# Guide 3

## Ex 1.5

| Ping from: | Ping to: | Connectivity | Packets (PC1-Switch1 link) | Packets (PC3-Switch1 link) |
|---|---|---|---|---|
| PC2 | Switch1 | No | ARP | N/A |
| PC2 | PC3 | No | ARP | N/A |
| PC2 | 192.168.1.34 | No | ARP | N/A |
| PC3 | Switch1 | Yes | N/A | ARP, ICMP |
| PC3 | PC2 | No | N/A | ARP |
| PC3 | 192.168.1.34 | No | N/A | ARP |
| Switch1 | PC3 | Yes | N/A | ICMP |
| Switch1 | 192.168.1.34 | No | N/A | ARP |

PCs from different vlans are unable to communicate since the switch is unable to make the connection between vlans. Neither PC1 nor PC2 can communicate with Switch1.

- **PC2 → Switch1**
  - There's no connectivity because PC2's vlan has no configured IP;
- **PC2 → PC3**
  - There's no connectivity because they are in different vlans;
- **PC2 → 192.168.1.34**
  - There's no connectivity because the IP doesn't exist;
- **PC3 → Switch1**
  - There's connectivity because they are in the same vlan;
- **PC3 → PC2**
  - There's no connectivity because they are in different vlans;
- **PC3 → 192.168.1.34**
  - There's no connectivity because the IP doesn't exist;
- **Switch1 → PC3**
  - There's connectivity because they are in the same vlan;
- **Switch1 → 192.168.1.34**
  - There's no connectivity because the IP doesn't exist;

ARP packets occur in every new communication in the same link. ICMP packets only occur when there is connectivity through the link.

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## Ex 2.2

| Ping from: | Ping to: | | Filtered Packets |
|---|---|---|---|

| | | Connectivity | |
|---|---|---|---|
| PC1 | Switch1 | Yes | N/A |
| PC1 | Switch2 | Yes | ARP, ICMP |
| PC1 | PC2 | No | ARP |
| PC1 | PC3 | No | ARP |
| PC2 | Switch1 | No | ARP |
| PC2 | Switch2 | No | ARP |
| PC2 | PC2 | Yes | N/A |
| PC2 | PC3 | Yes | ARP, ICMP |

- PC1 → Switch1
  - There's connectivity because they are in the same vlan;
- PC1 → Switch2
  - There's connectivity because they are in the same vlan;
- PC1 → PC2
  - There's no connectivity because they are in different vlans;
- PC1 → PC3
  - There's no connectivity because they are in different vlans;
- PC2 → Switch1
  - There's no connectivity because they are in different vlans;
- PC2 → Switch2
  - There's no connectivity because they are in different vlans;
- PC2 → PC2
  - There's connectivity because it's connecting with itself;
- PC2 → PC3
  - There's connectivity because they are in the same vlan;

The appearances of packets in this case is similar to the ones in Ex 1.5.

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# Ex 3.5

| Ping from: | Ping to: | Connectivity | Filtered Packets |
|---|---|---|---|
| PC4 | Switch4 | No | ARP |
| PC4 | Router | Yes | ARP, ICMP |
| PC4 | PC5 | Yes | ARP, ICMP |
| PC4 | 192.1.1.100 | No | ICMP |
| PC5 | Switch4 | No | ARP, ICMP |
| PC5 | Router | Yes | IMCP |
| PC5 | PC4 | Yes | ICMP |

| | | | |
|---|---|---|---|
| PC5 | 192.1.1.100 | No | ICMP |

- PC4 → Switch4
  - There's no connectivity because they are in different vlans and there are no valid routes between them;
- PC4 → Router
  - There's connectivity because there's a valid route between them;
- PC4 → PC5
  - There's connectivity because, even though they are in different vlans, there's a valid route through the router
- PC4 → 192.1.1.100
  - There's no connectivity because the destination doesn't exist;
- PC5 → Switch4
  - There's no connectivity because they are in different vlans and there are no valid paths between them;
- PC5 → Router
  - There's connectivity because there's a valid route between them;
- PC5 → PC4
  - There's connectivity because, even though they are in different vlans, there's a valid route through the router
- PC5 → 192.1.1.100
  - There's no connectivity because the destination doesn't exist;