SIM7672X & SIM7652X Series_NETWORK_ Application Note

LTE Module

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About Document

Version History

Version	Date	Owner	What is new
V1.00	2023.5.22		New version

Scope

Based on module AT command manual, this document will introduce APN application process. Developers could understand and develop application quickly and efficiently based on this document. This document applies to SIM7672X Series, SIM7652X Series.

Contents

1 Introduction

1.1 Purpose of the document

Based on module AT command manual, this document will introduce APN application process. Developers could understand and develop application quickly and efficiently based on this document.

1.2 Related documents

[1] SIM7672X & SIM7652X Series_AT Command Manual.

1.3 Conventions and abbreviations

Abbreviations	Description
APN	Access Point Name
API	Application Programming Interface
PDP	Packet Data Protocol
PDP-IP	Packet Data Protocol – internet protocol

2 AT Commands for NETWORK

Command	Description
AT+CGDCONT	Define PDP context
AT+CGAUTH	Set type of authentication for PDP-IP connections of GPRS
AT+CGACT	PDP context activate or deactivate

2.1 AT+CGDCONT   Define PDP context

The set command specifies PDP context parameter values for a PDP context identified by the (local) context identification parameter <cid>. The number of PDP contexts that may be in a defined state at the same time is given by the range returned by the test command. A special form of the write command (AT+CGDCONT= <cid>) causes the values for context <cid> to become undefined.
The read command returns the current settings for each defined context.
The test command returns values supported as compound values.

AT+CGDCONT Define PDP context	
Test Command **AT+CGDCONT=?**	Response 1) **+CGDCONT: (**range of supported**<cid>s),<PDP_type>,,,(**list of supported **<d_comp>s),(**list of supported **<h_comp>**s),(**list of **<ipv4_ctrl>s),(**list of **<request_type>s)** **OK** 2) **ERROR**
Read Command **AT+CGDCONT?**	Response 1) **+CGDCONT: <cid>,<PDP_type>,<APN>[[,<PDP_addr>],<d_comp>,<h_comp>,<ipv4_ctrl>,<request_type>,<P-CSCF_discovery>,<IM_CN_Signalling_Flag_Ind>]<CR><LF>** **+CGDCONT: <cid>,<PDP_type>,<APN>[[,<PDP_addr>],<d_comp>,<h_comp>,<ipv4_ctrl>,<request_type>,<P-CSCF_discovery>,<IM_CN_Signalling_Flag_Ind>]** …

	OK 2) **ERROR**
Write Command **AT+CGDCONT=<cid>[,<PDP** **_type>[,<APN>[,<PDP_addr>** **[,<d_comp>[,<h_comp>][,<ip** **v4_ctrl>[,<request_type>]]]]]** **]**	Response 1) **OK** 2) **ERROR** 3) **+CME ERROR: <err>**
Execution Command **AT+CGDCONT**	Response 1) **OK** 2) **ERROR**
Parameter Saving Mode	AUTO_SAVE
Max Response Time	5000ms
Reference	3GPP TS 27.007

Defined Values

<cid>	(PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. The parameter is local to the TE-MT interface and is used in other PDP context-related commands. The range of permitted values (minimum value=1) is returned by the test form of the command. cid1 is used to establish the default bearer when the network is registered. cid8 is used to establish IMS bearer and is not currently supported. Range: 1…15

<PDP_type>	(Packet Data Protocol type) a string parameter which specifies the type of packet data protocol.
	    IP Internet Protocol
	    IPV6 Internet Protocol Version 6
	    IPV4V6 Dual PDN Stack

<APN>	(Access Point Name) a string parameter which is a logical name that is used to select the GGSN or the external packet data network.
<PDP_addr>	A string parameter that identifies the MT in the address space applicable to the PDP. This parameter will be omitted when PDP_type is PPP type. Read command will continue to return the null string even if an address has been allocated during the PDP startup procedure. The allocated address may be read using command AT+CGPADDR.
<d_comp>	A numeric parameter that controls PDP data compression, this value

	may depend on platform:
	0 off (default if value is omitted)
	1 on
	2 V.42bis
<h_comp>	A numeric parameter that controls PDP header compression, this value may depend on platform:
	0 off (default if value is omitted)
	1 RFC1144
<ipv4_ctrl>	Parameter that controls how the MT/TA requests to get the IPv4 address information:
	0 Address Allocation through NAS Signaling
	1 on
<request_type>	integer type; indicates the type of PDP context activation request for the PDP context, see 3GPP TS 24.301 [83] (subclause 6.5.1.2)and 3GPP TS 24.008 [8] (subclause 10.5.6.17). If the initial PDP context is supported (see subclause 10.1.0)it is not allowed to assign <cid>=0 for emergency bearer services. According to 3GPP TS 24.008 [8] (subclause 4.2.4.2.2 and subclause 4.2.5.1.4)and 3GPP TS 24.301 [83] (subclause 5.2.2.3.3 and subclause 5.2.3.2.2), a separate PDP context must be established for emergency bearer services. NOTE 4: If the PDP context for emergency bearer services is the only activated context, only emergency calls are allowed, see 3GPP TS 23.401 [82] subclause 4.3.12.9.
	0 PDP context is for new PDP context establishment or for handover from a non-3GPP access network (how the MT decides whether the PDP context is for new PDP context establishment or for handover is implementation specific)
	1 PDP context is for emergency bearer services
	2 PDP context is for new PDP context establishment
<P-CSCF_discovery>	integer type; influences how the MT/TA requests to get the P-CSCF address, see 3GPP TS 24.229 [89] annex B and annex L.
	0 Preference of P-CSCF address discovery not influenced by +CGDCONT
	1 Preference of P-CSCF address discovery through NAS signalling
	2 Preference of P-CSCF address discovery through DHCP
<IM_CN_Signalling_Flag_Ind>	integer type; indicates to the network whether the PDP context is for IM CN subsystem-related signalling only or not.
	0 UE indicates that the PDP context is not for IM CN subsystem-related signalling only
	1 UE indicates that the PDP context is for IM CN subsystem-related signalling only

