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DHCWG
DHCPv4 over DHCPv6 with Relay Agent Support

Addition of DHCPv4 over DHCPv6 to all DHCPv6 Relay Agents

draft-porfiri-dhc-dhcpv4-over-dhcpv6-ra

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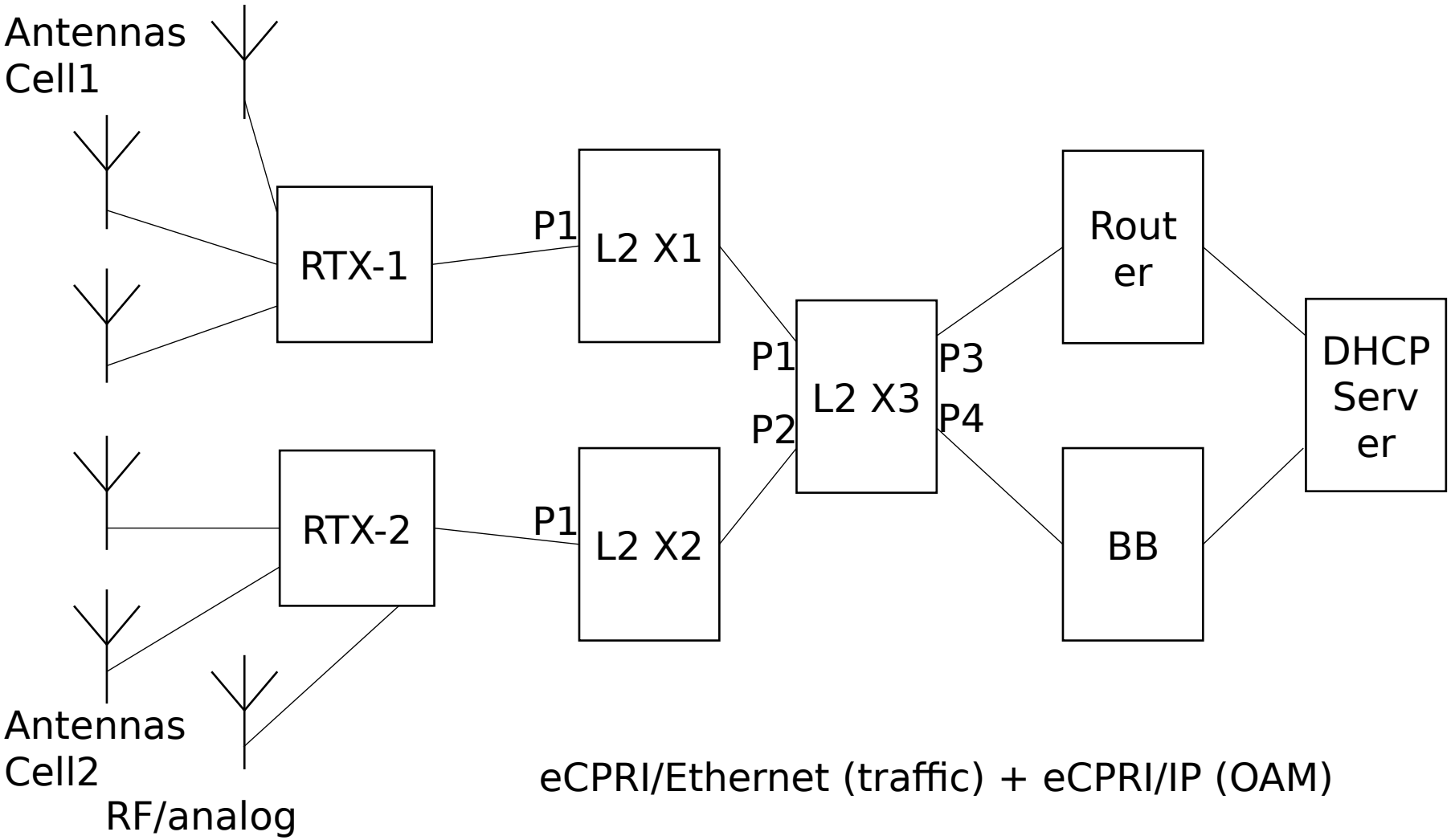
Limits of DHCPv4

