

# Advanced Computer Networking (ACN)

IN2097

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Rather simple modification of the provided template.

### 1c) Client VM configuration script (only shown for client1)

```
ip addr add 192.168.1.2/24 broadcast 192.168.1.255 dev enp2s0
ip link set enp2s0 up
ip route add 192.168.2.0/24 via 192.168.1.1 dev enp2s0 # route to client2
ip route add 192.168.3.0/24 via 192.168.1.1 dev enp2s0 # route to client3
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**Note:** Routes without gateway (via 192.168.1.1) will also work, however, client1 will then assume the other clients to be in a local, non-routed network. For the purpose of creating a router, we explicitly want to route packets.

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### 1d) Router VM configuration script

- RTFM: install driver, bind interfaces, create hugepages
- Configuring interfaces using `ip` is unnecessary (changing to DPDK driver removes the configuration)

### 1e) Ping / tcpdump test

ping tool typically creates ICMP packets, however, tcpdump sees only ARP packets.

- Reason: To create ICMP packets, client1 needs to know the next hop's destination MAC address.
- If you specified a gateway (see Problem 1b), client 1 creates ARP requests for 192.168.1.1 that are forwarded to client2. ARP reply is not created at client2, as client2 is not correctly addressed in the ARP request.
- If you did not specify a gateway (see Problem 1b), client 1 creates ARP requests for 192.168.2.2 that are forwarded to client2. ARP reply is created at client2, as it is correctly addressed, however, the unidirectional forwarder does not transmit the ARP replies to client1.
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### 1f) Bidirectional forwarding

Modify `start_thread()` to start a second thread forwarding from dst to src