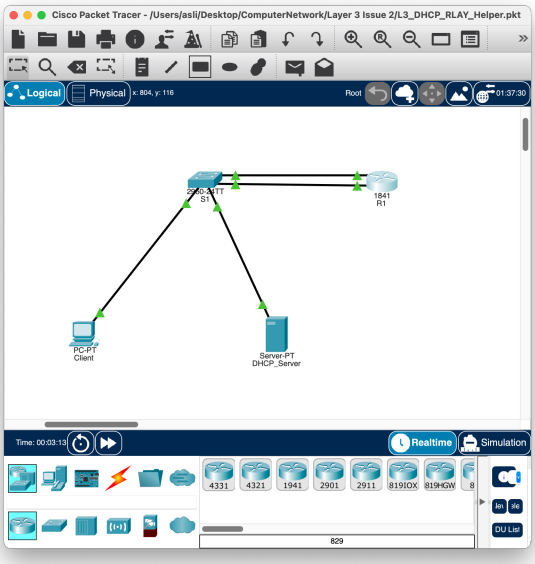
L3 – DHCP Relay Agent Misconfiguration

A company maintains two separate office networks: Accounting and Administration. The company's only DHCP serveris located in the Accounting Office.
When a new employee connects their computer to the Administration Office network, the device:

- Cannot access the Internet
- Fails to obtain an IP address

Despite the network cables, switch ports, and router interfaces being functional, the PC client remains without a valid IP address.

This problem stems from the fact that **DHCP is a broadcast-based protocol** and does not travel across routers by default.
Since the **DHCP server is in a different subnet** (Accounting Office), DHCP Discover messages from the Administration Office do **not reach the server**, and therefore the client cannot receive an offer.



To resolve the issue, the router interface connected to the Administration Office network was configured with the **ip helper-address**.
This configuration instructs the router to **relay DHCP requests as unicast packets** to the server. As a result, the new employee's device was successfully assigned an IP address automatically and gained access to the internet.

```
Router(config-if)#interface FastEthernet0/0
Router(config-if)#ip helper-address 192.168.1.10
Router(config-if)#
```

This issue is classified as a Layer 3 (Network Layer) problem. The root cause involved the router not forwarding broadcast packets between IP subnets. By configuring a helper address, the router took on the role of a DHCP Relay Agent, solving the problem at the network layer.