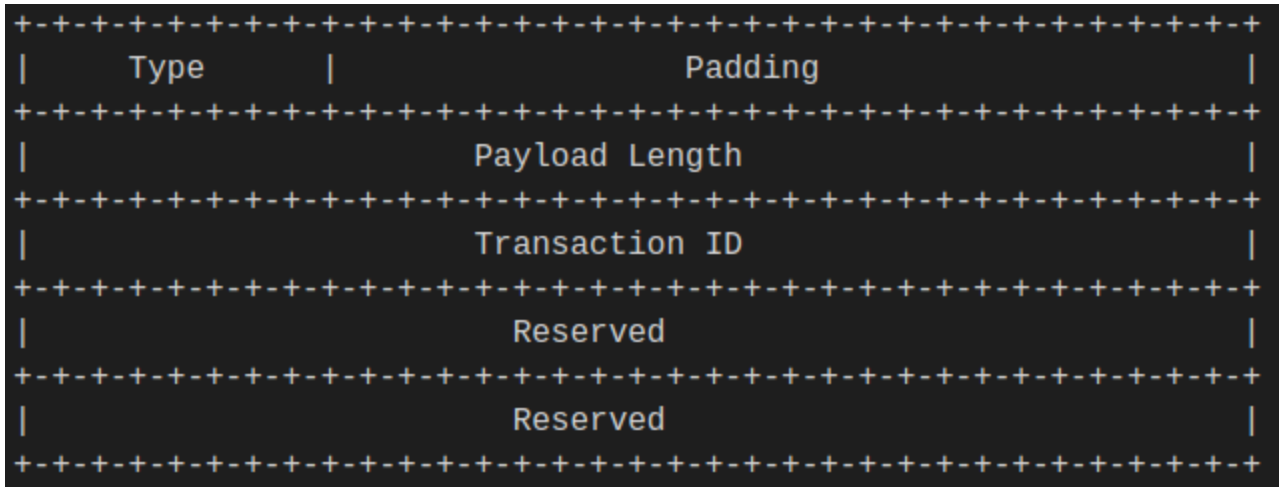


IP Header

[illegible]

CLDP Header (20 bytes)



1. Type (1 byte): Specifies the type of message
 - a. 0x01 - HELLO
 - b. 0x02 - QUERY
 - c. 0x03 - RESPONSE
2. Payload Length (4 bytes): The size of the payload in bytes; zero in HELLO & RESPONSE types of messages
3. Transaction ID (4 bytes): Identification of a QUERY-RESPONSE pair
4. Reserved (8 bytes)

RESPONSE payload (432 bytes)

1. Hostname (256 bytes)
2. System Time (64 bytes)
3. System Information (112 bytes)

Example Snapshots

Client and Server running on two different devices:

```
Received HELLO from 192.168.247.191
Received RESPONSE from 192.168.247.191, transaction id: 1
Hostname: nived-Inspiron-14-5420      System Time: 2025-03-30 18:55:27      Uptime: 152273
Free RAM/Total RAM: 8039395328/16439148544      Load Averages: 17280 39456 44640
```

```
harshit@acer-aspire-lite-52:~$ sudo tcpdump -i any proto 169 -X
tcpdump: data link type LINUX_SLL2
tcpdump: verbose output suppressed, use -v[v]... for full protocol decode
listening on any, link-type LINUX_SLL2 (Linux cooked v2), snapshot length 262144 bytes
18:55:24.843528 wlp0s20f3 B   IP 192.168.247.191 > 255.255.255.255: ip-proto-169 20
    0x0000: 4500 0028 9609 0000 ffa9 6cbb c0a8 f7bf E..(.....l.....
    0x0010: ffff ffff 0100 0000 0000 0000 0000 0000 .....
    0x0020: 0000 0000 0000 0000 .....
18:55:26.887109 wlp0s20f3 Out IP acer-aspire-lite-52 > 192.168.247.191: ip-proto-169 20
    0x0000: 4500 0028 4da0 0000 ffa9 fd62 c0a8 f718 E..(M.....b....
    0x0010: c0a8 f718 0200 0000 0000 0000 0100 0000 .....
    0x0020: 0000 0000 0000 0000 .....
18:55:27.292637 wlp0s20f3 In  IP 192.168.247.191 > acer-aspire-lite-52: ip-proto-169 452
    0x0000: 4500 01d8 a683 0000 ffa9 a2cf c0a8 f7bf E.....
    0x0010: c0a8 f718 0300 0000 b001 0000 0100 0000 .....
    0x0020: 0000 0000 0000 0000 6e69 7665 642d 496e .....nived-In
    0x0030: 7370 6972 6f6e 2d31 342d 3534 3230 0000 .....spiron-14-5420..
    0x0040: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x0050: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x0060: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x0070: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x0080: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x0090: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x00a0: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x00b0: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x00c0: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x00d0: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x00e0: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x00f0: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x0100: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x0110: 0000 0000 0000 0000 0000 0000 0000 0000 .....
    0x0120: 0000 0000 0000 0000 3230 3235 2d30 332d .....2025-03-
    0x0130: 3330 2031 383a 3535 3a32 3700 0000 0000 .....30.18:55:27.....
    0x0140: 0000 0000 0000 0000 0000 0000 0000 0000 .....
```

Handwritten annotations:

- Transaction IDs:** Red box around the value 0100 in the second packet.
- Hostname:** Blue box around the string "nived-Inspiron-14-5420.." in the third packet.
- System Time:** Blue box around the string "2025-03-30.18:55:27....." in the third packet.
- Other labels:** Green circles around 0100 and 0300; yellow circles around 0200 and 0300; green text "REQUEST" and "RESPONSE" with arrows pointing to the first and third packets respectively.

Client handling two Servers (one on the same device, one on a different device):

```
harshit@acer-aspire-lite-52:~/Documents/net/A7$ sudo ./cldp_server
Broadcasting HELLO
Received QUERY from 192.168.247.24, transaction id: 3
Broadcasting HELLO
Received QUERY from 192.168.247.24, transaction id: 5
Received QUERY from 192.168.247.24, transaction id: 7
Broadcasting HELLO
```

```
Received HELLO from 192.168.247.191
Received HELLO from 192.168.247.24
Received RESPONSE from 192.168.247.24, transaction id: 5
Hostname: acer-aspire-lite-52    System Time: 2025-03-30 18:55:50    Uptime: 101224
Free RAM/Total RAM: 942292992/16458448896    Load Averages: 43456 80384 71488
Received RESPONSE from 192.168.247.191, transaction id: 6
Hostname: nived-Inspiron-14-5420    System Time: 2025-03-30 18:55:51    Uptime: 1
52297    Free RAM/Total RAM: 8034361344/16439148544    Load Averages: 16608 37312 43744
Received HELLO from 192.168.247.191
```

Sources

<https://datatracker.ietf.org/doc/html/rfc791>

<https://www.binarytides.com/raw-sockets-c-code-linux/>

<https://man7.org/linux/man-pages/man2/sethostname.2.html>

<https://man7.org/linux/man-pages/man2/gettimeofday.2.html>

<https://man7.org/linux/man-pages/man2/sysinfo.2.html>