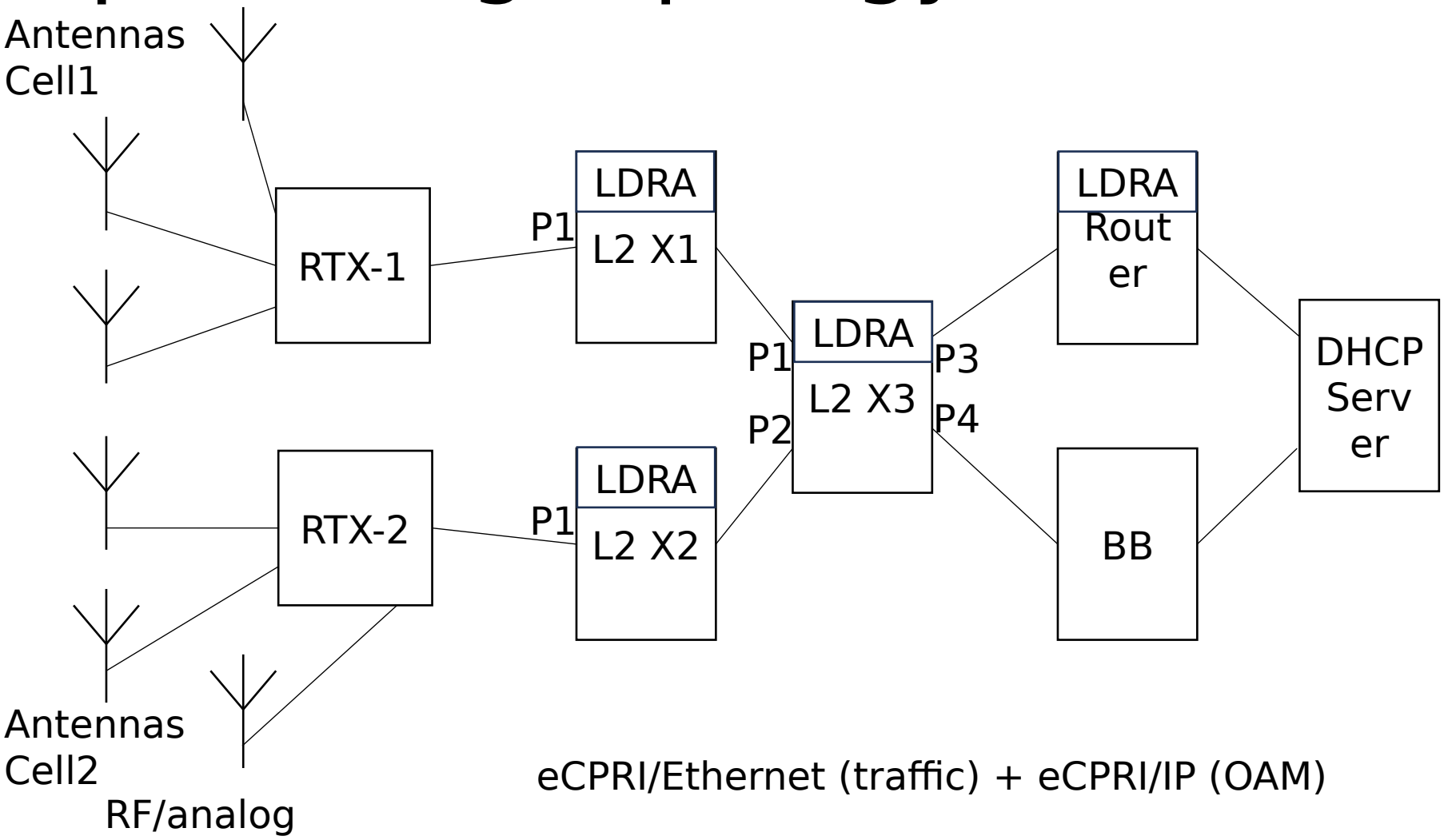
- Specifically, in DHCPv4 lacks the following capabilities:
  - There is no support for hierarchy of Relay Agents.
  - It is not clear if there is an attribute that could carry interface or port related information, like DHCPv6's Interface-ID [RFC3315] [RFC6221].
  - There is no specification for how to deploy Relay Agents in a Layer 2 device.

RAN Example: The Radio Fronthaul Network



In order to properly configure the RTX, BB needs to know the MAC address and what Antennas are connected as each antenna is related to a cell and sector.

