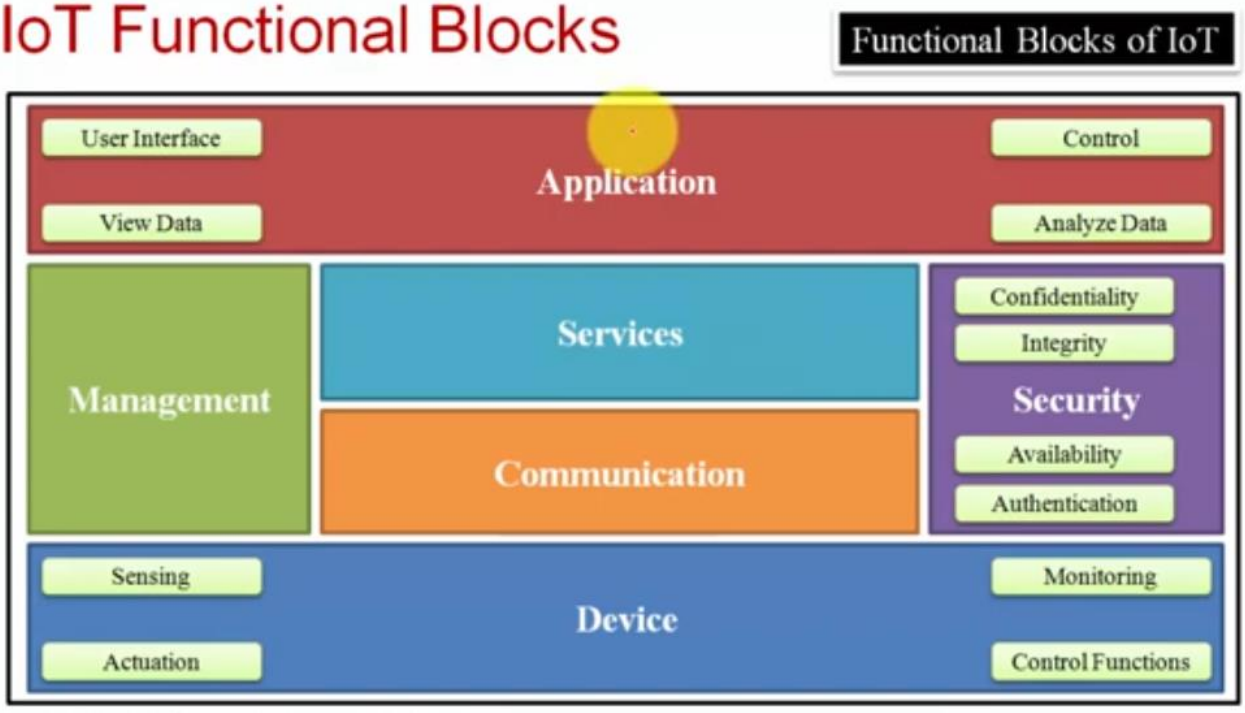
LOGICAL DESIGN OF IOT

Logical Design of IoT

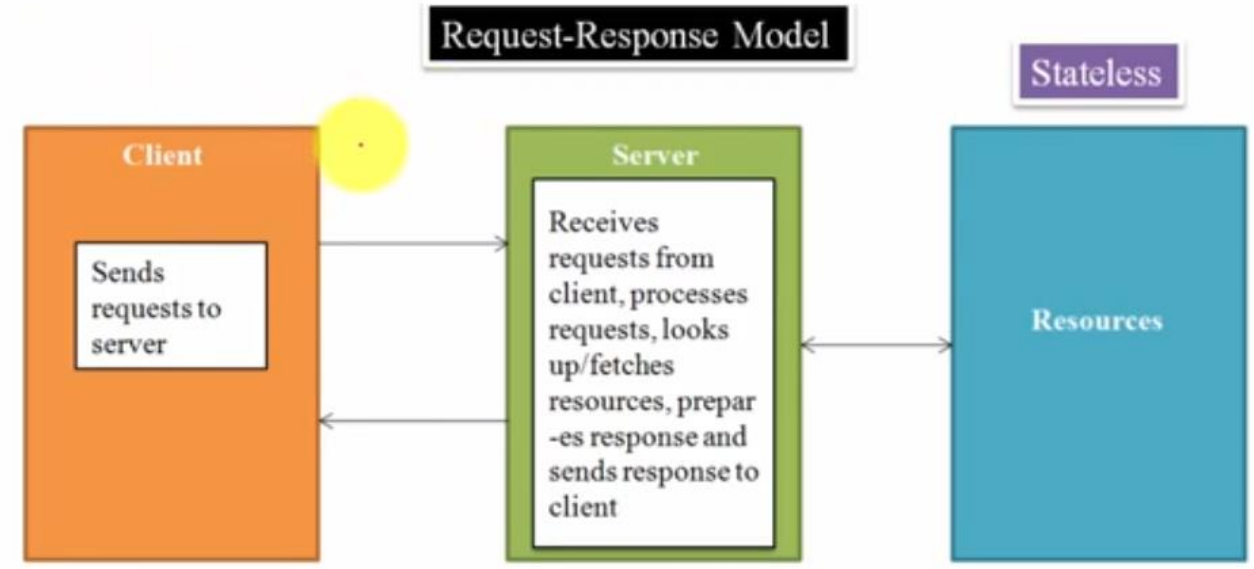
- IoT Functional Blocks
- IoT Communication Models
- IoT Communication APIs

