Window Networking Commands: ipconfig

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- To access the updated handouts, please click on the following link: https://yasirbhutta.github.io/windows/docs/ipconfig.html

Here are some practical tasks to help you get hands-on experience with the ipconfig command:

1. Check Your IP Configuration

Task: Display the IP configuration for all network adapters on your machine.

Command:

```
ipconfig
```

Goal: Identify your computer's IP address, subnet mask, and default gateway.

2. View Detailed IP Information

Task: Display detailed information for all network interfaces, including DNS, DHCP, and MAC addresses.

Command:

```
ipconfig /all
```

Goal: Record the MAC address and DNS server details.

3. Release Your Current IP Address

Task: Release the current IP address assigned to your machine.

Command:

```
ipconfig /release
```

Goal: Verify that the IP address is no longer assigned by checking the configuration again with ipconfig.

4. Renew Your IP Address

Task: Renew the IP address after releasing it.

Command:

```cmd
ipconfig /renew
```

Goal: Check if a new IP address has been assigned after running the command.

5. Display DNS Cache

Task: View the current DNS resolver cache entries.

Command:

```cmd
ipconfig /displaydns
```

Goal: Analyze the cached DNS entries and understand which domains have been recently resolved.

6. Flush DNS Resolver Cache

Task: Clear the DNS resolver cache to remove any old or incorrect DNS entries.

Command:

```cmd
ipconfig /flushdns
```

Goal: Confirm that the DNS cache has been successfully cleared.

7. Register DNS

Task: Force your computer to register its DNS name and refresh the DHCP lease.

Command:

```cmd
ipconfig /registerdns
```

Goal: Check if the computer's DNS name has been re-registered successfully and troubleshoot DNS issues.

8. Check for Link-Local IPv6 Address

Task: Check for the link-local IPv6 address of your machine.

Command:

```
ipconfig
```

Goal: Locate the IPv6 address starting with "fe80::" and understand its significance.

10. Check Autoconfiguration Status

Task: Check if your computer has automatically assigned an IP address from the APIPA range (169.254.x.x).

Command:

```
ipconfig /all
```

Goal: Determine if your computer is using an APIPA address and identify why it may not be getting an IP address from the DHCP server.

APIPA (Automatic Private IP Addressing) is a feature that assigns an IP address to a computer when DHCP is not available. The APIPA range is:

- **169.254.0.1 to 169.254.255.254**

The subnet mask for APIPA is **255.255.0.0**. Devices using APIPA can communicate only with other devices on the same local network that also have an APIPA address.

11. Identify IPv4 vs. IPv6 Configuration

Task: Compare the IPv4 and IPv6 configuration details for all adapters.

Command:

```
ipconfig /all
```

Goal: Distinguish between the IPv4 and IPv6 addresses and understand the differences in their format and use cases.