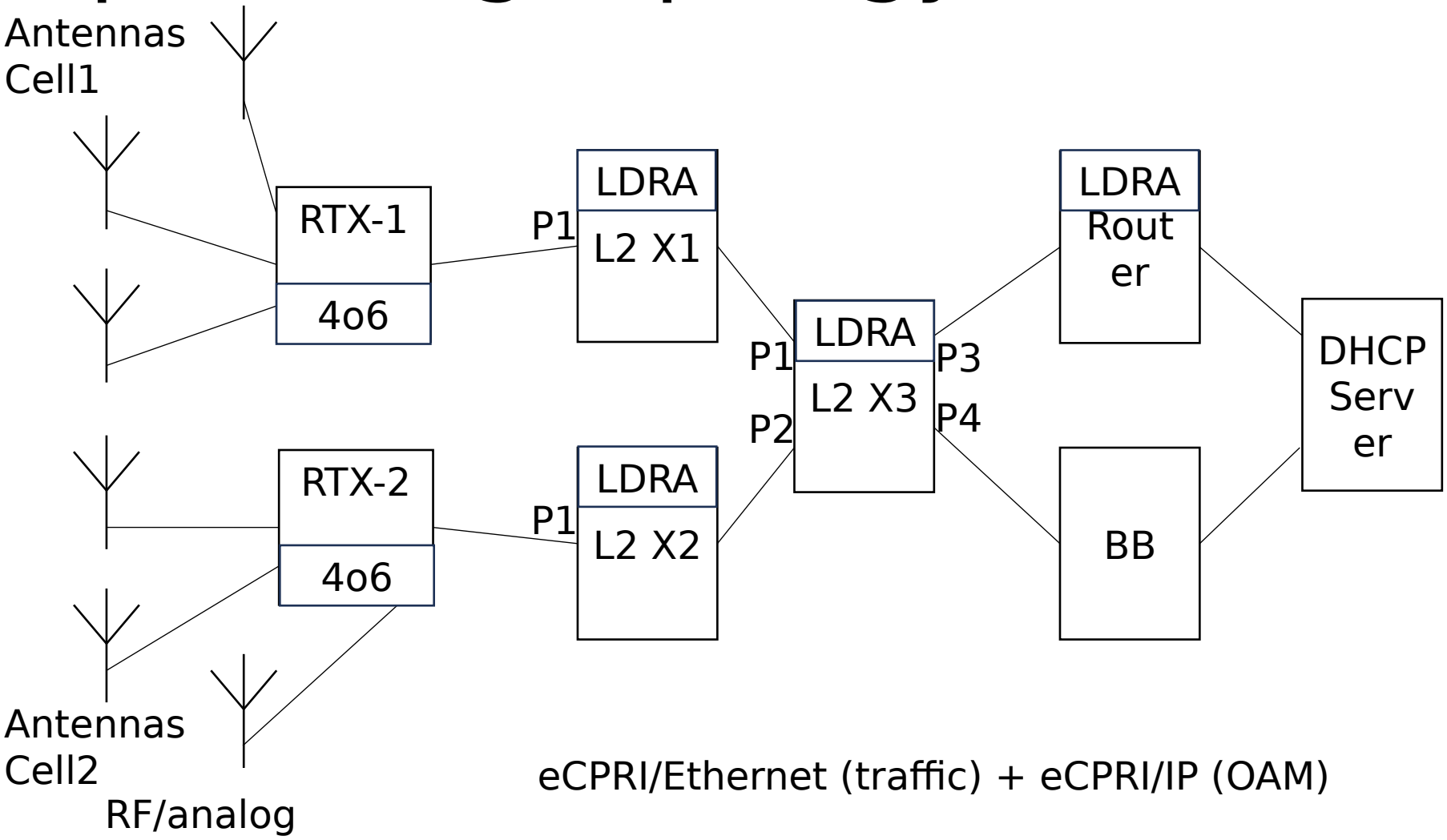
RAN Example: The LDRA for providing topology



On IPv6 the L2 topology is known by the server because of LDRA rfc6221.

On IPv4 this is not possible as LDRA doesn’t exist and DHCP4 doesn’t allow multiple RAIO.

