprints]</td><td>9.0, 10.3 and 12.0</td></tr><tr><td>[Finger Vein]</td><td>3.0</td></tr><tr><td>[Face]</td><td>5.0, 7.0 and 8.0</td></tr><tr><td>[Palms]</td><td>1.0</td></tr><tr><td>[Visible Light Face]</td><td>58.0 and 38.0</td></tr><tr><td>[Visible Light Palm]</td><td>32.2</td></tr></table>
			MinorVer=${XXX}	For example, for the fingerprint algorithm version 10.3, the major version is 10 and the minor version is 3. <table><tr><td>[Fingerprints]</td><td>9.0 and 10.3</td></tr><tr><td>[Finger Vein]</td><td>3.0</td></tr><tr><td>[Face]</td><td>5.0, 7.0 and 8.0</td></tr><tr><td>[Palms]</td><td>1.0</td></tr><tr><td>[Visible Light Face]</td><td>58.0 and 38.0</td></tr><tr><td>[Visible Light Palm]</td><td>32.2</td></tr></table>
			Format=${XXX}	Template format, for example, the ZK\ISO\ANSI format for fingerprints.

<table>
<tr><td></td><td></td><td></td><td>[Fingerprints]
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>ZK</td></tr><tr><td>1</td><td>ISO</td></tr><tr><td>2</td><td>ANSI</td></tr></table>
[Finger Vein]
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>ZK</td></tr></table>
[Face]
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>ZK</td></tr></table>
[Palms]
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>ZK</td></tr></table>
[Visible Light Palm]
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>ZK</td></tr></table></td></tr>
<tr><td></td><td></td><td>Tmp=${XXX}</td><td>Template data, with base64 encoding required for raw binary fingerprint templates.</td></tr>
<tr><td colspan="4">${LF} is used to connect multiple entries.</td></tr>
</table>

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}
……

OK:${XXX}
```

Annotation

HTTP Status Line	The standard HTTP definition is used
HTTP Response Header Field	
Content-Length Header field	According to HTTP 1.1, the data length of the specified response entity in the header field is usually used. If the length of the response entity is uncertain; **Transfer-Encoding**: chunked, Content-Length and Transfer-Encoding are also supported, whose header fields are all in compliance with the standard HTTP definition and require no elaboration here
Response Entity	When data is received normally and processed successfully by the server, **OK:** ${XXX} is returned, with **${XXX}** representing the number of successfully processed record entries. When an error occurs, error description is simply returned.

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=BIODATA&Stamp=9999 HTTP/1.1
Host	58.250.50.81:8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	1736

```
BIODATA Pin=306 No=0    Index=2 Valid=1 Duress=0    Type=8  MajorVer=1
 MinorVer=0  Format=0    Tmp=AAAAAAAAAAAAAAAAAAAAAFpLRmlYATFLFLToAUQBQ1
Mg+fgXuia23BDrNtwSfgJ8g74H3YHmXlkFpgetB5eH5yXuBvMLoa6wSx9HNgK7RP80v1i+L
LY8nCn7PXmD7w15Bp8N1wm/A78PowejZx9jJyWnBZ88K5wVfDDcNTjifGIvox9iD8sf1g37
B70Fk4WRl5RrKq8uD2MngRexMxk5cbDiH+c3xj+CV8Zf1idaDfWbkB8Rnwt/AV8Du0SvAdd
BywHMQ9MVysfFkNENfZD9FJ9jrnGeBD5Kcwp7CVySfJzOE+wZxjWFVY6fgreXHBd6B4ov4B
XBX+GuIZ4pazBTINiG8kf4h/DHxGaFxYe+yh+O1slCDsPcweuB/SHnA+UnqwG3AvnA88DZg
/vhmaaV4dsWzwerBn1jLcN8wu/ErITiR+YHVsc1wy2wdaC5uEmxKbwZ+AGeB5fFt6WLVa8k
q/gvqqv8LvwsBAACAgIHAQABAAEGAUxyAQkcIP9SAAohGhchAQAAEAEAAQYFASBPAgYGB1Y
KAQEMBgAACg8HFQ0DDAoEAg8CCBQDAxtLDwM40CUFEBNVSQYDDRNJJg8CAAcJFBMMAQQiYA
8MAwhZHAcEehMCACYEAAwACQsJBQAFBAYxAAknpwQGJ6EiBAUPIxwFBwQPOgQCBAARGz8WC
AIAGUQWBggLhyMIBJQlBAIiAgUEAgMPAwUACQAFUAABE/8EBwkQEgABCRECBwQFFEYNCAcC
FiJ3YwUACTpKLgwBDn8yDApjFAIBEwAAAwACBgEAAAECAUMBAwBCAAACAQIBAAEABAMBAQU
EAQMCBR0x/z4CAhUhSk8GAAcIDhUBNgsLDQMBAQAAAAYDAAAAAAEEAQAHBwEGQWEIAAJe/z
QBAAYY/30GAAABAAICAgAABAMAAAEFFAgAAAoEAAEUAgABAQEABwEECQMWGAIBDSIHASH/H
QQIClQeBgYMCgsIAwEBDSB0IBEJAjLbQgkIB245BQYKCAAEAAEDAwEDDgcKAQIBAhwABB+4
DAQOoiAFCAgXFwMBByNDCgYBABUQGSYDAwItYhMIATG9KQwLV0oCBBkEAQgBDggHAQADBwJ
DAxAS6AIGFxYXBgMiRxQNCgMXvCMOBQIXGrxABgkGJQ4YBQEQHxUJBUgNCgggAwIBAgMKAA
AAAgMCJwADAzUAAAEAAwAAAB4BAAEAAAAAAAAAA1j/JgQGAxf/fAMBAgkLAAEEAgIAAAAEA
```

```
AEAAwEAAAABAAQAAAAAAAABAAAAARgQAQABAjP/KQMAAAIDAQEBBAIEBAoCAAoUAgMBRAYC
ACoBAQAAAAsDAgAAAgEJAAMDHgABEiwNAQQnRA8DAwc5lDICAQAIETAbAAEGM00eAQApYCI
KA/81CwU5DAIGAAEEBQQABQACKAAGG2MEAxkpFQMBCTkKAAUCFSYJAQABDByEGwIBAjUrIQ
UDO/8eCwSMRAQACAQABQEABgAAAAMAAA8AAAMuAAAAAwgCBQMFCQcCBBNECgMAAAQvZhABA
AhZ/DIBACL/XQgDJiEHAgwFAQEAAAcDAAAAAQEDAAACAAAAAwEAAgEFCQEBBAEHIAIAAQEL
FRQEAwICS/8rBQEDRVQUBAYODwQAAAgAAAANAAAAAAAA
```

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07:25:38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store
OK:1
```

11.13 Uploading User Photo

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equal to version 2.2.14.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=OPERLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

<table>
<tr><th>Parameter</th><th>Required/ Optional</th><th>Description</th></tr>
<tr><td>SN</td><td>${Required}</td><td>Serial number of the client</td></tr>
<tr><td>table=OPERLOG</td><td>${Required}</td><td></td></tr>
<tr><td>Stamp</td><td>${Optional}</td><td>Latest timestamp at which the user photo is uploaded to the server. (For details, see the "OPERLOGStamp" parameter in "Initializing Information Exchange".)</td></tr>
<tr><td>Host header field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Request entity</td><td>${DataRecord}</td><td>Fingerprint template data, in the following format;

USERPIC${SP}PIN=${XXX}${HT}FileName=${XXX}${HT}Size=${XXX}${HT}Content=${XXX}
<table><tr><td>FileName=${XXX}</td><td>Filename of the user photo, with only the jpg format supported currently</td></tr><tr><td>Content=${XXX}</td><td>When the user photo is transmitted, base64 coding needs to be conducted for the original binary user photo</td></tr><tr><td>Size=${XXX}</td><td>Length of the user photo after base64 coding</td></tr></table></td></tr>
<tr><td colspan="3">${LF} is used to connect multiple records.</td></tr>
</table>

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}
……

OK:${XXX}
```

Annotation

HTTP Status Line	Defined with standard HTTP protocol
HTTP Response Header Field	
Content-Length Header field	Based on the HTTP 1.1, this header field is usually used to specify the data length of the response entity. If the response entity size is uncertain;

	Head fields of Transfer-Encoding: chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here.
Response Entity	When the server normally receives data and successfully processes data, **OK** is sent: ${XXX} is replied. **${XXX}** represents the number of records successfully processed. When an error occurs, the error description is replied.

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=OPERLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	1684
USERPIC PIN=123 FileName=123.jpg Size=10 Content=AAAAAAAAAA	

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK: 1
```

11.14 Uploading Data Packets

The PushProtVer is greater than or equal to 2.2.14 in configurations distributed by the server.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=OPERLOG&ContentType=${Value} HTTP/1.1
Host	${ServerIP}:${ServerPort}
Content-Length	${XXX}
${DataPack}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	represents the series number of the client
table=OPERLOG	${Required}	
ContentType		Entity data format, which currently supports the following; **Value**: tgz — **Description**: tgz as the compressed format of data packets
Host Header Field	${Required}	
Content-Length Header Field	${Required}	
Other Header Field	${Optional}	
Request Entity	${DataPack}	For the data format of data packets, refer to the format of other data types.

Multiple entries are connected with {LF} and then, packaged. For example,

Package the following data to transmit as entity data;

```
USER PIN=1 Name= Pri=0 Passwd=0 Card=89776433 Grp=1
TZ=0001000100000000 Verify=-1 ViceCard=123456789
```

```
FP    PIN=1               FID=1           Size=1336           Valid=1
TMP=SqFTUzIxAAAD4uUECAUHCc7QAAAb42kBAAAAgw8hXuIvAPwP0ADwAI7tjwBKAH4Pl
gBU4vcPfABhAMcPKOJiAOsPPACmAGbtZABlAHEPdgBq4hEPzwB0AFUPiuJ/AAwPOABAAO
vtTACYAF0PkQCi4uwPmgCiANgP1+KzACgPdwAMAFLtiADJADIPlgDP4kwPtADTAPQPdeL
bADsPZQAhAELt6QD0AC4PQAD64rsP0wAFAfgPyeIiAb8PvgDhAUHssQAxAUgOXwBH48EO
NwBFAYkOaeJLAa0OVgCOASrsYgBOAZcOCwvAbJqCS383/64TXp0icG8MpYY8kwHt+JJZh
674UIjJ54v3nXwJc6d9rpwIcpIOgoAaBAx2g4Ava7MH4wylEA+fuY9ehY/9S5HAd2MROJ
PzBtVBExK278PNfvjk7RabcRgxIU8Q0gOw+iIXWgz3/UX02wMzCP8WzOyyHygKKQnm9N/
wuhGqcuv/doGbeohqKBOSgJ79+X8tmo+EPIeh/d8FGuuciyaIpXtigDz2PyQ+tzuh+RpS
Z9LsYJdVfSfc1wx1c3JPtXyRTgPCNgECMx1NwwBp6nx1wAMAmckGw+sBhg6AdIsECQOCK
/dAVMARxd8vccHBhcLAcATCwrgHAFkwd8SXCwODMf1FQMBW1ADd1JL/w2fAeEbAUOoBik
eAwJacCQNwSgAv/j0FxYpOn3kKAIBdAPjA/RxtFADyXZ4HwMAdwX/AhH/CQwcDz1/pwf3
CJ84Ag90C/8E2O8HNAGKBdpbAQQsARWQDHTTAwP9EBcU6ZYnDwMIEAGGscYf2AfF7l//B
QIlpn1v/CwCNfMb9RSJBwAwAhX1FkMIjkXYNAIyCzDVXHUrBEQA8hSI4LSMuwP3BQhLFU
ZYL/v79/f/B7i9WIwkASZhiwU58BOJMnFzAhMHVAFd/5ST+wP/+O8E1ogcAlqCXngEMA3
ygFjY1/8AFwAviUaVed8FcygCfRB3//8A4/4r/wh8HANW0JEwFGAPzw9dU//7AO8H+oz/
/PsD+/8oAVSrd/v36I/06/8Mdwf8HAE/NloNp6AFzzVOdwKPACeKNzS0pc8A6BwO20UzB
cf8DxX/X1v8HALXWLTo+w+gBdN5Aa3Q6xArie943VMB7zQBmCEJpcRgQMMLDPaL//v3+/
P84/0Yc/EcGENQI/0DA9RE5G70+NTvA/xz9/f3///06wfwd/gQQyic9oAMTWClA/wMQwO
06/eERPDc9/xfVaUZSwf4+wP3AOPv1GzRzwWwaEKNLpNPBPv7A/P4/+v0f/MD+wMDAOv/
95hFRVwmHA9XPW5/BAAUAwe/xwA==
    USER PIN=2       Name=    Pri=0    Passwd=0     Card=89776433    Grp=1
TZ=0001000100000000 Verify=-1    ViceCard=123456789
    USER PIN=3       Name=    Pri=0    Passwd=0     Card=89776433    Grp=1
TZ=0001000100000000 Verify=-1    ViceCard=223456789
    USER PIN=4       Name=    Pri=0    Passwd=0     Card=89776433    Grp=1
TZ=0001000100000000 Verify=-1    ViceCard=323456789
    USER PIN=5       Name=    Pri=0    Passwd=0     Card=89776433    Grp=1
TZ=0001000100000000 Verify=-1    ViceCard=423456789
```