Examples

```
AT+CGDCONT=?
+CGDCONT: (1-15),"IP",,,,,(0),(0,2),(0),(0),(0,1),(0),(0,1),(0)
+CGDCONT: (1-15),"IPV6",,,,,(0),(0,2),(0),(0),(0,1),(0),(0),(0)
+CGDCONT: (1-15),"IPV4V6",,,,,(0),(0,2),(0),(0),(0,1),(0),(0,1),(0)
+CGDCONT: (1-15),"Non-IP",,,,,(0),(0,2),(0),(0),(0,1),(0),(0),(0),(0,1)

OK
AT+CGDCONT?
+CGDCONT: 1,"IP","cnnet"

OK
AT+CGDCONT=1,"IP","cnnet"
OK
AT+CGDCONT
OK
```

2.2 AT+CGAUTH   Set type of authentication for PDP-IP connections of GPRS

Set command allows the TE to specify authentication parameters for a PDP context identified by the (local) context identification parameter <cid> used during the PDP context activation and the PDP context modification procedures. Since the <cid> is the same parameter that is used in the +CGDCONT and +CGDSCONT commands, +CGAUTH is effectively as an extension to these commands. A special form of the write command (AT+CGAUTH= <cid>) causes the values for context <cid> to delete AUTH info.
The read command returns the current settings for each defined context.
The test command returns values supported as compound values.

AT+CGAUTH Set type of authentication for PDP-IP connections of GPRS	
Test Command **AT+CGAUTH=?**	Response 1) **+CGAUTH: (**range of supported **<cid>s),(**list of supported **<auth_type> s),(64),(64)** **OK** 2) **ERROR** 3) **+CME ERROR: <err>**
Read Command **AT+CGAUTH?**	Response 1)

	+CGAUTH: <cid>,<auth_type>[,<user>,<passwd>] … **OK** 2) **ERROR** 3) **+CME ERROR: <err>**
Write Command **AT+CGAUTH=<cid>[,<auth_type>[,<passwd>[,<user>]]]**	Response 1) **OK** 2) **ERROR** 3) **+CME ERROR: <err>**
Execution Command **AT+CGAUTH**	Response 1) **OK** 2) **ERROR** 3) **+CME ERROR: <err>**
Parameter Saving Mode	AUTO_SAVE
Max Response Time	5000ms
Reference	3GPP TS 27.007

Defined Values

<cid>	Parameter specifies a particular PDP context definition. This is also used in other PDP context-related commands. Range: 1…15

<auth_type>	Indicate the type of authentication to be used for the specified context. If CHAP is selected another parameter <passwd> needs to be specified. If PAP is selected two additional parameters <passwd> and <user> need to specified.
	    0 none
	    1 PAP
	    2 CHAP

<passwd>	Parameter specifies the password used for authentication.
<user>	Parameter specifies the username used for authentication.

Examples

```
AT+CGAUTH=?
+CGAUTH: (1-15),(0-2),(64),(64)

OK
AT+CGAUTH?
+CGAUTH: 1,0,"",""

OK
AT+CGAUTH=1,0
OK
AT+CGAUTH
OK
```

2.3 AT+CGACT   PDP context activate or deactivate

The write command is used to activate or deactivate the specified PDP context (s).

AT+CGACT PDP context activate or deactivate	
Test Command **AT+CGACT=?**	Response **+CGACT: (**list of supported **<state>s)** **OK**
Read Command **AT+CGACT?**	Response **+CGACT: [<cid>,<state>[<CR><LF>** **+CGACT: <cid>,<state>[<CR><LF>** **[..]]]** **OK**
Write Command **AT+CGACT=<state>[,<cid>]**	Response 1) **OK** 2) **ERROR** 3) **+CME ERROR: <err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	5000ms
Reference	3GPP TS 27.007

Defined Values

\<state\>	Indicates the state of PDP context activation: 0 deactivated 1 activated
\<cid\>	A numeric parameter which specifies a particular PDP context definition (see AT+CGDCONT command). 1…15

Examples

AT+CGACT=?
+CGACT: (0,1)

OK
AT+CGACT?
+CGACT: 1,1

OK
AT+CGACT=1,1
OK

3 Network Enable

3.1 Configure PDP Context with the AT Commands

3.1.1 Without username and password

Network doesn't require username and password.

Examples

AT+CGDCONT=1,"IP","cnnet"
OK

3.1.2 Multiple APN configuration

Multiple bearers can be defined at same time.

Examples

AT+CGDCONT=1,"IP","cnnet"
OK
AT+CGDCONT=2,"IPv6","cmnet"
OK
AT+CGDCONT=3,"IPv4v6","3gnet"
OK
…
AT+CGDCONT=<cid>,<IPtype>,<APN>
OK

3.1.3 Use username and password

Please ask the carrier to confirm the username, password and APN of the Network.

Examples

AT+CGAUTH=1,1, "username","password"
OK

AT+CGDCONT=1,"IP","cnnet"
OK

3.2 Activate the PDP bearer

Different carriers can activate different number of bearer at the same time. For details, consult the carrier.

Examples

AT+CGACT=1,1   // Activate the cid1 PDP Context
OK
AT+CGACT=1,<cid>
OK

AT+CGACT=0,1   // Deactivate the cid1 PDP Context
OK
AT+CGACT=0,<cid>
OK