RAN Example: The LDRA + 4o6 for providing topology



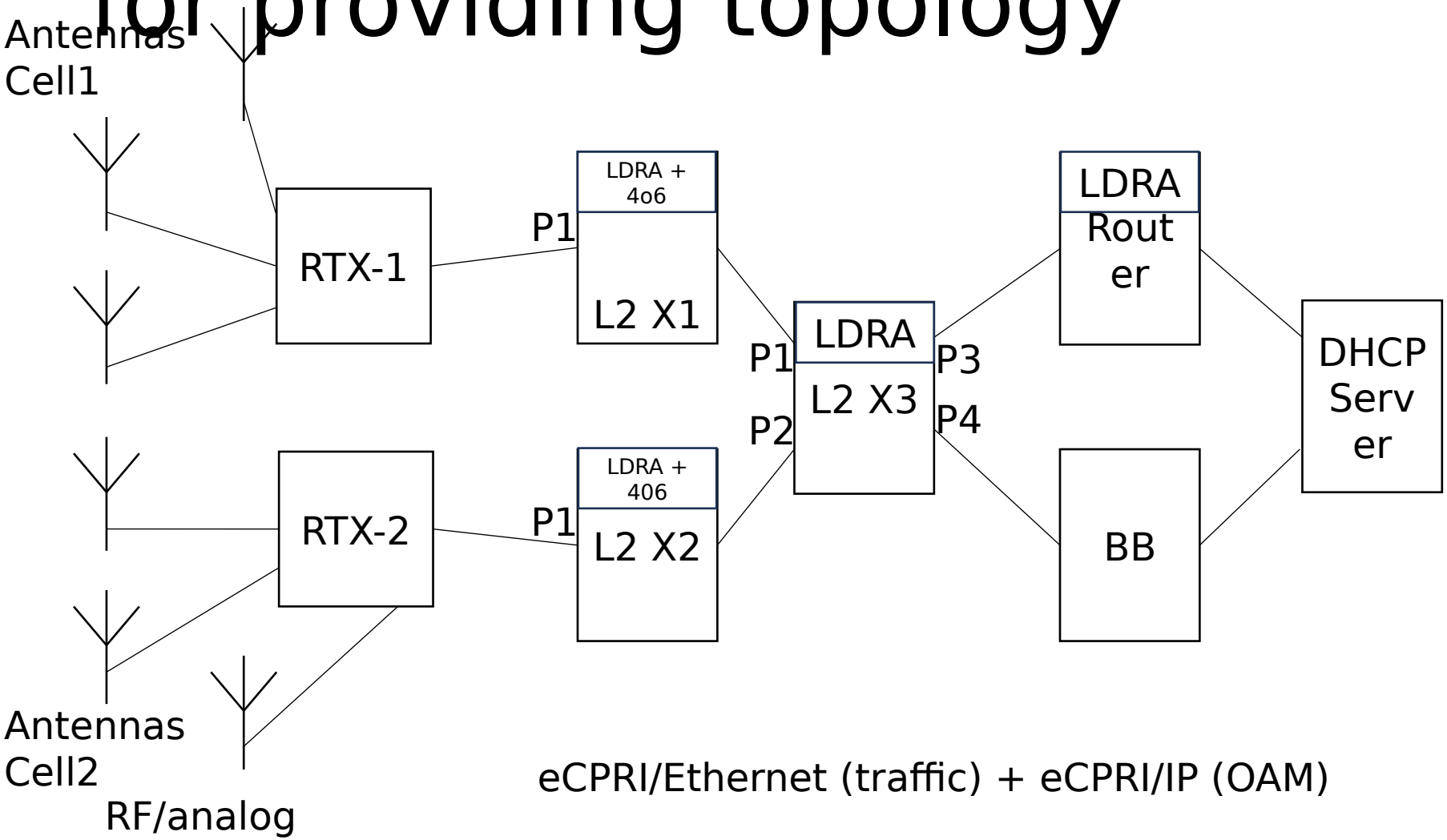
The adoption of 4o6 at the client allows reusing LDRA for Topology discovery.

The side effect is that adoption of DHCPv4 over DHCPv6 rfc7341 is needed in all clients.

Points in the new draft

- Provides a solution for DHCP Clients using existing technology and IPv6
- Poses no requirements on the Clients
- DHCPv4 over DHCPv6 encapsulation (4o6RA) is implemented at the intermediate nodes:
  - The 4o6RA shall be part of any DHCPv6 Relay Agent, in details
    - The 4o6RA shall create DHCPV4-QUERY from the DHCP request message from the client
    - The 4o6RA shall terminate DHCPV4-RESPONSE, extract DHCP response and forward to the client
    - The 4o6RA shall discard invalid messages

RAN Example: The LDRA + 4o6 at the switch completes the scenario for providing topology



The addition of DHCPv4 over DHCPv6 to LDRA agent allows the Topology Discovery on IPv4 as well as IPv6 without posing requirements to the client.

Thanks