Sheet for Common Network Commands

Here's a quick reference guide for some useful network commands with examples:

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1. ping (Check Connectivity)

Description: Used to check the network connectivity between the local machine and a remote host. It sends ICMP Echo Request packets and waits for an Echo Reply to confirm that the destination is reachable.

- **Basic Syntax**:

```bash
Copy
ping <hostname or IP>
```

- **Example**:

```bash
Copy
ping google.com
```

- **Example Output**:

```python
Copy
PING google.com (172.217.5.78): 56 data bytes
64 bytes from 172.217.5.78: icmp_seq=0 ttl=118 time=14.4 ms
64 bytes from 172.217.5.78: icmp_seq=1 ttl=118 time=14.5 ms
```

- **Explanation**: The command sends packets to `google.com` and waits for a reply. If the packets are returned, the connection is successful.

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2. traceroute / tracert (Trace Packet Routes)

Description: This command traces the path packets take to reach a destination. It shows each router or hop along the route, useful for troubleshooting network delays or issues.

- **Basic Syntax**:
  - On Linux/macOS:

```bash
Copy
traceroute <hostname or IP>
```

    o   On Windows:

```bash
Copy
tracert <hostname or IP>
```

- **Example** (Linux/macOS):

```bash
Copy
traceroute google.com
```

- **Example** (Windows):

```bash
Copy
tracert google.com
```

- **Example Output**:

```arduino
Copy
traceroute to google.com (172.217.5.78), 30 hops max, 60 byte packets
1   <1 ms   <1 ms   <1 ms 192.168.0.1
2   10 ms    9 ms    9 ms 10.0.0.1
3   14 ms   12 ms   14 ms 172.217.5.78
```

- **Explanation**: This shows the hops taken from your machine to `google.com`. Each line represents a router the packets pass through, with the response time in milliseconds.

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3. netstat (Network Statistics)

Description: Provides network statistics, including open connections, listening ports, routing tables, and interface statistics.

- **Basic Syntax**:

```bash
Copy
netstat <options>
```

- **Example**:

```bash
Copy
netstat -a
```

- **Explanation**: The `-a` option lists all active connections and listening ports.

- **Example Output**:

```css
Copy
Proto Recv-Q Send-Q Local Address        Foreign Address
State
tcp       0      0 0.0.0.0:80            0.0.0.0:*
LISTEN
tcp       0      0 192.168.1.2:22        192.168.1.3:51000
ESTABLISHED
```

- **Explanation**: This shows active connections, listening ports, and the current states (e.g., `LISTEN`, `ESTABLISHED`).

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4. curl (Make HTTP Requests)

Description: Curl is a command-line tool for transferring data from or to a server, supporting various protocols like HTTP, HTTPS, FTP, etc. It's mainly used for testing APIs or making HTTP requests.

- **Basic Syntax**:

```bash
Copy
curl <URL>
```

- **Example**:

```bash
Copy
curl http://example.com
```

- **Example** (GET request to API):

```bash
Copy
curl -X GET https://jsonplaceholder.typicode.com/posts
```

- **Example Output**:

```php
Copy
<html>
<head><title>Example Domain</title></head>
<body>
<h1>Example Domain</h1>
<p>This domain is for use in illustrative examples in documents.</p>
</body>
</html>
```

- **Explanation**: The command makes an HTTP request to `http://example.com` and returns the HTML content of the webpage.

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5. dig / nslookup (DNS Lookup)

Description: Both `dig` and `nslookup` are used to query DNS servers for domain name resolution. `dig` provides more detailed output, while `nslookup` is more basic and widely available.

- **Basic Syntax**:
    - Using `dig`:

        ```bash
        Copy
        dig <hostname>
        ```

    - Using `nslookup`:

        ```bash
        Copy
        nslookup <hostname>
        ```

- **Example** (dig):

    ```bash
    Copy
    dig google.com
    ```

- **Example** (nslookup):

    ```bash
    Copy
    nslookup google.com
    ```

- **Example Output** (dig):

    ```less
    Copy
    ; <<>> DiG 9.10.6 <<>> google.com
    ;; ANSWER SECTION:
    google.com.          300     IN      A       172.217.5.78
    ```

- **Example Output** (nslookup):

    ```makefile
    Copy
    Server:  UnKnown
    Address:  192.168.1.1
    ```

```
Name:     google.com
Addresses:  172.217.5.78
```

- **Explanation**: Both commands resolve the domain `google.com` to its corresponding IP address. The `dig` command provides more detailed DNS information compared to `nslookup`.

This cheat sheet provides basic usage and examples of some common networking commands used to check connectivity, trace network routes, monitor network statistics, make HTTP requests, and perform DNS lookups. Each command can be modified with additional options to suit specific network troubleshooting or monitoring needs.