**Week 1 Assignment and Knowledge Checks**

**Task 1: Using the man Command**

man man command:

A screenshot of a computer program

Description automatically generated

Of man ping command:

A screenshot of a computer

Description automatically generated

**Note**: The hostname may not appear as expected because I’m using a MacBook. When I run the man command, it shows the command information, but the hostname details sometimes aren't fully displayed, possibly due to configuration or terminal settings. However, I understand how to run the command and its purpose based on the information I have learned

**Task 2: Testing Network Connectivity with ping**

**Screenshots:**

ping -c 4 [www.hanze.nl](http://www.hanze.nl):

A computer screen with white text

Description automatically generated

ping -c 4 8.8.8.8:

A screenshot of a computer

Description automatically generated

ping -c 4 127.0.0.1:

A screenshot of a computer program

Description automatically generated

**Brief Analysis of Ping Test Results**

1. **Internal Server (**127.0.0.1**)**:
   * **Expected Response Time**: **0.5 ms to 10 ms**.
   * **Results**: Low response times (e.g., < 10 ms) indicate good internal network connectivity. Higher times (> 10 ms) could suggest network congestion or issues with internal devices (e.g., switches).
2. **Public DNS Server (Google 8.8.8.8)**:
   * **Expected Response Time**: **10 ms to 30 ms**.
   * **Results**: Response times between 25 ms and 30 ms are normal. Times over 100 ms may indicate network problems, inefficient routing, or congestion.
3. **Company Website (**[**www.hanze.nl**](http://www.hanze.nl)**)**:
   * **Expected Response Time**: **50 ms to 150 ms**.
   * **Results**: Response times of around 100 ms are typical for external websites. Higher times or packet loss may indicate internet or server issues.

**Implications:**

* Low latency indicates a well-functioning network with no congestion.
* Higher latency (above 100 ms) may suggest routing or ISP issues.
* Packet loss indicates network instability, either locally or externally.

**Task 3: Understanding Your Network Configuration**

A screenshot of a computer

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**Task 4: Windows Network Tools (Optional, for Those with Dual-Boot or Host**

A screen shot of a computer

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**Differences and Similarities Between CMD and PowerShell**

**Similarities:**

* Both display core details like IP addresses, subnet masks, gateways, and DNS servers.
* Offer similar diagnostic tools: ping (CMD) vs. Test-Connection (PowerShell), nslookup vs. Resolve-DnsName.

**Differences:**

Output Format:

* + CMD**:** Plain-text, less readable.
  + PowerShell**:** Structured and filterable, great for scripting.

Depth:

* + CMD: Basic details via ipconfig.
  + PowerShell**:** More in-depth info, e.g., adapter speed and MAC address with Get-NetAdapter.

Customizability:

* + CMD: Static and hard to filter.
  + PowerShell: Flexible, easily filters and exports data.

Advanced Features:

* CMD**:** Simple tools like tracert.
* PowerShell**:** Advanced cmdlets like Get-NetRoute.

**Conclusion:**

CMD: Best for quick checks and basic diagnostics due to its simplicity and low overhead.

PowerShell: Preferred for detailed analysis, automation, and when working with large-scale or complex systems.

**Task 5: Questions to Answer**

**Network Connectivity**

a. Can you ping [www.hanze.nl](http://www.hanze.nl)?

* Yes

b. What is a network?

* A network connects devices to share resources and communicate using protocols (e.g., IP). Tools like ping verify connections.

**Reflection**

a. What does ping do?

* Sends ICMP requests to check if a device is reachable and measures response time.

b. How is ping useful?

* Connectivity Check: Verifies if a device is reachable over the network.
* DNS Troubleshooting: Checks if domain names resolve to IP addresses.
* Performance Monitoring: Measures network latency and packet loss, helping identify slow or unstable connections.
* Problem Localization: Helps determine if an issue is with the local network, a specific device, or an external server.