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}
……

OK:${XXX}
```

Annotation

HTTP Status Line	The standard HTTP definition is used
HTTP Response Header Field	
Content-Length Header field	According to HTTP 1.1, the data length of the specified response entity in the header field is usually used. If the length of the response entity is uncertain; **Transfer-Encoding**: chunked, Content-Length and Transfer-Encoding are also supported, whose header fields are all in compliance with the standard HTTP definition and require

	no elaboration here
Response Entity	When data is received normally and processed successfully by the server, **OK:**${XXX} is returned, with **${XXX}** representing the number of successfully processed record entries. When an error occurs, error description is simply returned

11.15 Uploading Comparison Photo

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equal to version 2.2.14.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=OPERLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Serial number of the client
table=OPERLOG	${Required}	
Stamp	${Optional}	Latest timestamp at which the comparison photo is uploaded to the server. (For details, see the "OPERLOGStamp" parameter in "Initializing Information Exchange".)
Host header field	${Required}	
Content-Length header field	${Required}	
Other header fields	${Optional}	
Request entity	${DataRecord}	Comparison photo data, in the following format:

<table>
<tr><td></td><td></td><td>BIOPHOTO${SP}PIN=${XXX}${HT}FileName=${XXX}${HT}Type=${XXX}${HT}Size=${XXX}${HT}Content=${XXX}

<table>
<tr><td>FileName=${XXX}</td><td>Filename of the biometric image, with only the jpg format supported currently</td></tr>
<tr><td>Type=${XXX}</td><td>Biometric identification type.

<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>common</td></tr>
<tr><td>1</td><td>fingerprint</td></tr>
<tr><td>2</td><td>face</td></tr>
<tr><td>3</td><td>vocal print</td></tr>
<tr><td>4</td><td>iris</td></tr>
<tr><td>5</td><td>retina</td></tr>
<tr><td>6</td><td>palm print</td></tr>
<tr><td>7</td><td>finger vein</td></tr>
<tr><td>8</td><td>palm</td></tr>
<tr><td>9</td><td>visible light face</td></tr>
</table></td></tr>
<tr><td>Size=${XXX}</td><td>Length of the biometric photo after base64 coding.</td></tr>
<tr><td>Content=${XXX}</td><td>When the biometric photo is transmitted, base64 coding needs to be conducted for the original binary biometric photo.</td></tr>
</table></td></tr>
</table>

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}
……

OK
```

Annotation

HTTP Status Line	Defined with standard HTTP protocol
HTTP Response Header Field	
Content-Length Header field	Based on the HTTP 1.1, this header field is usually used to specify the data length of the response entity. If the response entity size is uncertain; **Head fields of Transfer-Encoding**: chunked, Content-Length and Transfer-Encoding are

	supported, all of which are standard definitions of HTTP and are not described in detail here.
Response Entity	When the server normally receives data and successfully processes data, OK is sent. When an error occurs, the error description is replied.

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=OPERLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81:8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	1684
BIOPHOTO PIN=123 FileName=123.jpg Type=2 Size=95040 Content=AAAA	

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK
```

11.16 Uploading Error Log

The configuration PushProtVer parameter sent by the server for initialization information exchange is greater than or equal to version 2.4.1.

Client Request

Post http	POST/iclock/cdata?SN=${SerialNumber}&table=ERRORLOG&Stamp=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}
Content-Length	${XXX}
${DataRecord}	

Annotation

HTTP request method	POST method
URI	/iclock/cdata
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Serial number of the client.
table=ERRORLOG	${Required}	
Stamp	${Optional}	Latest timestamp at which the error log is uploaded to the server. (For details, see the "ERRORLOGStamp" parameter in "Initializing Information Exchange".)
Host header field	${Required}	
Content-Length header field	${Required}	
Other header fields	${Optional}	
Request entity	${DataRecord}	Error log data, in the following format: ERRORLOG ErrCode=${XXX}$(HT)ErrMsg=${XXX}$(HT)DataOrigin=${XXX}$(HT)CmdId=${XXX}$(HT)Additional=${XXX} ErrCode=${XXX}: Error code. See appendix 9 for coding instructions ErrMsg=${XXX}: Error message DataOrigin=${XXX}: Data source, dev means device source data, cmd means software sent data CmdId=${XXX}: Command number issued by the software Additional: Additional information (base64

		=${XXX}	data), the native data format is json

Server Response

```
HTTP/1.1 200 OK
Content-Length: ${XXX}
……

OK
```

Annotation

HTTP Status Line	Defined with standard HTTP protocol
HTTP Response Header Field	
Content-Length Header field	Based on the HTTP 1.1, this header field is usually used to specify the data length of the response entity. If the response entity size is uncertain; **Head fields of Transfer-Encoding:** chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here
Response Entity	When the server normally receives data and successfully processes data, **OK** is sent. When an error occurs, the error description is replied

Example

Client Request

Post http	POST/iclock/cdata?SN=0316144680030&table=ERRORLOG&Stamp=9999 HTTP/1.1
Host	58.250.50.81:8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	71
ERRORLOG ErrCode=D01E0001 ErrMsg= DataOrigin=cmd CmdId=123 Additional=	

Server Response

```
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Thu, 30 Jul 2015 07: 25: 38 GMT
Content-Type: text/plain
Content-Length: 4
Connection: close
Pragma: no-cache
Cache-Control: no-store

OK
```

12 Get Command

If the server needs to operate the equipment, the server generates a command format, waits till the equipment initiates a request, and then sends a command to the equipment. For the result of command execution, see Reply Command.

Client Request

Get http	Get /iclock/getrequest?SN=${SerialNumber}
Host	${ServerIP}: ${ServerPort}

Annotation

HTTP request method	GET method
URI	/iclock/getrequest
HTTP protocol version	1.1

Client Configuration Information

Parameter	Required/ Optional	Description
SN	${Required}	Serial number of the client
Host head field	${Required}	
Other header fields	${Optional}	

Server Response

When no commands are sent, the reply is as follows:

```
HTTP/1.1 200 OK
Date: ${XXX}
Content-Length: 2
……

OK
```

When a command is sent, the reply is as follows:

```
HTTP/1.1 200 OK
```

```
Date: ${XXX}
Content-Length: ${XXX}
……

${CmdRecord}
```

Annotation

HTTP Status Line	Defined with standard HTTP protocol
HTTP Response Header Field	
Date header field ${Required}	This header field is used for synchronization with the server time, in GMT format. For example, Date: Fri, 03 Jul 2015 06: 53: 01 GMT
Content-Length Header field	Based on HTTP 1.1, this header field is usually used to specify the data length of the response entity. If the response entity size is uncertain; **Head fields of Transfer-Encoding:** chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in detail here.
Response Entity ${CmdRecord}	Issued command record, in the following data format: `C: ${CmdID}: ${CmdDesc}${SP}${XXX}` `${CmdID}` — This command ID is generated by the server randomly, supporting numbers and letters and with a length not over 16 digits. The client needs to reply to the command with this command ID. For details, see the "Reply Command" function as follows. `${CmdDesc}` — Command description falls into data commands and control commands. The data command is unified as the "DATA" description and detailed in the following. "Data Command" function, and all kinds of control commands are different descriptions. `${LF}` is used to connect multiple records

12.1 DATA Command

When ${CmdDesc} in a command issued by the server is “DATA”, this command is deemed as a data command. The client data can be added, deleted, modified, or queried, but different service data supports different operations. For details, see the following.

12.1.1 UPDATE Subcommand

Adding or modifying data: Whether adding or modifying depends on whether corresponding data exists on the client, and this operation has nothing to do with the server

The following shows the command format:

Function

```
C: ${CmdID}: DATA${SP}UPDATE${SP}${TableName}${SP}${DataRecord}
```

Parameter Description

Parameter	Description
UPDATE	This description is used to represent the operation of adding or modifying data.
${TableName}	Different names of service data tables, for example, the user information USERINFO. The following describes specific supported data.
${DataRecord}	Service data records in the form of key=value. Different service data has different key descriptions. The following describes the specifics.

12.1.1.1 User Information

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}USERINFO${SP}PIN=${XXX}${HT}Name=${XXX}${HT}Pri=${XXX}${HT}Passwd=${XXX}${HT}Card=${XXX}${HT}Grp=${XXX}${HT}TZ=${XXX}${HT}Verify=${XXX}${HT}ViceCard=${XXX}${HT}Phone=${XXX}${HT}Gender=${XXX}${HT}Nation=${XXX}${HT}IDNum=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID
Name=${XXX}	User name. When the equipment is in Chinese, the GB2312 code is used. When the equipment is in another language, the UTF-8 code is used
Pri=${XXX}	User privilege value, with the meaning described as below; **Value** / **Description** 0 / Normal user 2 / Registrar 6 / Administrator

<table>
<tr><td></td><td><table><tr><td>10</td><td>User-defined</td></tr><tr><td>14</td><td>Super administrator</td></tr></table></td></tr>
<tr><td>Passwd=${XXX}</td><td>Password</td></tr>
<tr><td>Card=${XXX}</td><td>Card number, supporting two formats;
a. hexadecimal data, in the format of [%02x%02x%02x%02x], representing the first, second, third or fourth digit from left to right. For example, if the card number is 123456789, this is: Card=[15CD5B07].
b. string data. If the card number is 123456789, this is: Card=123456789.</td></tr>
<tr><td>Grp=${XXX}</td><td>Group to which the user belongs, group 1 by default</td></tr>
<tr><td>TZ=${XXX}</td><td>Information on number of the time period used by the user, in the format of XXXXXXXXXXXXXXXX.
Digit 1-4 describe whether the group time period is used, digit 5-8 describe using personal time period 1, digit 9-12 describe using personal time period 2, and digit 13-16 describe using personal time period 3.

For example, 0000000000000000 represents use of the group time period.

• 0001000200000000 represents use of personal time period, with personal time period 1 using the time information of number 2 time period.
• 0001000200010000 represents using personal time period, with personal time period 1 using the time information of number 2 time period and personal time period 2 using the time information of number 1 time period.</td></tr>
<tr><td>Verify=${XXX}</td><td>User verification mode, does not contain the field, is null, or is set to -1(use group verification, if there is no access group, group verification is 0), otherwise see (appendix 7)</td></tr>
<tr><td>ViceCard=${XXX}</td><td>User card number (secondary card), string data. If the card number is 123456789,ViceCard=123456789</td></tr>
<tr><td>StartDatetime=${XXX}</td><td>Validity start date, the format is YYYYMMDD.</td></tr>
<tr><td>EndDatetime=${XXX}</td><td>Validity end date, the format is YYYYMMDD.</td></tr>
<tr><td colspan="2">${LF} is used to connect multiple records</td></tr>
</table>

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Function

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.2 Identity Card Information (only supported by personal identification protocol)

The command format is:

Function

