



# SIM7020 Series\_CoAP \_Application Note

LPWA Module

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# About Document

## Version History

Version	Date	Owner	What is new
1.00	2018.04.10	Linshu Guan	First Release
1.01	2018.06.07	Albert Meng	Revised
1.02	2019.05.10	Wenjie.lai	Change CoAP Connection and Service
1.03	2020.06.10	Xiaohui.xu	All

## Scope

This document applies to the following products

Name	Type	Size(mm)	Comments
SIM7020C	NB1	17.6*15.7	Band 1/3/5/8
SIM7020E	NB1	17.6*15.7	Band 1/3/5/8/20/28
SIM7030	NB1	16*18	Band 1/3/5/8
SIM7060	NB1+GNSS	24*24	Band 5/8
SIM7020G	NB2	17.6*15.7	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85
SIM7060G	NB2+GNSS	24*24	Band 1/2/3/4/5/8/12/13/17/18/19/20/25/26/28/66/70/71/85

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# 1 Introduction

## 1.1 Purpose of the 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.

## 1.2 Related documents

[1] SIM7020 Series\_AT Command Manual

## 1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:

ME (Mobile Equipment);

MS (Mobile Station);

TA (Terminal Adapter);

DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface.

The controlling device at the other end of the serial line is referred to as following term:

TE (Terminal Equipment);

DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

## 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+CCOAPNEW	Create a CoAP client instance
AT+CCOAPSEND	Send CoAP data
AT+CCOAPCSEND	Send CoAP data
AT+CCOAPDEL	Destroy the CoAP client instance
+CCOAPNMI	Content from CoAP server

For detail information, please refer to "SIM7020 Series\_AT Command Manual".

## 4 Bearer Configuration

Usually module will register PS service automatically.

### 4.1 PDN Auto-activation

//Example of PDN Auto-activation.

```
AT+CPIN? //Check SIM card status
+CPIN: READY

OK
AT+CSQ //Check RF signal
+CSQ: 20,0

OK
AT+CGREG? //Check PS service
+CGREG: 0,1

OK
AT+CGACT? //Activated automatically.
+CGACT: 1,1

OK
AT+COPS? //Query Network information, operator and network
+COPS: 0,2,"46000",9 mode 9, NB-IOT network

OK
AT+CGCONTRDP //Attached PS domain and got IP address
+CGCONTRDP: automatically.
1,5,"cmnbiot","100.80.73.123.255.255.255.0"

OK
```



## 4.2 APN Manual configuration

If not attached automatically, could configure correct APN setting.

//Example of APN Manual configuration.

```
AT+CFUN=0 // Disable RF
+CPIN: NOT READY

OK
AT*MCGDEFCONT="IP","cmnbiot" // Set the APN manually
OK
AT+CFUN=1 //Enable RF
OK

+CPIN: READY
AT+CGREG? //Inquiry PS service .1 indicates PS has attached.
+CGREG: 0,1

OK
AT+CGCONTRDP //Attached PS domain and got IP address
+CGCONTRDP: automatically
1,5,"cmnbiot","100.80.73.123.255.255.255.0"

OK
```

## 5 CoAP Examples

//Example of CoAP Connection and Service.

```
AT+CCOAPNEW="10.161.11.104",5683,1 //Create client instance
+CCOAPNEW: 1 //If succeed, client instance id will return.

OK
AT+CCOAPSEND=1,12,"400141C7B7636F756E746572" //Send hex data to server.
OK

+CCOAPNMI: 1,11,"60457233c02105ff303234" //Got data from server
AT+CCOAPCSEND=1,1,0,0,1,, "B7636F756E746572",, //Send hex data to server.
OK

+CCOAPNMI: 1,11,"60457233c02105ff303234" //Got data from server
AT+CCOAPDEL=1 //Release Client instance
OK
```