Socket Communication using AT Commands in Cavli Modules

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Introduction to Socket Communication

- Used for **TCP/IP communication** in IoT devices

- Works over **cellular network**

- Socket = endpoint for sending/receiving data (e.g., to a cloud server)

TCP/IP Protocol

- TCP/IP (Transmission Control Protocol / Internet Protocol) is the foundation of internet communication.

- It defines **how devices communicate** across networks like the internet or a cellular network.

Required AT Commands Overview

AT Command	Purpose
AT+QICSGP	Set APN and PDP context
AT+QIACT	Activate data connection
AT+QIOPEN	Open socket (TCP/UDP)
AT+QISEND	Send data over the socket
AT+QICLOSE	Close socket

AT+QICSGP – PDP SETUP

- **Command : AT+QICSGP=1,1,"your_apn","","",1**

  1 - context ID

  1 - PDP type (IPv4)

  "your_apn" - access point name

  "" - username, password (if any)

  1 - authentication (0=none, 1=PAP, 2=CHAP)

AT + QIACT – ACTIVATE PDP CONTEXT

- **Command : AT+QIACT = 1**

    AT+QIACT?   → to confirm it's active

    AT+QILOCIP   → returns local IP

AT + QIOPEN – OPEN TCP CONNECTION

Command : AT + QIOPEN = 1,0,"TCP", "test.server.com",1883,0,1

Field	Description
1	PDP context ID
0	Socket ID
"TCP"	Protocol (TCP or UDP)
"test.server.com"	Server IP or domain
1883	Port number (e.g. MQTT)
0	Local port (0 = auto)
1	Keep alive

Response :
OK
+QIOPEN : 0,0 <=(Socket ID 0, success)

AT + QISEND – SEND DATA

- **Command : AT+QISEND=0,<length>**

  > Your payload data here

  0 – Socket ID

  <length> - number of bytes to send

  After > prompt, type the data and press Ctrl + Z

  Ex: AT+QISEND=0,13

  > Hello, Server!

  Response : SEND OK

AT + QICLOSE – CLOSE SOCKET

- **Command : AT+QICLOSE=0**

  Cleanly disconnects the TCP session
  0 = socket ID

CONCLUSION

- Socket communication enables Cavli modules (like C10QM) to interact with cloud servers and IoT platforms over the TCP/IP protocol.

- Commands like "AT+QIOPEN" and "AT+QISEND" are essential for establishing TCP connections and transmitting data reliably.

- TCP/IP protocol ensures reliable, ordered, and error-checked communication — crucial for mission-critical IoT applications like telemetry, tracking, and remote monitoring.