```
C:${CmdID}:DATA$(SP)UPDATE$(SP)IDCARD$(SP)PIN=${XXX}${HT}SNNum=${XXX}${HT}
IDNum=${XXX}${HT}DNNum=${XXX}${HT}Name=${XXX}${HT}Gender=${XXX}${HT}Nation
=${XXX}${HT}Birthday=${XXX}${HT}ValidInfo=${XXX}${HT}Address=${XXX}${HT}Ad
ditionalInfo=${XXX}${HT}Issuer=${XXX}${HT}Photo=${XXX}${HT}FPTemplate1=${X
XX}${HT}FPTemplate2=${XXX}${HT}Reserve=${XXX}${HT}Notice=${XXX}
```

Parameter Description

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>PIN=${XXX}</td><td>User ID.
If the user's information is not bound to the identity card, then the value of PIN is 0</td></tr>
<tr><td>SNNum=${XXX}</td><td>Physical card number of identity card</td></tr>
<tr><td>IDNum=${XXX}</td><td>Citizen id number</td></tr>
<tr><td>DNNum=${XXX}</td><td>Identity card serial number (card body management number)</td></tr>
<tr><td>Name=${XXX}</td><td>Id Name, using utf-8 encoding</td></tr>
<tr><td>Gender=${XXX}</td><td>Gender code.
<table><tr><td>1</td><td>" male "</td></tr><tr><td>2</td><td>" female"</td></tr></table></td></tr>
<tr><td>Nation=${XXX}</td><td>Ethnic code.
<table><tr><td>0</td><td>”Decoding error”</td></tr><tr><td>1</td><td>” Han”</td></tr><tr><td>2</td><td>” Mongol”</td></tr><tr><td>3</td><td>”Hui”</td></tr><tr><td>4</td><td>” Tibetan”</td></tr><tr><td>5</td><td>” Uighur”</td></tr><tr><td>6</td><td>”Miao”</td></tr><tr><td>7</td><td>”Yi”</td></tr><tr><td>8</td><td>”Zhuang”</td></tr><tr><td>9</td><td>”Buyi”</td></tr><tr><td>10</td><td>”Korean”</td></tr><tr><td>11</td><td>”Manchu”</td></tr><tr><td>12</td><td>”Dong”</td></tr></table></td></tr>
</table>

		13	"Yao"	
		14	"Bai"	
		15	"Tujia"	
		16	"Hani"	
		17	"Kazakh"	
		18	"Dai"	
		19	"Li"	
		20	"Lisu"	
		21	"Wa"	
		22	"She"	
		23	"Gaoshan"	
		24	"Lahu"	
		25	"Shui"	
		26	"Dongxiang"	
		27	"Naxi"	
		28	"Jingpo"	
		29	"Kirghiz"	
		30	"Du"	
		31	"Daur"	
		32	"Mulam"	
		33	"Qiang"	
		34	"Blang"	
		35	"Salar"	
		36	"Maonan"	
		37	"Gelao"	
		38	"Xibe"	
		39	"Achang"	
		40	"Pumi"	
		41	"Tajik"	
		42	"Nu"	
		43	"Uzbek"	
		44	"Russian"	
		45	"Evenki"	
		46	"De'ang"	
		47	"Bonan"	
		48	"Yugur"	
		49	"Gin"	
		50	"Tatar"	
		51	"Drung"	

		52	"Oroqin"
		53	"Hezhen"
		54	"Menba"
		55	"Lhoba"
		56	"Jino"
		57	"Coding error"
		97	"Other"
		98	" Foreign origin"
Birthday=${XXX}	Date of birth (format: yyyyMMdd)		
ValidInfo=${XXX}	Period of validity, start date and end date (format: yyyyMMddyyyyMMdd)		
Address=${XXX}	Address, encoded in UTF-8		
AdditionalInfo=${XXX}	Machine read appends address, encoded in UTF-8		
Issuer = ${XXX}	Issuing authority, use UTF-8 encoding.		
Photo=${XXX}	Photo data stored by identity card, which is encrypted and converted into base64 data content for transmission.		
FPTemplate1=${XXX}	Fingerprint 1_ fingerprint characteristic data and converted into base64 data content for transmission.		
FPTemplate2=${XXX}	Fingerprint 2_ fingerprint characteristic data and converted into base64 data content for transmission.		
Reserve=${XXX}	Reserve field		
Notice=${XXX}	Note information, encoded in UTF-8.		

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.3 Fingerprint Template

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}FINGERTMP${SP}PIN=${XXX}${HT}FID=${XXX}${HT}Size=${XXX}${HT}Valid=${XXX}${HT}TMP=${XXX}
```

Parameter Description

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>PIN=${XXX}</td><td>User ID</td></tr>
<tr><td>FID=${XXX}</td><td>Finger number, valued from 0 – 9.</td></tr>
<tr><td>Size=${XXX}</td><td>Length of binary data of the finger template after base64 coding.</td></tr>
<tr><td>Valid=${XXX}</td><td>To describe the template validity and duress mark, with the following values and meanings.
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Invalid template</td></tr><tr><td>1</td><td>Normal template</td></tr><tr><td>3</td><td>Duress template</td></tr></table></td></tr>
<tr><td>TMP=${XXX}</td><td>When the fingerprint template is transmitted, base64 coding needs to be conducted for the original binary fingerprint template.</td></tr>
<tr><td colspan="2">${LF} is used to connect multiple records</td></tr>
</table>

Note: The fingerprint algorithm version supported by this command is less than or equal to 10.0

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.4 Face Template

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}FACE${SP}PIN=${XXX}${HT}FID=${XXX}${HT}Vali
d=${XXX}${HT}Size=${XXX}${HT}TMP=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID
FID=${XXX}	Face template number, valued from 0.
Size=${XXX}	Length of binary data of the face template after base64 coding

Valid=${XXX}	Face template validity mark, with the following values and meanings. Value: 0 — Invalid template; 1 — Normal template
TMP=${XXX}	When the face template is transmitted, base64 coding needs to be conducted for the original binary face template.
${LF} is used to connect multiple records	

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.5 Finger Vein Template

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}FVEIN${SP}Pin=${XXX}${HT}FID=${XXX}${HT}Index=${XXX}${HT}Valid=${XXX}${HT}Size=${XXX}${HT}Tmp=${XXX}
```

Parameter Description

Parameter	Description
Pin=${XXX}	User ID
FID=${XXX}	Finger number, (0~9)
Index=${XXX}	One finger has multiple finger vein templates, and Index is the number of finger vein template (0~2)
SIZE=${XXX}	Length after base64 coding of the finger vein template binary data
Valid=${XXX}	Valid identification of the finger vein template, the values are as follows; Value: 0 — Invalid template; 1 — Normal template

Tmp=${XXX}	Base64 encoding of the original binary finger vein template is needed when transferring the finger vein template.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.6 Unified Templates

The following new biometric template will be uploaded and downloaded in a unified format, using Type in the data to distinguish what Type of biometric template is, using the integrated format: palm template, etc.

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}BIODATA${SP}Pin=${XXX}${HT}No=${XXX}${HT}In
dex=${XXX}${HT}Valid=${XXX}${HT}Duress=${XXX}${HT}Type=${XXX}${HT}MajorVer
=${XXX}${HT}MinorVer=${XXX}${HT}Format=${XXX}${HT}Tmp=${XXX}
```

Note: Each field explains see uploading Unified Templates

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.7 User Photo

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}USERPIC${SP}PIN=${XXX}${HT}Size=${XXX}${HT}
Content=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID
Size=${XXX}	Length of binary data of the user photo after base64 coding
Content=${XXX}	When the user photo is transmitted, base64 coding needs to be conducted for the original binary user photo.
${LF} is used to connect multiple records	

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.8 Comparison Photo

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}BIOPHOTO${SP}PIN=${XXX}${HT}Type=${XXX}${HT
}Size=${XXX}${HT}Content=${XXX}${HT}Format=${XXX}${HT}Url=${XXX}${HT}PostB
ackTmpFlag=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID
Type=${XXX}	Biometric identification type **Value** / **Description**

<table>
<tr><td></td><td><table>
<tr><td>0</td><td>common</td></tr>
<tr><td>1</td><td>fingerprint</td></tr>
<tr><td>2</td><td>face (near-infrared)</td></tr>
<tr><td>3</td><td>vocal print</td></tr>
<tr><td>4</td><td>iris</td></tr>
<tr><td>5</td><td>retina</td></tr>
<tr><td>6</td><td>palm print</td></tr>
<tr><td>7</td><td>finger vein</td></tr>
<tr><td>8</td><td>palm</td></tr>
<tr><td>9</td><td>visible light face</td></tr>
</table></td></tr>
<tr><td>Size=${XXX}</td><td>Length of the biometric photo after base64 coding</td></tr>
<tr><td>Content=${XXX}</td><td>When the biometric photo is transmitted, base64 coding needs to be conducted for the original binary biometric photo</td></tr>
<tr><td>Url=${XXX}</td><td>Server file storage address, currently only supports JPG format</td></tr>
<tr><td>Format=${XXX}</td><td>Send mode,<table>
<tr><td>0</td><td>base64 mode</td></tr>
<tr><td>1</td><td>url mode</td></tr>
</table></td></tr>
<tr><td>PostBackTmpFlag=${XXX}</td><td>Whether to return the template data after image conversion.<table>
<tr><td>0</td><td>not required</td></tr>
<tr><td>1</td><td>required</td></tr>
</table>No PostBackTmpFlag parameter, it is not required to return by default</td></tr>
<tr><td colspan="2">${LF} is used to connect multiple records</td></tr>
</table>

Note: Url is the relative path of the occasion, directly send relative path

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.9 Short Message

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}SMS${SP}MSG=${XXX}${HT}TAG=${XXX}${HT}UID=${XXX}${HT}MIN=${XXX}${HT}StartTime=${XXX}
```

Parameter Description

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>MSG=${XXX}</td><td>Content of the short message, supporting up to 320 bytes.
When the equipment is in Chinese, the GB2312 code is used.
When the equipment is in another language, the UTF-8 code is used.</td></tr>
<tr><td>TAG=${XXX}</td><td>Type of the short message, with the following values and meanings:
<table><tr><th>Value</th><th>Description</th></tr><tr><td>253</td><td>Public short message</td></tr><tr><td>254</td><td>User short message</td></tr><tr><td>255</td><td>Reserved short message</td></tr></table></td></tr>
<tr><td>UID=${XXX}</td><td>Number of the short message, supporting only integer.</td></tr>
<tr><td>MIN=${XXX}</td><td>Valid duration of the short message, in minute</td></tr>
<tr><td>StartTime=${XXX}</td><td>Starting time for the short message to take effect, in the format of XXXX-XX-XX XX: XX: XX. For example, 2015-07-29 00: 00: 00</td></tr>
<tr><td colspan="2">${LF} is used to connect multiple records.</td></tr>
</table>

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.10 Personal Short Message User List

The command format is:

Function

```
C: ${CmdID}: DATA${SP}UPDATE${SP}USER_SMS${SP}PIN=${XXX}${HT}UID=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID
UID=${XXX}	Number of the short message, supporting only integer.
${LF} is used to connect multiple records	

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.11 Publicity Picture

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}ADPIC${SP}Index=${XXX}${HT}Size=${XXX}${HT}
Extension=${XXX}${HT}Content=${XXX}
```

Parameter Description

Parameter	Description
Index=${XXX}	Image index
Size=${XXX}	Image size
Extension=${XXX}	Image extension
Content=${XXX}	Image Base64 encoding
${LF} is used to connect multiple records.	

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.12 Work Code

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}WORKCODE${SP}PIN=${XXX}${HT}CODE=${XXX}${HT}NAME=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	Working code index
CODE=${XXX}	Working code
NAME=${XXX}	Working code name
${LF} is used to connect multiple records.	

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.13 Shortcut Key

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}ShortcutKey${SP}KeyID=${XXX}${HT}KeyFun=${XXX}${HT}StatusCode==${XXX}${HT}ShowName=${XXX}${HT}AutoState=${XXX}${HT}Au
```

```
toTime=${XXX}${HT}Sun=${XXX}${HT}Mon=${XXX}${HT}Tue=${XXX}${HT}Wed=${XXX}$
{HT}Thu=${XXX}{HT}Fri=${XXX}${HT}Sat=${XXX}
```

