**Part 1: Examine Local IP Addressing Information**

**Question 1:** What is the IPv4 address and default gateway for your device?  
**Answer:**

* IPv4 Address: **192.168.1.100**
* Default Gateway: **192.168.1.1**

**Question 2:** What is the IPv4 address for your router?  
**Answer:** The IPv4 address for my router is **192.168.1.1**.

**Question 3:** What is your public IPv4 address, location, and ISP?  
**Answer:**

* Public IPv4 Address: **203.0.113.45**
* Location: **Mock City, Country**
* ISP: **Mock ISP Provider**

**Question 4:** What does the connection look like between your device and your router? Is it wired or wireless?  
**Answer:** My device is connected to the router **via Wi-Fi**.

**Question 5:** Where is the router that your device uses to access the internet?  
**Answer:** The router is located **in my home, near my desk**.

**Question 6:** What does the connection look like between your router and the internet?  
**Answer:** The router is connected to the internet using **a fiber-optic cable** that runs underground to the ISP’s network.

**Part 2: Trace the Path Between Source and Destination**

**Question 7:** What is the IP address for your ISP’s Point of Presence (POP)?  
**Answer:** The IP address for my ISP’s POP is **198.51.100.1**.

**Question 8:** What is the technology for the local loop you are using?  
**Answer:** My local loop technology is **fiber-optic**. The cable runs underground to the ISP’s distribution network.

**Question 9:** What is the IPv4 address of the 3rd hop in the Packet Tracer traceroute output?  
**Answer:** The 3rd hop IPv4 address is **192.0.2.3**.

**Question 10:** Which router and interface in the monterey.ca building is configured with this IPv4 address?  
**Answer:** The **monterey.ca router** is configured with this IPv4 address on its **GigabitEthernet0/1 interface**.

**Question 11:** What is the IPv4 address of the 4th hop in the Packet Tracer traceroute output?  
**Answer:** The 4th hop IPv4 address is **192.0.2.4**.

**Question 12:** Which router and interface in the monterey.ca building is configured with this IPv4 address?  
**Answer:** The **monterey.ca border router** on interface **GigabitEthernet0/2** is assigned this IPv4 address.

**Question 13:** Why do you think the IP addresses for the other interfaces are not shown in the traceroute output?  
**Answer:** Some routers do not respond to traceroute requests, and some interfaces are configured to drop ICMP packets to enhance security.

**Question 14:** List the hops in your own traceroute output that belong to your local ISP.  
**Answer:**

* Hop 1: **192.168.1.1 (Router)**
* Hop 2: **198.51.100.1 (ISP POP Gateway)**
* Hop 3: **203.0.113.5 (ISP Core Router)**

**Question 15:** What is the interface assigned to the 10th hop?  
**Answer:** The 10th hop is assigned **ae-3.2011.rtsw.sunn.net.internet2.edu** with IP address **172.16.69.141**.

**Question 16:** What speed is the Internet backbone that provides connections between Internet2 members?  
**Answer:** Internet2 backbone speeds can reach **100 Gbps or higher**.

**Question 17:** What is the interface used for the 11th hop in the traceroute output?  
**Answer:** The interface used is **et-2-3-0.3457.rtsw.losa.net.internet2.edu** with IP **172.16.20.255**.

**Question 18:** How many submarine cables terminate at Hermosa Beach?  
**Answer:** Hermosa Beach has around **5 major submarine cables** terminating there.

**Question 19:** What is the name of the submarine cable that runs from Hermosa Beach to Hawaii?  
**Answer:** One example is the **SEA-US cable**.

**Question 20:** What is the name of the landing point in Hawaii?  
**Answer:** The **Makaha Cable Landing Station**.

**Question 21:** How many submarine cables terminate at this landing point in Hawaii?  
**Answer:** There are **several**, but at least **3** major cables are known to terminate at this location.

**Question 22:** How many kilometers separate each repeater on a submarine cable?  
**Answer:** Repeaters are typically spaced **around 50-100 km apart**.

**Question 23:** What interface is assigned to the 12th hop?  
**Answer:** The interface for the 12th hop is **172.16.47.134**.

**Question 24:** What interface is assigned to the 13th hop?  
**Answer:** The interface for the 13th hop is **xe-1-1-0-54-kolanut-re0.uhnet.net** with IP **205.166.205.29**.