APN Configuration Using AT+CGDCONT on a Real Modem

# Introduction

**Access Point Name (APN)** is a configuration setting on cellular devices (like modems, smartphones, or IoT modules) that defines the gateway between the mobile network (GPRS/3G/4G/5G) and the internet or a private network. The APN tells the modem what type of network connection it should establish and what IP addressing method to use.

### ****Role in Cellular Connectivity:****

* **Identifies the network path**: The APN specifies which external network (public internet or corporate intranet) the modem should connect to.
* **Enables mobile data access**: Without a correct APN, the modem cannot initiate a data session even if it's registered on the network.
* **Customizes connectivity settings**: Operators use different APNs for general internet, MMS, or private enterprise services.

Example:  
For Jio in India, the APN is usually set as jionet. Without this, the modem will not connect to Jio’s internet gateway.

# 2. What is AT+CGDCONT?

The AT+CGDCONT command stands for "Define PDP Context". It is used to set up the parameters for a packet data protocol (PDP) context.   
Syntax:  
AT+CGDCONT=<cid>,"<PDP\_type>","<APN>","<PDP\_address>",<d\_comp>,<h\_comp>  
It is commonly used to configure the APN for 3G/4G data sessions.

# 3. Typical Use Case

Modems use the AT+CGDCONT command to establish an internet connection by configuring the APN associated with the user’s mobile network provider.

# 4. Required Parameters

|  |  |
| --- | --- |
| Parameter | Description |
| <cid> | Context ID (e.g., 1, 2…) |
| <PDP\_type> | PDP Type (e.g., "IP", "IPV6", "PPP") |
| <APN> | APN string provided by network operator |
| <PDP\_address> | Optional – mostly left blank |
| <d\_comp> | Data compression (0 or 1) |
| <h\_comp> | Header compression (0 or 1) |

Example:  
AT+CGDCONT=1,"IP","internet"

# 5. Checking Existing Configuration

Command to view existing PDP context:  
AT+CGDCONT?

# 6. Example with Real Modem

Step-by-step:  
1. Connect to modem via serial terminal (e.g., Tera Term).  
2. Send: AT+CGDCONT=1,"IP","your\_apn\_name"  
3. Check with: AT+CGDCONT?  
4. Use AT+CGACT=1,1 to activate context.  
5. Use AT+CGPADDR=1 to verify IP assignment.

# 7. APN Configuration for Popular Operators

|  |  |
| --- | --- |
| Operator | APN |
| Jio | jionet |
| Airtel | airtelgprs.com |
| Vi (Vodafone-Idea) | www |
| BSNL | bsnlnet |

# 8. Troubleshooting Tips

- Use AT+CREG? or AT+CGREG? to check network registration.  
- Make sure SIM is inserted and unlocked.  
- Check signal strength with AT+CSQ.

# 9. Conclusion

This document summarizes the importance of APN configuration using the AT+CGDCONT command in establishing a mobile data connection on real modem devices.