Parameter Description

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>KeyID</td><td>Shortcut key ID
<table><tr><th>Value</th><th>Corresponding Key</th></tr><tr><td>1</td><td>F1</td></tr><tr><td>2</td><td>F2</td></tr><tr><td>3</td><td>F3</td></tr><tr><td>4</td><td>F4</td></tr><tr><td>5</td><td>F5</td></tr><tr><td>6</td><td>F6</td></tr><tr><td>7</td><td>F7</td></tr><tr><td>8</td><td>F8</td></tr></table></td></tr>
<tr><td>KeyFun</td><td>Shortcut key function
<table><tr><th>Value</th><th>Corresponding Function</th></tr><tr><td>0</td><td>Undefined</td></tr><tr><td>1</td><td>State key</td></tr><tr><td>2</td><td>Work code</td></tr><tr><td>3</td><td>Short message</td></tr><tr><td>4</td><td>Key for help</td></tr><tr><td>5</td><td>Check the attendance record</td></tr><tr><td>6</td><td>Check the final attendance record</td></tr></table></td></tr>
<tr><td>StatusCode</td><td>Attendance status</td></tr>
<tr><td>ShowName</td><td>Status name</td></tr>
<tr><td>AutoState</td><td>Auto switch</td></tr>
<tr><td>AutoTime</td><td>Automatic switching time from Monday to Sunday, 08:00; 09:00; 10:00; 11:00; 12:00; 13:00; 14:00</td></tr>
<tr><td>Sun</td><td>Whether to switch on Sunday</td></tr>
<tr><td>Mon</td><td>Whether to switch on Monday</td></tr>
<tr><td>Tue</td><td>Whether to switch on Tuesday</td></tr>
<tr><td>Wed</td><td>Whether to switch on Wednesday</td></tr>
<tr><td>Thu</td><td>Whether to switch on Thursday</td></tr>
<tr><td>Fri</td><td>Whether to switch on Friday</td></tr>
<tr><td>Sat</td><td>Whether to switch on Saturday</td></tr>
</table>

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.14 Access Group

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}AccGroup${SP}ID=${XXX}${HT}Verify=${XXX}${HT}ValidHoliday=${XXX}${HT}TZ=${XXX}
```

Parameter Description

Parameter	Description
ID	Number of access group
Verify	Group verification mode, with the default value of 0, as shown in (appendix 7)
Validholiday	Valid for holidays: value range 0-1
TZ format	For example: TZ=1; 0; 0: the first number represents time period 1, the second parameter represents time period 2, and the third parameter represents time period 3

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.15 Access Time Periods

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}AccTimeZone${SP}UID=${XXX}${HT}SunStart=${X
XX}${HT}SunEnd=${XXX}${HT}MonStart=${XXX}${HT}MonEnd=${XXX}${HT}TuesStart=
${XXX}${HT}TuesEnd=${XXX}${HT}WedStart=${XXX}${HT}WedEnd=${XXX}${HT}ThursS
tart=${XXX}${HT}ThursEnd=${XXX}${HT}FriStart=${XXX}${HT}FriEnd=${XXX}${HT}
SatStart=${XXX}${HT}SatEnd=${XXX}
```

Parameter Description

Parameter	Description
UID	Time period number
SunStart	Sunday start time, 1159 means 11:59
SunEnd	Sunday end time, 2359 means 23:59
MonStart	Monday start time
MonEnd	Monday end time
TueStart	Tuesday start time
TuesEnd	Tuesday end time
WedStart	Wednesday start time
WedEnd	Wednesday end time
ThurStart	Thursday start time
ThursEnd	Thursday end time
FriStart	Friday start time
FriEnd	Friday end time
SatStart	Saturday start time
SatEnd	Saturday end time

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.16 Access Holiday

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}AccHoliday${SP}UID=${XXX}${HT}HolidayName=${XXX}${HT}StartDate=${XXX}${HT}EndDate=${XXX}${HT}TimeZone=${XXX}
```

Parameter Description

Parameter	Description
UID	Holiday number
HolidayName	Holiday name
StartDate	1123 means November 23rd
EndDate	1125 means November 25
TimeZone	Time period number

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.17 Access Combined Verification

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}AccUnLockComb${SP}UID=${XXX}${HT}Group1=${XXX}${HT}Group2=${XXX}${HT}Group3=${XXX}${HT}Group4=${XXX}${HT}Group5=${XXX}
```

Parameter Description

Parameter	Description
UID	Group verification number
Group1	Group number of people. The group number in the person information
Group2	Group number of people. The group number in the person information
Group3	Group number of people. The group number in the person information

Group4	Group number of people. The group number in the person information
Group5	Group number of people. The group number in the person information

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.18 Blacklist of Identity Card Issued (only supported by personal identification protocol)

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}BLACKLIST${SP}IDNum=${XXX}${HT}Name=${XXX}${HT}Gender=${XXX}${HT}Nation=${XXX}
```

Parameter Description

Parameter	Description
IDNum	ID number
Name	Name
Gender	Gender code 1 Male 2 Female
Nation	Ethnic code 0 "Decoding error" 1 " Han" 2 " Mongol" 3 "Hui" 4 " Tibetan" 5 " Uighur" 6 "Miao" 7 "Yi"

		8	″Zhuang″	
		9	″Buyi″	
		10	″Korean″	
		11	″Manchu″	
		12	″Dong″	
		13	″Yao″	
		14	″Bai″	
		15	″Tujia″	
		16	″Hani″	
		17	″Kazakh″	
		18	″Dai″	
		19	″Li″	
		20	″Lisu″	
		21	″Wa″	
		22	″She″	
		23	″Gaoshan″	
		24	″Lahu″	
		25	″Shui″	
		26	″Dongxiang″	
		27	″Naxi″	
		28	″Jingpo″	
		29	″Kirghiz″	
		30	″Du″	
		31	″Daur″	
		32	″Mulam″	
		33	″Qiang″	
		34	″Blang″	
		35	″Salar″	
		36	″Maonan″	
		37	″Gelao″	
		38	″Xibe″	
		39	″Achang″	
		40	″Pumi″	
		41	″Tajik″	
		42	″Nu″	
		43	″Uzbek″	
		44	″Russian″	
		45	″Evenki″	
		46	″De'ang″	

		47	”Bonan”	
		48	”Yugur”	
		49	”Gin”	
		50	”Tatar”	
		51	”Drung”	
		52	”Oroqin”	
		53	”Hezhen”	
		54	”Menba”	
		55	”Lhoba”	
		56	”Jino”	
		57	”Coding error”	
		97	”Other”	
		98	” Foreign origin”	

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.1.19 Whitelist of Identity Card Issued (only supported by personal identification protocol)

The command format is:

Function

```
C:${CmdID}:DATA${SP}UPDATE${SP}WHITELIST${SP}IDNum=${XXX}${HT}Name=${XXX}${HT}Gender=${XXX}${HT}Nation=${XXX}${HT}StartDate=${XXX}${HT}EndDate=${XXX}
```

Parameter Description

Parameter	Description
IDNum	ID number
Name	Name
Gender	Gender code

		1	Male	
		2	Female	
Nation	Ethnic code			
		0	″Decoding error″	
		1	″ Han″	
		2	″ Mongol″	
		3	″Hui″	
		4	″ Tibetan″	
		5	″ Uighur″	
		6	″Miao″	
		7	″Yi″	
		8	″Zhuang″	
		9	″Buyi″	
		10	″Korean″	
		11	″Manchu″	
		12	″Dong″	
		13	″Yao″	
		14	″Bai″	
		15	″Tujia″	
		16	″Hani″	
		17	″Kazakh″	
		18	″Dai″	
		19	″Li″	
		20	″Lisu″	
		21	″Wa″	
		22	″She″	
		23	″Gaoshan″	
		24	″Lahu″	
		25	″Shui″	
		26	″Dongxiang″	
		27	″Naxi″	
		28	″Jingpo″	
		29	″Kirghiz″	
		30	″Du″	
		31	″Daur″	
		32	″Mulam″	
		33	″Qiang″	
		34	″Blang″	

		35	"Salar"	
		36	"Maonan"	
		37	"Gelao"	
		38	"Xibe"	
		39	"Achang"	
		40	"Pumi"	
		41	"Tajik"	
		42	"Nu"	
		43	"Uzbek"	
		44	"Russian"	
		45	"Evenki"	
		46	"De'ang"	
		47	"Bonan"	
		48	"Yugur"	
		49	"Gin"	
		50	"Tatar"	
		51	"Drung"	
		52	"Oroqin"	
		53	"Hezhen"	
		54	"Menba"	
		55	"Lhoba"	
		56	"Jino"	
		57	"Coding error"	
		97	"Other"	
		98	" Foreign origin"	
StartDate	Effective start time, the format is XXXX-XX-XX XX:XX:XX, such as 2021-06-17 00:00:00			
EndDate	Effective end time, the format is XXXX-XX-XX XX:XX:XX, such as 2021-06-20 00:00:00			

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2 DELETE Subcommand

The command format to delete data:

Function

```
C: ${CmdID}: DATA${SP}DELETE${SP}${TableName}${SP}${DataRecord}
```

Parameter Description

Parameter	Description
DELETE	This description is used to represent the operation of deleting data
${TableName}	Different service data table names. For example, the user information is USERINFO, and the following describes specific supported data.
${DataRecord}	Condition for deleting data. Different service data supports different conditions. The following describes the specifics

12.1.2.1 User Information

The command format is:

Function

```
C: ${CmdID}: DATA${SP}DELETE${SP}USERINFO${SP}PIN=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID to delete specified user information, including fingerprint template, face template and user photo

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.2 Fingerprint Template

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}FINGERTMP${SP}PIN=${XXX}
C:${CmdID}:DATA${SP}DELETE${SP}FINGERTMP${SP}PIN=${XXX}${HT}FID=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID
FID=${XXX}	Finger number, valued from 0-9. To delete specified fingerprint template. When only PIN information is transmitted, all fingerprints of the user are deleted

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.3 Face Template

The command format is:

Function

```
C: ${CmdID}: DATA${SP}DELETE${SP}FACE${SP}PIN=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID to delete specified face template of the user.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.4 Finger Vein Template

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}FVEIN${SP}Pin=${XXX}
C:${CmdID}:DATA${SP}DELETE${SP}FVEIN${SP}Pin=${XXX}${HT}FID=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID
FID=${XXX}	Finger number, (0~9). To delete specified finger vein template of the user.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.5 Unified Templates

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}BIODATA${SP}Pin=${XXX}
C:${CmdID}:DATA${SP}DELETE${SP}BIODATA${SP}Pin=${XXX}{HT}Type=${XXX}
C:${CmdID}:DATA${SP}DELETE${SP}BIODATA${SP}Pin=${XXX}{HT}Type=${XXX}{HT}No
=${XXX}
```

Note:

See upload unified template function for field description to delete specified unified template of the user.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.6 User Photo

The command format is:

Function

```
C: ${CmdID}: DATA${SP}DELETE${SP}USERPIC${SP}PIN=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID to delete specified user photo of the user

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.7 Comparison Photo

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}BIOPHOTO${SP}PIN=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID to delete specified comparison photo of the user

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.8 Short Message

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}SMS${SP}UID=${XXX}
```

Parameter Description

Parameter	Description
UID=${XXX}	short message number, supporting only integers

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.9 Work Code

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}WORKCODE${SP}CODE=${XXX}
```

Parameter Description

Parameter	Description
CODE=${XXX}	Working code

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.10 Publicity Picture

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}ADPIC${SP}Index=${XXX}
```

Parameter Description

Parameter	Description
Index=${XXX}	Image index

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.11 Blacklist of Identity Card (only supported by personal identification protocol)

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}BLACKLIST${SP}IDNum=${XXX}
```

Parameter Description

Parameter	Description
IDNum=${XXX}	ID number, delete the specified identity card blacklist data

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.2.12 Whitelist of Identity Card (only supported by personal identification protocol)

The command format is:

Function

```
C:${CmdID}:DATA${SP}DELETE${SP}WHITELIST${SP}IDNum=${XXX}
```

Parameter Description

Parameter	Description
IDNum=${XXX}	ID number, delete the specified identity card whitelist data

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

12.1.3 QUERY Subcommand

The command format to query data:

Function

```
C: ${CmdID}: DATA${SP}QUERY${SP}${TableName}${SP}${DataRecord}
```

Parameter Description

Parameter	Description
QUERY	This description is used to represent the operation of querying data.
${TableName}	Different service data table names. For example, the user information is USERINFO, and the following describes specific supported data.
${DataRecord}	Condition for querying data. Different service data supports different conditions. The following describes the specifics.

- **Attendance Record**

The command format is:

Function

```
C:${CmdID}:DATA${SP}QUERY${SP}ATTLOG${SP}StartTime=${XXX}${HT}EndTime=${XXX}
```

Parameter Description

Parameter	Description
StartTime=${XXX}	Query starting time, in the format of XXXX-XX-XX XX: XX: XX. For example, 2015-07-29 00: 00: 00
EndTime=${XXX}	Query ending time, in the format of XXXX-XX-XX XX: XX: XX. For example, 2015-07-29 23: 59: 59

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

To query the attendance record within specified time period. For how to upload, see "Uploading Attendance Record".

- **Attendance Photo**

The command format is:

Function

```
C:${CmdID}:DATA${SP}QUERY${SP}ATTPHOTO${SP}StartTime=${XXX}${HT}EndTime=${XXX}
```

Parameter Description

Parameter	Description
StartTime=${XXX}	Query starting time, in the format of XXXX-XX-XX XX: XX: XX. For example, 2015-07-29 00: 00: 00
EndTime=${XXX}	Query ending time, in the format of XXXX-XX-XX XX: XX: XX. For example, 2015-07-29 23: 59: 59

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

To query the attendance photo within specified time period. For how to upload, see “Uploading Attendance Photo”.

- **User Information**

The command format is:

Function

```
C: ${CmdID}: DATA${SP}QUERY${SP}USERINFO${SP}PIN=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

To query the basic information of specified user. For how to upload, see "Uploading User Information".

