Computer Networks Lab

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Dated: 28th September, 2025.

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Core Network Architecture

- **Main Router:** Router1 (WAN Backbone)

- **LAN Router 2:** Router2 (Manages PC1-PC11, PC23)

- **LAN Router 3:** Router3 (Manages PC12-PC22, PC24).

IP Addressing Scheme

- **WAN Links:** 10.0.12.0/30 and 10.0.13.0/30
- **Router2 LAN:** 192.168.10.0/24
- **Router3 LAN:** 192.168.20.0/24
- **PC23 Direct:** 192.168.30.0/30

Connectivity test results

Test 1: PC4 to PC9 – SUCCESSFUL
Description: Intra-router communication (same LAN, different switches)
Source: PC4 (192.168.10.5)
Destination: PC9 (192.168.10.10)
Path: PC4 → Switch2 → Switch1 → Router2 → Switch1 → Switch3 → PC9
Result: Ping successful - All packets transmitted and received
Significance: Verifies proper switch-to-switch communication within Router2's LAN

Test 2: PC23 to Router2 – SUCCESSFUL
Description: Direct PC-to-router connection test
Source: PC23 (192.168.30.2)
Destination: Router2 Gig0/2 (192.168.30.1)
Path: Direct point-to-point connection
Result: Ping successful - Immediate response from router interface
Significance: Confirms WAN-level direct access configuration and /30 subnet functionality

Test 3: PC2 to PC6 – SUCCESSFUL

Description: Intra-switch communication test

Source: PC2(192.168.10.3)
Destination: PC6(192.168.10.7)
Path: PC2 → Switch2 → PC6 (same switch)
Result: Ping successful - Minimal latency, direct switch communication
Significance: Validates basic LAN connectivity and switch

Test 4: PC17 to PC8 - SUCCESSFUL
Description: Cross-router WAN communication test
Source: PC17 (192.168.20.7) - Router3 LAN
Destination: PC8 (192.168.10.9) - Router2 LAN
Path: PC17 → Switch5 → Switch4 → Router3 → Router1 → Router2 → Switch1 → Switch3 → PC8
Result: ✅ Ping successful - Packets routed through WAN backbone
Significance: Confirms proper static routing configuration between different LANs