



SIM7080 Series_CoAP_Application Note

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About Document

Document Information

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Revision	Date	Owner	Status / Comments
1.00	Sept 2, 2019	Wenjie.lai	First Release
1.01	Feb 26,2020	Wenjie.lai	Added product types

Related Documents

[1] SIM7080 Series AT Command Manual V1.02

This document applies to the following products:

Name	Type	Size (mm)	Comments
SIM7080G	CAT-M/NB	17.6*15.7 *2.3	N/A
SIM7070G/SIM7070E	CAT-M/NB/EGPRS	24*24*2.4	N/A
SIM7070G-NG	NB/EGPRS	24*24*2.4	N/A
SIM7090G	CAT-M/NB	14.8*12.8*2.0	N/A

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1 Purpose of this document

Based on module AT command manual, this document will introduce CoAP application process.

Developers could understand and develop application quickly and efficiently based on this document.

2 CoAP Introduction

In the IoT application, there is a network between the device and the device, and they need to communicate with each other. However, because IoT devices are usually resource-constrained, limited CPU capacity, limited RAM, limited flash, and limited network bandwidth, the CoAP (Constrained Application Protocol) protocol borrows the HTTP protocol mechanism and simplifies for such special scenarios. The protocol Packet format. The communication between IoT devices is succinctly realized.

◆ CoAP protocol features

1. Based on message model, four message types are defined, and the message is the data communication carrier, and the data communication between devices is realized by exchanging network messages.
2. The operation of the CoAP Server cloud device resource is completed by the request and response mechanism. Similar to HTTP, the device can operate the server resource through four request methods (GET, PUT, POST, DELETE). The request and response packets are placed in the CoAP message for transmission.
3. Message-based two-way communication (M2M), both the CoAP Client and the CoAP server can send requests to each other independently. Both parties can be in the client or server role.
4. The protocol packet is lightweight and has a minimum length of only 4B.
5. Support reliable transmission, data retransmission, block transmission. Ensure that data arrives reliably
6. Support IP multicast, which can send requests to multiple devices at the same time (such as CoAP client search for CoAP Server)
7. Non-long connection communication for low power IoT scenarios.

3 AT Commands for CoAP

Command	Description
AT+CCOAPPDPID	Select PDP Index for CoAP
AT+CCOAPINIT	Create CoAP object

AT+CCOAPURL	Configure CoAP URL
AT+CCOAPPARA	Assembling CoAP data Packet
AT+CCOAPACTION	Operate CoAP object
AT+CCOAPHEAD	Read head of CoAP packet
AT+CCOAPREAD	Read data of CoAP Packet
AT+CCOAPTERM	Delete CoAP object

For detail information, please refer to "SIM7080 Series_AT Command Manual_V1.00".

4 CoAP samples

4.1 PDN Auto-activation

AT Command	Response	Description
AT+CPIN?	+CPIN:READY OK	Check SIM card status
AT+CSQ	+CSQ: 20,0 OK	Check RF signal
AT+CGREG?	+CGREG: 0,1 OK	Check PS service
AT+COPS?	+COPS: 0,0,"460 01",9 OK	Query Network information, operator and network mode 9, NB-IOT network
AT+CGNAPN	+CGNAPN: 1,"ctnb" OK	Query CAT-M or NB-IOT network after the successful registration of APN
AT+CNACT=0,1	OK +APP PDP: 0,ACTIVE	Activating network bearing

4.2 CoAP case

AT Command	Response	Description
AT+CNACT=0,1	OK +APP PDP: 0,ACTIVE	Open data connection.
AT+CCOAPINIT	OK	Create CoAP object

AT+CCOAPURL="coap://117.131.85.139:6011"	OK	Configure CoAP URL
AT+CCOAPPARA="CODE",1,uri-path,0,"home/query",uri-query,0,"address=1",payload,0,"hello world"	OK	Assembling CoAP data packet
AT+CCOAPACTION	+CCOAPACTION: 0,1	Send data, Message id is 1
	OK	
	+CCOAPRECV: 1,14,9	Received data, Message id is 1, data length is 14 bytes, data payload is 9 bytes.
AT+CCOAPACTION=4	+CCOAPACTION: 4,1,1	Get receive queue. The current receive queue has a total of 1 data packet, and the first packet id is 1.
	OK	
AT+CCOAPHEAD=1,1	+CCOAPHEAD: 1,1,2,0,4,04,1,,,,,,,,0,,,,,,,,	Read the packet header with message id of 1 and print it parsed.
	OK	
AT+CCOAPREAD=1	+CCOAPREAD: 9,Not Found	Read the receive packet payload with message id of 1. The total byte length is 9 and the content is Not Found.
	OK	
AT+CCOAPTERM	OK	Delete CoAP Object
AT+CNACT=0,0	OK	Disconnect data connection
	+APP PDP: 0,DEACTIVE	

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