- **Fingerprint Template**

The command format is:

Function

```
C:${CmdID}:DATA${SP}QUERY${SP}FINGERTMP${SP}PIN=${XXX}${HT}FingerID=${XXX}
```

Parameter Description

Parameter	Description
PIN=${XXX}	User ID
FingerID=${XXX}	Finger number, valued from 0 – 9.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

To query the fingerprint template information of the user. When only the PIN information is transmitted, the information about all fingerprint templates of the user is queried. For how to upload, see "Uploading Fingerprint Template".

- **Unified Template**

The command format is:

Function

```
C:${CmdID}:DATA${SP}QUERY${SP}BIODATA${SP}Type=${XXX}
C:${CmdID}:DATA${SP}QUERY${SP}BIODATA${SP}Type=${XXX}${HT}PIN=${XXX}
C:${CmdID}:DATA${SP}QUERY${SP}BIODATA${SP}Type=${XXX}${HT}PIN=${XXX}${HT}
No=${XXX}
```

Parameter Description

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>Type=${XXX}</td><td>Biometric Type
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Common</td></tr><tr><td>1</td><td>Fingerprint</td></tr><tr><td>2</td><td>Face</td></tr><tr><td>3</td><td>Voiceprint</td></tr><tr><td>4</td><td>Iris</td></tr><tr><td>5</td><td>Retina</td></tr><tr><td>6</td><td>Palmprint</td></tr><tr><td>7</td><td>Finger vein</td></tr><tr><td>8</td><td>Palm</td></tr><tr><td>9</td><td>Visible light face</td></tr><tr><td>10</td><td>Visible light palm</td></tr></table></td></tr>
<tr><td>PIN=${XXX}</td><td>User ID</td></tr>
<tr><td>No=${XXX}</td><td>Biometric specific number, default value is 0.
<table><tr><th>Value</th><th>Description</th></tr><tr><td>[Fingerprint]</td><td>The number is: 0-9,
The corresponding fingers are:
left hand: little finger / ring finger / middle finger / index finger / thumb,
right hand: thumb / index finger / middle finger / ring finger / little finger</td></tr><tr><td>[Finger vein]</td><td>the same as fingerprints</td></tr><tr><td>[Face]</td><td>All is 0</td></tr><tr><td>[Iris]</td><td>0 for left eye, 1 for right eye</td></tr></table></td></tr>
</table>

		[Palm]	0 for left hand, 1 for right hand
		[Visible Light Palm]	0 for left hand, 1 for right hand

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=DATA
```

To query the unified template information of the specified type. When only the Type information is transmitted, all unified template information of the specified type is queried. For how to upload, see “Uploading Unified Template”.

12.2 CLEAR Command

12.2.1 Clearing Attendance Record

To clear the client attendance record, the command format is:

Function

```
C: ${CmdID}: CLEAR${SP}LOG
```

Parameter Description

Parameter	Description
CLEAR${SP}LOG	used to describe this command

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=CLEAR_LOG
```

Parameter Description

Parameter	Description

CMD=CLEAR_LOG	CLEAR_LOG is used to describe this command

12.2.2 Clearing Attendance Photo

To clear the client attendance photo, the command format is:

Function

```
C: ${CmdID}: CLEAR${SP}PHOTO
```

Parameter Description

Parameter	Description
CLEAR${SP}PHOTO	used to describe this command

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=CLEAR_PHOTO
```

Parameter Description

Parameter	Description
CMD=CLEAR_PHOTO	CLEAR_PHOTO is used to describe this command

12.2.3 Clearing All Data

To clear all client data, the command format is:

Function

```
C: ${CmdID}: CLEAR${SP}DATA
```

Parameter Description

Parameter	Description

CLEAR${SP}DATA	used to describe this command

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=CLEAR_DATA
```

Parameter Description

Parameter	Description
CMD=CLEAR_DATA	CLEAR_DATA is used to describe this command.

12.2.4 Clearing Unified Template

To clear client unified template data of the specified type, the command format is:

Function

```
C:${CmdID}:CLEAR${SP}BIODATA
```

Parameter Description

Parameter	Description
CLEAR${SP}BIODATA	used to describe this command

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
I ID=${XXX}&Return=${XXX}&CMD=CLEAR_BIODATA
```

Parameter Description

Parameter	Description
CMD= CLEAR_BIODATA	CLEAR_BIODATA is used to describe this command.

12.3 Check Command

12.3.1 Checking Data Update

The client is required to read configuration information from the server and re-upload corresponding data to the server based on the timestamp. For details, see "Initializing Information Exchange". Currently, only the server resetting the timestamp to 0 is supported. For example, set parameter Stamp to 0.

After reading configuration parameters, the client conducts Uploading Attendance Record again, and the command format is:

Function

```
C: ${CmdID}: CHECK
```

Parameter Description

Parameter	Description
CHECK	used to describe this command

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=CHECK
```

12.3.2 Checking and Transmitting New Data

The client immediately checks whether new data exists and transmits the new data to the server.

The command format is:

Function

```
C: ${CmdID}: LOG
```

Parameter Description

Parameter	Description
LOG	used to describe this command

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=LOG
```

12.3.3 Automatically Verifying Attendance Data

The server issues the verification for attendance records within a time period, start and end time of uploading by the attendance equipment, as well as total number of records.

The verification is achieved by the server, and the command format is:

Function

```
C:${CmdID}:VERIFY${SP}SUM${SP}ATTLOG${SP}StartTime=${XXX}${HT}EndTime=${XXX}
```

Parameter Description

Parameter	Description
VERIFY${SP}SUM	used to describe this command
StartTime=${XXX}	Starting time of issuing by the server, in the format of XXXX-XX-XX XX: XX: XX. For example, 2015-07-29 00: 00: 00
EndTime=${XXX}	Ending time of issuing by the server, in the format of XXXX-XX-XX XX: XX: XX. For example, 2015-07-29 00: 00: 00

For how the result of command execution is replied, see the Reply Command function(#replycmd). For the Return value, see Appendix 1(#appendix1).

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=VERIFY${SP}SUM&StartTime=${XXX}&EndTime=${XXX}
&AttlogSum=${XXX}
```

Parameter Description

Parameter	Description
AttlogSum=${XXX}	Total number of attendance records within the period from starting to ending time.

12.4 Configuring Option Command

12.4.1 Option for Setting the Client

To set the client configuration information, the command format is:

Function

```
C: ${CmdID}: SET${SP}OPTION${SP}${Key}=${Value}
```

Parameter Description

Parameter	Description
SET${SP}OPTION	used to describe this command

Note: The configuration information is set in the form of key-value, and this command supports only the configuration of single configuration information.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=SET${SP}OPTION
```

12.4.2 Option for Refreshing the Client

The client reloads the configuration information. The command format is:

Function

```
C: ${CmdID}: RELOAD${SP}OPTIONS
```

Parameter Description

Parameter	Description
RELOAD${SP}OPTIONS	used to describe this command

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=RELOAD${SP}OPTIONS
```

12.4.3 Sending Client Information to the Server

The server gets information such as client configuration. The command format is:

Function

```
C: ${CmdID}: INFO
```

Parameter Description

Parameter	Description
INFO	used to describe this command

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=INFO${LF}${Key}=${Value}${LF}${Key}=${Value}${
LF}${Key}=${Value}${LF}${Key}=${Value}……
```

Parameter Description

Parameter	Description
CMD=INFO	is followed by specific customer configuration information, in the form of key-value.

12.5 File Command

12.5.1 Getting File in the Client

The client sends a server-specified file to the server. The command format is:

Function

```
C: ${CmdID}: GetFile${SP}${FilePath}
```

Parameter Description

Parameter	Description
GetFile	used to describe this command
${FilePath}	File in the client system

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}${LF}SN=${SerialNumber}${LF}FILENAME=${XXX}${LF}CMD=GetFile${LF}R
eturn=${XXX}${LF}Content=${BinaryData}
```

Parameter Description

Parameter	Description
Return=${XXX}	Size of returned file.
Content=${BinaryData}	Binary data flow of the transmitted file

12.5.2 Sending File to the Client

Function 1

The equipment is required to download a file from the server and saves the file in a specified folder. (After being downloaded, a .tgz file is automatically decompressed to the specified directory of FilePath or /mnt/mtdblock if no directory is specified. For a file in another format, the file save path and filename need to be specified.) This file must be provided by the server by HTTP, as well as the URL for obtaining this file. If the URL starts with "http://", the equipment deems the URL as a complete URL address, otherwise, the equipment appends the server's /iclock/ address to specified URL.

The command format is:

Function

```
C: ${CmdID}: PutFile${SP}${URL}${HT}${FilePath}
```

Parameter Description

Parameter	Description
PutFile	used to describe this command
${URL}	Address of the file to be downloaded from the server
${FilePath}	Destination path for the file to be saved on the client. **Example 1** PutFile file/fw/X938/main.tgz main.tgz or PutFile file/fw/X938/main.tgz requires the equipment to download http: //server/iclock/file/fw/X938/main.tgz, and decompress main.tgz into the folder of /mnt/mtdblock. **Example 2** PutFile file/fw/X938/main.tgz /mnt/ requires the equipment to download http: //server/iclock/file/fw/X938/main.tgz, and decompress main.tgz into the folder of /mnt/. **Example 3** PutFile file/fw/X938/ssruser.dat /mnt/mtdblock/ssruser.dat requires the equipment to download http: //server/iclock/file/fw/X938/ssruser.dat, and remain the file to be /mnt/mtdblock/ssruser.dat.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}${LF}Return=${XXX}${LF}CMD=PutFile
```

Parameter Description

Parameter	Description
Return=${XXX}	Size of returned file.

Function 2

The command format is:

Function

```
C:${CmdID}:PutFile${SP}${URL}${HT}${FilePath}${HT}Action=${Value}
```

Parameter Description

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>PutFile</td><td>used to describe this command</td></tr>
<tr><td>${URL}</td><td>Address of the files to be downloaded from the server</td></tr>
<tr><td>${FilePath}</td><td>Destination path where the files are stored in the client</td></tr>
<tr><td>Action</td><td>Describes what action to take after the file downloading is complete, supporting the following at present.
Action=SyncData:
• Represents that the device is required to synchronize the data of the same data type with those in the downloaded files, that is, overwriting the old data in the device.
• The action requires two additional parameters, TableName and RecordCount.
The complete command is as follows:
C:${CmdID}:PutFile${SP}${URL}${HT}${FilePath}${HT}Action=${Value}${HT}TableName=${Value}${HT}RecordCount=${Value}
<table><tr><td>TableName</td><td>Represents the data type, supporting the following;<table><tr><th>${Value}</th><th>Data type</th></tr><tr><td>USERINFO</td><td>User data</td></tr><tr><td>FINGERTMP</td><td>Fingerprint data</td></tr></table></td></tr></table></td></tr>
</table>

	FACE: Face data
RecordCount	Number of records in the data packet

Action= AppendData:

- Represents that the data in the downloaded files should be appended to the device.

The complete command is as follows.

C:${CmdID}:PutFile${SP}${URL}${HT}${FilePath}${HT}Action=AppendData

The format of the content in the compressed package is the same as that of distributed data commands, such as

