

Communication Models in IoT

1. Request-Response Model:

- **Definition:** In the request-response model, one device (requester) sends a request to another device (responder), and the responder sends back a response. It is a synchronous communication model where the requester explicitly seeks information or an action.
- **Example:** A temperature sensor requesting the current room temperature from a thermostat and receiving the temperature as a response.

2. Exclusive Pair:

- **Definition:** "Exclusive pair" is a bi-directional, fully duplex communication model in which a dedicated communication link is set between the client and the server.
- **Example:** WebSocket enables a persistent, full-duplex communication channel over a single, long-lived connection like user's connection to the chat server is unique, creating a dedicated and secure communication link between the client (user's device) and the server.

3. Publish-Subscribe Model:

- **Definition:** In the publish-subscribe model, devices (subscribers) express interest in specific topics or types of events. Devices that generate information (publishers) send messages related to those topics. Subscribers receive only the messages they have subscribed to, decoupling senders and receivers.
- **Example:** A motion sensor publishing an event when motion is detected, and lights subscribing to that event to turn on when motion is sensed.

4. Pull-Push Model:

- **Definition:** The pull-push model combines elements of both pull and push communication. Devices can push information to others, and at the same time, devices can pull information when needed. It allows for a flexible communication approach where devices can actively request or passively receive information.
- **Example:** In a smart home system, a thermostat could push temperature updates to a central server, and a user's mobile app could pull the latest temperature when opened.