PDP Context & Internet Setup with AT+CGDCONT

What is PDP Context?

PDP (Packet Data Protocol) context defines the parameters required for a device to connect to the internet over a cellular network. It includes information like:

- APN (Access Point Name)
- IP type (IPv4/IPv6)
- PDP address (optional)
- Data compression settings (optional)

AT+CGDCONT – Define PDP Context

Syntax:

AT+CGDCONT=<cid>,"<PDP_type>","<APN>"

- <cid>: Context ID (1–16; often 1)
- <PDP_type>: "IP" (IPv4), "IPV6", or "IPV4V6"
- <APN>: Access Point Name (e.g., internet, airtelgprs.com, etc.)

Example Commands (on real modems)

1. Set APN (for Airtel India):

   AT+CGDCONT=1,"IP","airtelgprs.com"

2. Set APN (for Jio India):

   AT+CGDCONT=1,"IP","jionet"

3. Query current PDP context:

   AT+CGDCONT?

4. Expected response:

   +CGDCONT: 1,"IP","jionet","0.0.0.0",0,0

Important Notes

- This command only configures the PDP context. To actually connect to the internet, follow with:
  - AT+CGATT=1 → Attach to GPRS
  - ATD*99# or ATD*99***1# → Dial data call

How GSM Modules Use AT+CGDCONT to Set Up Internet

Step 1: Set APN with AT+CGDCONT

This command tells the modem:

- What kind of IP connection to use
- What APN (Access Point Name) to connect to

Command:

AT+CGDCONT=1,"IP","<apn>"

Example (for Jio India):

AT+CGDCONT=1,"IP","jionet"

Step 2: Attach to GPRS with AT+CGATT

Command:

AT+CGATT=1

This tells the modem to attach to the GPRS network, enabling data services.

Expected Response:

OK

Step 3: Start Data Call with ATD*99#

Command:

ATD*99#

This dials a special number that starts a data session using the context defined in +CGDCONT.

Optional: If using CID other than 1 (say 2), use:

ATD*99***2#

Expected Response:

CONNECT

At this point, the modem opens a data channel and the serial port becomes a raw PPP stream.

Step 4: Use PPP (Point-to-Point Protocol)

Once CONNECT is received, the modem expects a PPP session (handled by OS or software like pppd on Linux). If you're on a microcontroller, a PPP stack is needed.

Complete Sequence Example:

```
AT+CFUN=1          → Full functionality mode
AT+CSQ             → Check signal strength
AT+CGDCONT=1,"IP","internet"
AT+CGATT=1         → Attach to GPRS
ATD*99#            → Start data session
```

Verify Settings

- Query current context:

  AT+CGDCONT?

- Check GPRS attachment:

  AT+CGATT?

  Returns:

  +CGATT: 1 → attached

- Check registration:

  AT+CREG? → for GSM

  AT+CGREG? → for GPRS

Supported PDP Types

Type	Description
"IP"	IPv4 only
"IPV6"	IPv6 only
"IPV4V6"	Dual-stack

Notes:

- Incorrect APN = no internet access
- SIM card must have active data plan
- PPP or LTE connection depends on module type (2G/3G/4G)