```
C:123:DATA UPDATE USERINFO PIN=1    Name=1  Pri=0   Passwd
=1    Grp=1
        C:124:DATA UPDATE FINGERTMP  PIN=1   FID=11  SIZE=
28 VALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:125:DATA UPDATE FACE  PIN=1    FID=0   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:126:DATA UPDATE FACE  PIN=1    FID=1   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:127:DATA UPDATE FACE  PIN=1    FID=2   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:128:DATA UPDATE FACE  PIN=1    FID=3   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:129:DATA UPDATE FACE  PIN=1    FID=4   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:130:DATA UPDATE FACE  PIN=1    FID=5   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:131:DATA UPDATE FACE  PIN=1    FID=6   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:132:DATA UPDATE FACE  PIN=1    FID=7   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:133:DATA UPDATE FACE  PIN=1    FID=8   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:134:DATA UPDATE FACE  PIN=1    FID=9   SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:135:DATA UPDATE FACE  PIN=1    FID=10  SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
        C:136:DATA UPDATE FACE  PIN=1    FID=11  SIZE=28 V
ALID=1 TMP=c2FmZHNhd3Jyd3JlcmVyZXJlcnc=
           ......
```

The format of returned content is:

Returned Content

```
ID=${XXX}${LF}Return=${XXX}${LF}CMD=PutFile
```

Parameter Description

Parameter	Description
Return=${XXX}	Size of returned file.

12.6 Remote Enrollment Command

12.6.1 Enrolling User Fingerprint

The fingerprint enrollment is initiated by the server and conducted on the client. The command format is:

The command format is:

Function

```
C:${CmdID}:ENROLL_FP${SP}PIN=${XXX}${HT}FID=${XXX}${HT}RETRY=${XXX}${HT}OV
ERWRITE=${XXX}
```

Parameter Description

Parameter	Description
ENROLL_FP	used to describe this command
PIN=${XXX}	Enrolled user ID
FID=${XXX}	Enrolled fingerprint number
RETRY=${XXX}	Number of retries required if enrollment fails
OVERWRITE=${XXX}	Whether to overwrite the fingerprint. **0** means the fingerprint of corresponding user exists and will not be overwritten and error information is returned **1** means the fingerprint of corresponding user exists and will be overwritten

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=ENROLL_FP
```

12.6.2 Enrolling Card Number

The card number enrollment is initiated by the server and conducted on the client. The command format is:

Function

```
C:XXX:ENROLL_MF PIN=%s\tRETRY=%d
```

Example: `C:123:ENROLL_MF PIN=408\tRETRY=3`

Parameter Description

Parameter	Description
PIN	User ID
RETRY	Number of retries. **Value** / **Description** 0 – Command executed successfully -1 – Parameter error -3 – Access error 4 – Register failed retries 5 – Log out over time 6 – Click Esc to exit the registration screen

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=ENROLL_MF
```

12.6.3 Enrolling Face, Palm Print (Unified Templates)

The fingerprint enrollment is initiated by the server and conducted on the client.

The command format is:

Function

```
ENROLL_BIO TYPE=%?\tPIN=%?tCardNo=%?\tRETRY=%?\tOVERWRITE=%?
```

Parameter Description

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>TYPE</td><td>
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>/**< General template */</td></tr>
<tr><td>1</td><td>/**< Fingerprint */</td></tr>
<tr><td>2</td><td>/**< Face */</td></tr>
<tr><td>3</td><td>/**< Voice */</td></tr>
<tr><td>4</td><td>/**< Iris */</td></tr>
<tr><td>5</td><td>/**< Retina */</td></tr>
<tr><td>6</td><td>/**< Palm vein */</td></tr>
<tr><td>7</td><td>/**< Finger vein */</td></tr>
<tr><td>8</td><td>/**< Palm print */</td></tr>
<tr><td>9</td><td>/**< Visible light face */</td></tr>
</table>
</td></tr>
<tr><td>PIN</td><td>Enrolled user ID</td></tr>
<tr><td>CardNo</td><td>Enrolled card number</td></tr>
<tr><td>RETRY</td><td>Number of retries required if enrollment fails</td></tr>
<tr><td>OVERWRITE</td><td>Whether to overwrite the face.
0 means the face of corresponding user exists and will not be overwritten and error information is returned.
1 means the face of corresponding user exists and will be overwritten</td></tr>
</table>

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=ENROLL_BIO
```

12.7 Control Command

12.7.1 Rebooting the Client

To reboot the client, the command format is:

Function

```
C: ${CmdID}: REBOOT
```

Parameter Description

Parameter	Description
REBOOT	is used to describe this command.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=REBOOT
```

12.7.2 Outputting the Door Unlocking Signal

The access equipment outputs the door unlocking signal. The command format is:

Function

```
C: ${CmdID}: AC_UNLOCK
```

Parameter Description

Parameter	Description
AC_UNLOCK	is used to describe this command.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=AC_UNLOCK
```

12.7.3 Canceling the Alarm Signal Output

The access equipment cancels the alarm signal output. The command format is:

Function

```
C: ${CmdID}: AC_UNALARM
```

Parameter Description

Parameter	Description
AC_UNALARM	is used to describe this command.

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}&Return=${XXX}&CMD=AC_UNALARM
```

12.8 Other Commands

12.8.1 Executing the System Command

The server issues operating system commands which are supported by the client which send execution results to the server. The command format is:

Function

```
C: ${CmdID}: SHELL${SP}${SystemCmd}
```

Parameter Description

Parameter	Description
SHELL	is used to describe this command.
${SystemCmd}	Operating system command. For example, when the client is linux system, 1s is supported

For how the result of command execution is replied, see the Reply Command function. For the Return value, see Appendix 1.

The format of returned content is:

Returned Content

```
ID=${XXX}${LF}SN=${SerialNumber}${LF}Return=${XXX}${LF}CMD=Shell${LF}FILEN
AME=shellout.txt${LF}Content=${XXX}
```

Parameter Description

Parameter	Description
Return=${XXX}	The value is the returned value for the system command.
Content=${XXX}	The value is the output content of the system command.

12.8.2 Online Update

Application scenario: Firmware used to remotely upgrade client devices from server software.

Method 1

Remotely upgrade the client's firmware, compatible controller and new architecture all-in-one machine. Upgrade files need to be converted by the server and then sent to the client.

The command format is:

Function

//The server issues the command

```
C:${CmdID}:UPGRADE$(SP)checksum=${XXX},url=$(URL),size=${XXX}
```

// The client downloads the upgrade package from the URL that comes with the command

```
GET /iclock/file?SN=$(SerialNumber)&url=$(URL) HTTP/1.1
```

```
.....

// The client uploads the execution results

ID=${CmdID}&Return=${XXX}&CMD=UPGRADE
```

Annotation

Parameter Description

Parameter	Description
Checksum	Represents md5 checksum
Url	Represents the download resource address of the upgrade file, and the upgrade file name is emfw.cfg
Size	Represents the original file size

Remarks

In this method, the firmware update file is converted to base64 format data by the server when it is issued. The file that the client receives needs to be converted to binary format and named emfw.cfg.

Example

Function

```
// The server issues the firmware upgrade command

C:384:UPGRADE

checksum=a5bf4dcd6020f408589224274aab132d,url=http*//localhost*8088\firewa
re\F20\admin\emfw.cfg,size=2312

// The client requests to download the upgrade package

GET
/iclock/file?SN=3383154200002&url=http://192.168.213.17:8088/fireware/F20/
admin/emfw.cfg

HTTP/1.1

Cookie: token=af65a75608cf5b80fbb3b48f0b4df95a

Host: 192.168.213.17:8088

.....

// The client uploads successful execution results

ID=384&Return=0&CMD=UPGRADE
```

Method 2

Remote upgrade client firmware, directly obtain files, no need to transfer format, the client directly obtain files.

The command format is:

Function

//The server issues the command

```
C:${CmdID}:UPGRADE$(SP)type=1,checksum=${XXX},size=${XXX},url=$(URL)
```

// The client requests to download the upgrade package

```
GET /iclock/file?SN=$(SerialNumber)&url=$(URL) HTTP/1.1

Cookie: token=af65a75608cf5b80fbb3b48f0b4df95a

Host: 192.168.213.17:8088

……
```

// The client uploads the execution results

```
ID=${CmdID}&Return=${XXX}&CMD=UPGRADE
```

Annotation

Parameter Description

Parameter	Description
Type: 1	means to get the upgrade file from the url. For the time being, only 1 is supported.
Checksum	Represents md5 checksum
Url	Represents the download resource address of the upgrade file, and the upgrade file name is emfw.cfg
Size	represents the upgrade package size

Remarks

In this method, what the client gets directly is the firmware update file, which does not need to be converted to another format.

Example

Function

// The server issues the firmware upgrade command

```
C:123:UPGRADE

type=1,checksum=oqoier9883kjankdefi894eu,size=6558,url=http://192.168.0.13
:89/data/emfw.cfg
```

// The client requests to download the upgrade package

```
GET  /iclock/file?SN=3383154200002&url=http://192.168.0.13:89/data/emfw.cfg
HTTP/1.1

Cookie: token=af65a75608cf5b80fbb3b48f0b4df95a

Host: 192.168.0.13:89

 ……
```

// The client uploads successful execution results

```
ID=384&Return=0&CMD=UPGRADE
```

Method 3

Remotely upgrade the client's firmware, and obtain files in a subcontracted pull mode, without format conversion, and the client directly obtains the files. The subcontracting pull process refers to the Range protocol of HTTP, and the process is as follows:

1. The device side specifies RANGE in the HTTP Header: xx-xx specifies the byte range of the upgrade package to be pulled.
2. The software side parses the RANGE specified in the HTTP Header, and returns the upgrade package data in the specified range to the device side.
3. The device side pulls 1M of data each time by default, and the maximum one-time use of 1M memory, which solves the problem of insufficient memory caused by the device pulling large data packets at one time.

The command format is:

Function

// The server issues the command

```
C:${CmdID}:UPGRADE$(SP)checksum=${XXX},size=${XXX},url=$(URL),supportsubco
ntracting=${XXX}
```

// The client requests to download the upgrade package

```
GET $(URL) HTTP/1.1

Cookie: token=af65a75608cf5b80fbb3b48f0b4df95a

Host: 192.168.213.17:8088

……
```

// The client uploads the execution results

```
ID=${CmdID}&Return=${XXX}&CMD=UPGRADE
```

Annotation

Parameter Description

Parameter	Description
Checksum	Represents md5 checksum
Url	Represents the download resource address of the upgrade file, and the upgrade file name is emfw.cfg
Size	represents the upgrade package size
Supportsubcontracting	Represents whether the software supports the upgrade package subcontracting protocol (**0**: not supported, **1**: supported)

Remarks

In this method, what the client gets directly is the firmware update file, which does not need to be converted to another format.

Example

Function

// The server issues the firmware upgrade command

```
C:123:UPGRADE

checksum=oqoier9883kjankdefi894eu,size=6558,url=http://192.168.0.13:89/dat
a/emfw.cfg
```

// The client requests to download the upgrade package

```
The client requests to download the upgrade package:

GET http://192.168.0.13:89/data/emfw.cfg HTTP/1.1

Cookie: token=af65a75608cf5b80fbb3b48f0b4df95a
```

```
Host: 192.168.0.13:89

……

// The client uploads successful execution results

ID=384&Return=0&CMD=UPGRADE
```

12.8.3 Background Verification

Application scenario: After the fingerprint/face verification on the attendance device is successful, the personnel number will be uploaded to the back-end system by push, and the back-end system will return a result (whether the verification is allowed or not) to the attendance device after receiving the personnel number for logical judgment.

The command format is:

Function

```
// Client data sending

POST /iclock/cdata?SN=${SerialNumber}&type=PostVerifyData HTTP/1.1

Host: ${ServerIP}:${ServerPort}

 ……

${PostData}

// Uploaded data
```

Annotation

HTTP request method	GET method
URI	/iclock/cdata
HTTP protocol version	1.1

Client configuration information

Parameter	Description
SN	${Required} Serial number of the client
Type =PostRecordData	means to upload recorded data

Host header field	${Required}
Other header fields	${Optional}

Server Response

```
HTTP/1.1 200 OK

Date: ${XXX}

Content-Length: ${XXX}

 ……


  OK
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Date header field	**${Required}** uses this header field to synchronize server time, and the time format uses GMT format, such as Date: Fri, 03 Jul 2015 06:53:01 GMT
Content-Length header field	According to the HTTP 1.1, this header field is generally used to specify the data length of the response entity. If the response entity size is uncertain, head fields of Transfer-Encoding: chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in details here
Response entity	When the server normally receives data and successfully processes data, OK is replied. When an error occurs, the error description is replied
Parameter configuration	PostSelfDefineDataType=PostVerifyData

13 Command Reply

After Getting Command Issued by the Server, the client needs to reply corresponding command.

