Cast:
The cast term here signifies some data(stream of packets) is being transmitted to the recipient(s) from the client(s) side over the communication channel that helps them to communicate.

1. Unicast: One-to-One Communication
- **What it is:** Unicast is communication between a single sender and a single receiver. It is the most common type of data transmission in networks.
- **How it works:** Data packets are sent from one device (source) directly to another device (destination).
- **Use Case:** Examples include web browsing (HTTP), file transfers, and video calls.
- **Example in Real Life:** Sending a personal text message to a friend.

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2. Broadcast: One-to-All Communication
- **What it is:** Broadcast is communication from one sender to all devices in a network.
- **How it works:** A data packet is sent to every device within the same network (subnet). All devices process the packet, whether they need it or not.
- **Use Case:** Examples include Address Resolution Protocol (ARP) and network discovery.
- **Example in Real Life:** Announcing a message over a public address system in a building.

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3. Multicast: One-to-Many Communication
- **What it is:** Multicast is communication from one sender to a specific group of devices (not all) in the network.
- **How it works:** Data packets are sent to multiple devices that have joined a multicast group. Devices outside the group do not receive the data.
- **Use Case:** Examples include video conferencing, live streaming, and online multiplayer gaming.
- **Example in Real Life:** Sending an invitation to a group of friends for a party.

Key Points:
1. **Unicast** is precise and used for direct communication.
2. **Broadcast** reaches everyone in the network, whether they need it or not.
3. **Multicast** is selective, targeting only interested recipients.

Question:

Is youtube video unicast or multicast?

YouTube videos primarily use **Unicast** communication, but **Multicast** can also be involved depending on the scenario.

Why Unicast?
- When you watch a YouTube video, the data is sent directly from YouTube's servers to your device. Each viewer establishes a unique connection to the server, meaning the video stream is individually delivered to each user.
- **Example:** If 100 people are watching the same video, YouTube sends 100 separate streams, one for each user.

When Multicast?
- Multicast is typically used for live streaming scenarios where many users watch the same content simultaneously. Instead of sending individual streams to each viewer, a multicast group can be used to send a single stream to all participants who have joined the group.
- However, for YouTube, this would only work if the underlying network infrastructure supports multicast, which is uncommon on the public internet.

Conclusion:
YouTube primarily relies on **Unicast** for regular video playback to ensure personalized experiences (e.g., video quality adjustments for your connection speed). Multicast might be leveraged in controlled network environments, such as corporate or educational settings, for efficient live streaming.

Unicast, Broadcast and Multicast in Computer Network – FAQs

Which method generates the most network traffic?
Broadcast creates the most traffic because it transmits information to all the nodes that are in the network regardless of whether the information that is being sent is what the node really wants or not.

Is Multicast more secure than Broadcast?
Yes, Multicast is more secure than Broadcast because data is sent only to a certain number of people in a network and not to all the available devices.

What are some examples of Unicast communication?
Typical example of Unicast communication is e-mail and file transfer because these data are sent from one person to one person.

When is Broadcast typically used in a network?
Broadcast is generally used when specific activities such as DHCP request or ARP request is to be conducted in a network which involves all the devices in a particular network.

What is IP multicast, and what does it require?
It is in IP multicast that way servers are able to forward number of data streams, with each requesting host dueing for a return of a single copy. It needs assistance from protocols such as the Internet Group Management Protocol (IGMP) and Multicast routing.

What is the Direct Broadcast Address used for?
The Direct Broadcast Address is used where a device in one network needs to send packet stream to all the devices in the other network. It involves the process to send all the bit of Host Id part of the IP address present in the header of the packet to 1.