Client Request

Post http	POST /iclock/devicecmd?SN=${SerialNumber}
Host	${ServerIP}: ${ServerPort}
${CmdRecord}	

Annotation

HTTP Request Method	GET method
URI	/iclock/devicecmd
HTTP protocol version	1.1

Client Configuration Information

<table>
<tr><th>Parameter</th><th>Required/ Optional</th><th>Description</th></tr>
<tr><td>SN</td><td>${Required}</td><td>Serial number of the client</td></tr>
<tr><td>Host head field</td><td>${Required}</td><td></td></tr>
<tr><td>Content-Length header field</td><td>${Required}</td><td></td></tr>
<tr><td>Other header fields</td><td>${Optional}</td><td></td></tr>
<tr><td>Response entity</td><td>${CmdRecord}</td><td>record of replied commands.
The reply content all contains the ID\Return\CMD information, with the following meanings.
<table><tr><td>ID</td><td>Number of the command issued by the client</td></tr><tr><td>Return</td><td>Returned result after the client executes the command</td></tr><tr><td>CMD</td><td>Description of the command issued by the server</td></tr></table>A small number of replies contain other information.
For specific reply content format, see the</td></tr>
</table>

		description of each command.
${LF} is used to connect multiple command reply records		

Server Response

```
HTTP/1.1 200 OK
Date: ${XXX}
Content-Length: 2
……

OK
```

Annotation

HTTP status line	Defined with standard HTTP protocol
HTTP response header field	
Date header field	${Required} This header field is used for synchronization with the server time, in GMT format. For example, Date: Fri, 03 Jul 2015 06: 53: 01 GMT
Content-Length header field	Based on HTTP 1.1, this header field is usually used to specify the data length of the response entity. If the response entity size is uncertain, head fields of Transfer-Encoding: chunked, Content-Length and Transfer-Encoding are supported, all of which are standard definitions of HTTP and are not described in details here

Example

Client Request

Post http	POST /iclock/devicecmd?SN=0316144680030 HTTP/1.1
Host	58.250.50.81: 8011
User-Agent	iClock Proxy/1.09
Connection	close
Accept	*/*
Content-Length	143
ID=info8487&Return=0&CMD=DATA ID=info8488&Return=0&CMD=DATA ID=info8489&Return=0&CMD=DATA ID=info7464&Return=0&CMD=DATA	

```
ID=fp7464&Return=0&CMD=DATA
```

Server Response

```
Host:  A response from the server:
HTTP/1.1 200 OK
Server: nginx/1.6.0
Date: Tue, 30 Jun 2015 01: 24: 48 GMT
Content-Type: text/plain
Content-Length: 2
Connection: close
Pragma: no-cache
Cache-Control: no-store
OK
```

14 Remote Attendance

When attendance is required for a user on a business trip and no information about this user is stored in the attendance machine, the user can check on attendance remotely.

Current Aapplication Scenario

The user uses the attendance machine keypad to directly enter ID and press OK, and then the attendance machine requests the server to issue all information about this user (basic information and fingerprint information). After that, the user checks on attendance. After being downloaded, the user information is stored in the attendance machine for a period of time. The saving time is set via a parameter. After this period of time, the user information will be deleted.

Client Request

Post http	GET/iclock/cdata?SN=${SerialNumber}&table=RemoteAtt&PIN=${XXX} HTTP/1.1
Host	${ServerIP}: ${ServerPort}

Annotation

HTTP request method	GET method
URI	/iclock/cdata
HTTP protocol version	1.1

Client configuration information

SN	${Required} Serial number of the client
table=RemoteAtt	Acquiring user information for remote attendance
PIN=${XXX}	ID information to be required
Host head field	${Required}
Other header fields	${Optional}

Server Response

```
When user information exists, the reply information is:
HTTP/1.1 200 OK
Date: ${XXX}
```

```
Content-Length: ${XXX}
……

DATA${SP}UPDATE${SP}USERINFO${SP}PIN=${XXX}${HT}Name=${XXX}${HT}Passwd=${XX
X}${HT}Card=${XXX}${HT}Grp=${XXX}${HT}TZ=${XXX}${HT}Pri=${XXX}
DATA${SP}UPDATE${SP}FINGERTMP${SP}PIN=${XXX}${HT}FID=${XXX}${HT}Size=${XXX}
${HT}Valid=${XXX}${HT}TMP=${XXX}
OK
```

Annotation: ${LF} is used to connect multiple data records of the response entity. For specific data format, see Issuing User Information and Issuing Fingerprint Template.

Appendix 1

Error Code	Description
0	Successful
-1	The parameter is incorrect.
-2	The transmitted user photo data does not match the given size.
-3	Reading or writing is incorrect.
-9	The transmitted template data does not match the given size.
-10	The user specified by PIN does not exist in the equipment.
-11	The fingerprint template format is illegal.
-12	The fingerprint template is illegal.
-30	The integrated template algorithm's version is inconsistent.
-1001	Limited capacity
-1002	Not supported by the equipment
-1003	Command execution timeout
-1004	The data and equipment configuration are inconsistent.
-1005	The equipment is busy.
-1006	The data is too long.
-1007	Memory error
-1008	Failed to get server data

Enroll_FP/ Enroll_BIO Error Code	Description
2	Enroll Fingerprint: Fingerprints of the user already exist.
4	Enroll Fingerprint: Registration fails, usually caused by the inferior quality of fingerprints or the inconsistency of the three fingerprints.
5	Enroll Fingerprint: Registered fingerprints already exist in the fingerprint database.
6	Enroll Fingerprint: Registration is cancelled.
7	Enroll Fingerprint: Registration cannot proceed due to the busy device.

PutFile (Action=SyncData) Error Code	Description
n > 0	Data is synchronized, with n commands successfully processed.

Appendix 2

Language number	Meaning
83	Simplified Chinese
69	English
97	Spanish
70	French
66	Arabic
80	Portuguese
82	Russian
71	German
65	Persian
76	Thai
73	Indonesian
74	Japanese
75	Korean
86	Vietnamese
116	Turkish
72	Hebrew
90	Czech
68	Dutch
105	Italian

89	Slovak
103	Greek
112	Polish
84	Traditional Chinese

Appendix 3

Operation code	Meaning
0	Startup
1	Shutdown
2	Authentication fails
3	Alarm
4	Access menu
5	Change settings
6	Enroll fingerprint
7	Enroll password
8	Enroll HID card
9	Delete user
10	Delete fingerprint
11	Delete password
12	Delete RF card
13	Clear data
14	Create MF card
15	Enroll MF card
16	Register MF card
17	Delete MF card registration

18	Clear MF card content
19	Move enrolled data into the card
20	Copy data in the card to the machine
21	Set time
22	Delivery configuration
23	Delete entry and exit records
24	Clear administrator privilege
25	Modify access group settings
26	Modify user access settings
27	Modify access time period
28	Modify unlocking combination settings
29	Unlock
30	Enroll a new user
31	Change fingerprint attribute
32	Duress alarm
33	Doorbell call
34	Anti-passback
35	Delete attendance photo
36	Modify other user information
37	Holidays
38	Restore data
39	Backup data
40	U-disk upload
41	U-disk download
42	U-disk attendance record encryption
43	Delete records after successful download
53	Exit button

54	Door sensor
55	Alarm
56	Recovery parameters
68	Register user photo
69	Edit user photo
70	Modify user name
71	Modify user permissions
76	Modify network settings IP
77	Modify network settings mask
78	Modify network settings gateway
79	Modify network settings DNS
80	Modify connection settings password
81	Modify connection settings device ID
82	Modify cloud server address
83	Modify cloud server port
87	Modify access control record settings
88	Modify face parameter icon
89	Modify fingerprint parameter icon
90	Modify finger vein parameter icon
91	Modify palmprint parameter icon
92	U-disk upgrade icon
100	Modify RF card information
101	Enroll face
102	Modify personnel permissions
103	Delete personnel permissions
104	Add personnel permissions
105	Delete access control records

106	Delete face
107	Delete personnel photo
108	Modify parameters
109	Select WIFISSID
110	proxy enable
111	proxyip modification
112	Proxy port modification
113	Change personnel password
114	Modify face information
115	Change operator's password
116	Restore access control settings
117	The operator password is entered incorrectly
118	operator password lock
120	Modify the data length of the Legic card
121	Register finger vein
122	Modify finger vein
123	Delete finger vein
124	Register palmprint
125	Modify palmprint
126	Delete palmprint

Appendix 4

Operation code	Operation object 1	Operation object 2	Operation object 3	Operation object 4
2	If 1:1 authentication is used, this is user ID.			
3	Alarm	For alarm causes, see Appendix 5.		
5	Sequence number of modified setting item	Value after modification		
6	User ID	Sequence number of the fingerprint	Length of the fingerprint template	
9	User ID			
10	User ID			
11	User ID			
12	User ID			

Appendix 5

Alarm reason	Meaning
50	Door Close Detected
51	Door Open Detected
53	Out Door Button
54	Door Broken Accidentally
55	Machine Been Broken
58	Try Invalid Verification
65535	Alarm Cancelled

Appendix 6

Protocol version rules

- **Released version of the protocol:**

2.2.14
2.3.0
2.4.0
2.4.1
Encryption protocol version: 2.4.0 and above

- **Device end:**

The device pushes the protocol version currently used by push to the server through the following protocol

GET /iclock/cdata?SN=${SerialNumber}&options=all&pushver=${XXX}&language=${XXX}&pushcommkey=${XXX}

The server returns the release protocol version used by the server for this request and returns the protocol version to the device.
PushProtVer= XXX. If this parameter is not returned, the default protocol version used by the server is 2.2.14.
The device interacts with the lower version based on the version of the protocol used by the current push and that returned by the server.

- **Server-side:**

The server side obtains the protocol version used by push on the device side according to the following request. If there is no pushver field, then the default device USES the 2.2.14 protocol version.

GET /iclock/cdata?SN=${SerialNumber}&options=all&pushver=${XXX}&language=${XXX}&pushcommkey=${XXX}

The service side need to return which released software use protocol version:
PushProtVer = XXX
The server interacts with the lower version based on the protocol version used by the software and the one uploaded by the device.

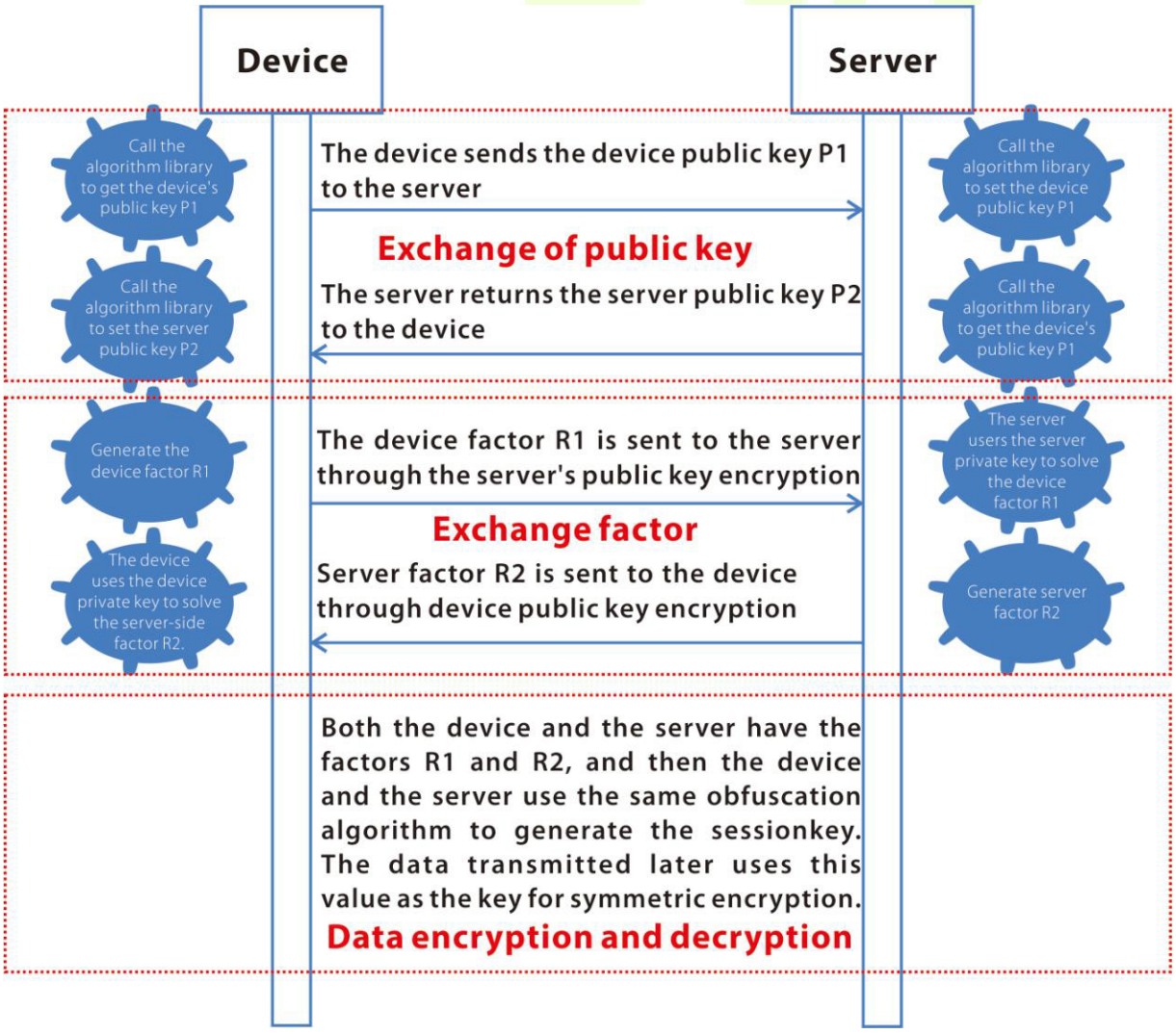
Appendix 7

Verification	Description
0	Finger vein or face or fingerprint or card or password (automatic identification)
1	Only fingerprint
2	User ID verification
3	Only password
4	Only card
5	Fingerprint or password
6	Fingerprints or card
7	Card or password
8	User ID + fingerprint
9	Fingerprint + password
10	Card + fingerprint
11	Card + password
12	Fingerprint + password + card
13	User ID + fingerprint + password
14	User ID + fingerprint or Card + fingerprint
15	Face
16	Face + fingerprint
17	Face + password
18	Face + card
19	Face + fingerprint + card
20	Face + fingerprint + password
21	Finger vein
22	Finger vein + password
23	Finger vein + card

24	Finger vein + password + card
25	Palm print
26	Palm print + card
27	Palm print + face
28	Palm print + fingerprint
29	Palm print + fingerprint + face
200	Other

Appendix 8

Data encryption key exchange scheme



- Algorithm: Encryption algorithm library will be unified packaging, the device used for the static library.
- Scheme:

  a) The asymmetric encrypted public-private key is initialized when the device and server reconnect.

  b) The device and server exchange public keys:

  - The device sends the device public key P1 to the server.
  - The server returns the server public key P2 to the device.
  - Complete the public key exchange. Both the device and the server have public keys P1 and P2.

  c) Device and server exchange factors:

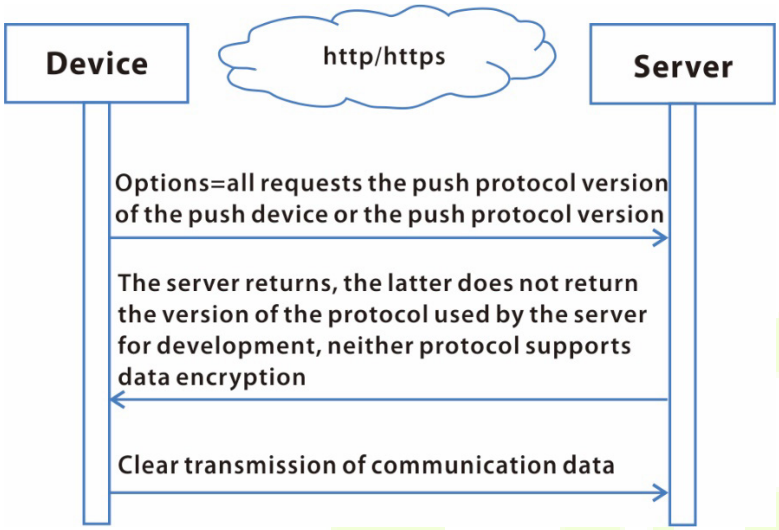
  - The device generates the factor R1 and sends it to the server via the server's public key encryption.
  - The server uses the server private key to solve the device factor R1.
  - The server generates factor R2 and sends it to the device through the device's public key encryption.
  - The device uses the device private key to solve the server factor R2.
  - Complete the factor exchange. Both the device and the server have factors R1 and R2.

  d) Device and server at the same time have factor R1, R2, and then confused device and a server using the same algorithm was born into a session key (sessionKey), after the transfer of data to value as the symmetric encryption keys.

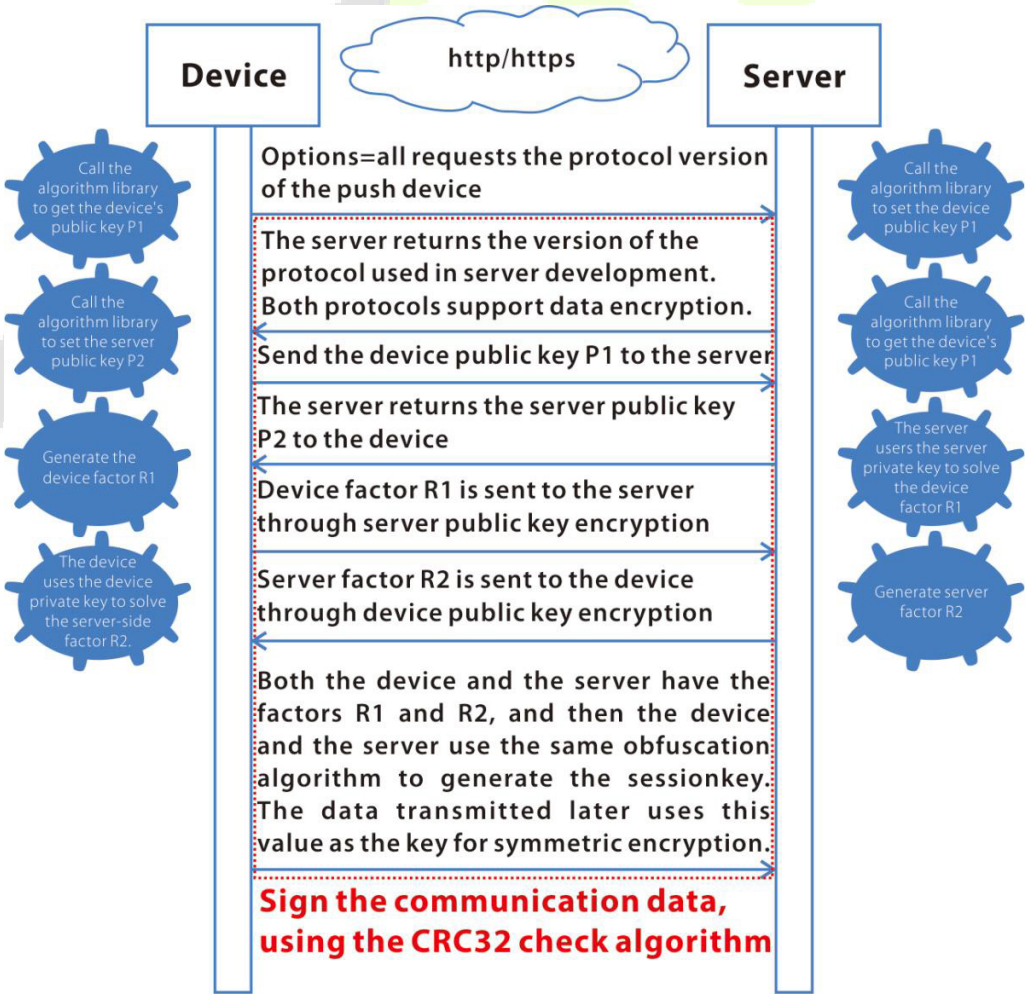
Compatibility scheme

Compatibility is achieved according to the protocol version used by the device and server, as follows:

Case 1



Case 2



Annotation:

a) The device determines whether to use HTTPS or HTTP based on the server address set.

b) In the first request protocol header of the existing device, pushver field is added to the current communication protocol version number of the device, and PushProtVer is added to the data returned by the software to indicate which protocol version the software was developed on. The device and server take the lowest protocol version and communicate according to the lowest protocol version.

c) Case 1: When protocol versions of both the server and the device are not supported, explicit transmission of data communication is used.

d) Case 2: Set a protocol version that supports data encryption. When both the server and the device support the protocol version, use the data encryption scheme.

e) The order of interaction is as follows:

- The new protocol exchanges the public keys P1 and P2 of the device and server.
- The new protocol exchanges the factors R1 and R2 of the device and server.
- Crc32 verification is carried out for the signature of communication data. Both the device and the server have factors R1 and R2 at the same time. Then, the device and the server use the same obconfusion algorithm to generate sessionKey (sessionKey).

Appendix 9

Error code	Description
00000000	Succeed
D01E0001	Face detection failed
D01E0002	Face occlusion
D01E0003	Lack of clarity
D01E0004	Face angle is too big
D01E0005	Live detection failed
D01E0006	Extraction template failed

According to the error code generation end + module + type + error value definition

Error generator (first)

D: error code returned by the device

S: error code returned by the software

Module (2nd ~ 3rd)

Device-end:

01: PUSH communication module

02: Template processing module

03: Hardware interaction module

04: PULL communication module

05: Offline communication module

06: Data transfer module

07: Licensing service module

Software-side:

Undetermined

Type (fourth)

E: ERROR

Error value (5th ~ 8th)

Integer data

Appendix 10 Biometric Type Index Definition

Index	0	1	2	3	4	5	6	7	8	9	10
Type	Common	Fingerprint	Near-infrared face	Voiceprint	Iris	Retina	Palmprint	Finger vein	Palm vein	Visible light face	Visible light palm

Parameter	Description	Description
type	Biometric type Type 1-8 belongs to near-infrared; Type 9-10 belongs to visible light.	0-Common 1-Fingerprint 2-Near-infrared face 3-Voiceprint 4-Iris 5-Retina 6-Palmprint 7-Finger vein 8-Palm vein 9-Visible light face 10-Visible light palm
MultiBioPhotoSupport	Supports biometric photos	The type is defined bit by bit. Different types are separated by colons, 0 means not supported, 1 means supported. Such as: 0: 1: 1: 0: 0: 0: 0: 0: 0: 0: 0, indicating support for near-infrared fingerprint photo and face photo.
MultiBioDataSupport	Supports bio-templates	The type is defined bit by bit. Different types are separated by colons, 0 means not supported, 1 means supported. Such as: 0: 1: 1: 0: 0: 0: 0: 0: 0: 0: 0, indicating support for near-infrared fingerprint template and face template.
MultiBioVersion	Supported algorithms	The type is defined bit by bit. Different types are separated by colons, 0 means not supported, non-0 means supported version number. Such as: 0: 10: 0: 7: 0: 0: 0: 0: 0: 0: 0: 0: 0, indicating support for fingerprint algorithm10.0 and near-infrared face algorithm7.0.
MaxMultiBioDataCount	Supports maximum number of bio-templates.	The type is defined bit by bit. Different types are separated by colons, 0 means not supported, non-0 means supported maximum capacity. Such as: 0: 10000: 3000: 0: 0: 0: 0: 0: 0: 0: 0, indicating support for the maximum number of fingerprint templates is 10000 and the maximum

		number of near-infrared face templates is 3000.
MaxMultiBioPhotoCount	Supports maximum number of biometric photos.	The type is defined bit by bit. Different types are separated by colons, 0 means not supported, non-0 means supported maximum capacity. Such as: 0: 10000: 3000: 0: 0: 0: 0: 0: 0: 0: 0, indicating support for the maximum number of fingerprint photos is 10000 and the maximum number of near-infrared face photos is 3000.
MultiBioDataCount	The current capacity of bio-templates	The type is defined bit by bit. Different types are separated by colons. Such as: 0: 10000: 3000: 0: 0: 0: 0: 0: 0: 0: 0, indicating the current number of fingerprint templates is 10000 and the current number of near-infrared face templates is 3000.
MultiBioPhotoCount	The current capacity of biometric photos	The type is defined bit by bit. Different types are separated by colons. Such as: 0: 10000: 3000: 0: 0: 0: 0: 0: 0: 0: 0, indicating the current number of fingerprint photos is 10000 and the current number of near-infrared face photos is 3000.

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