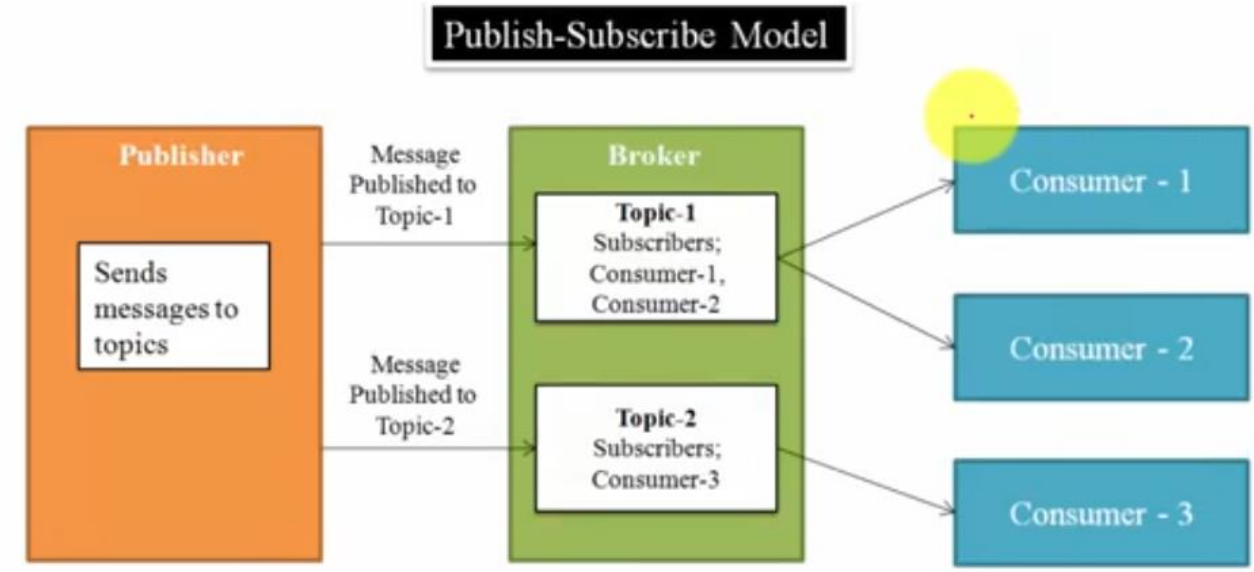
IoT Functional Blocks

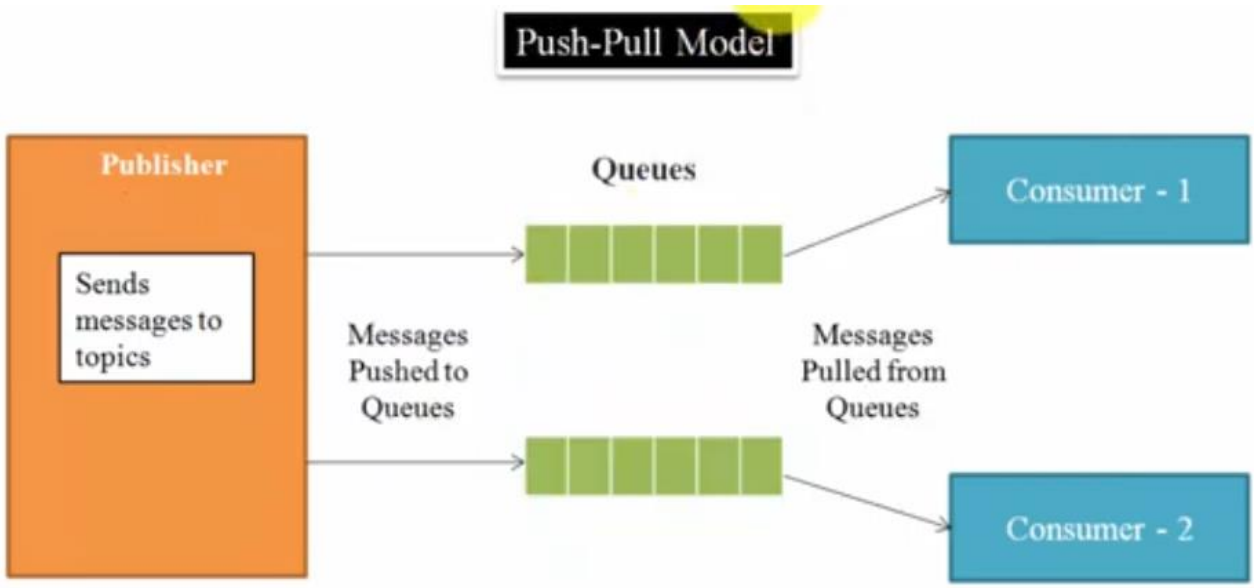


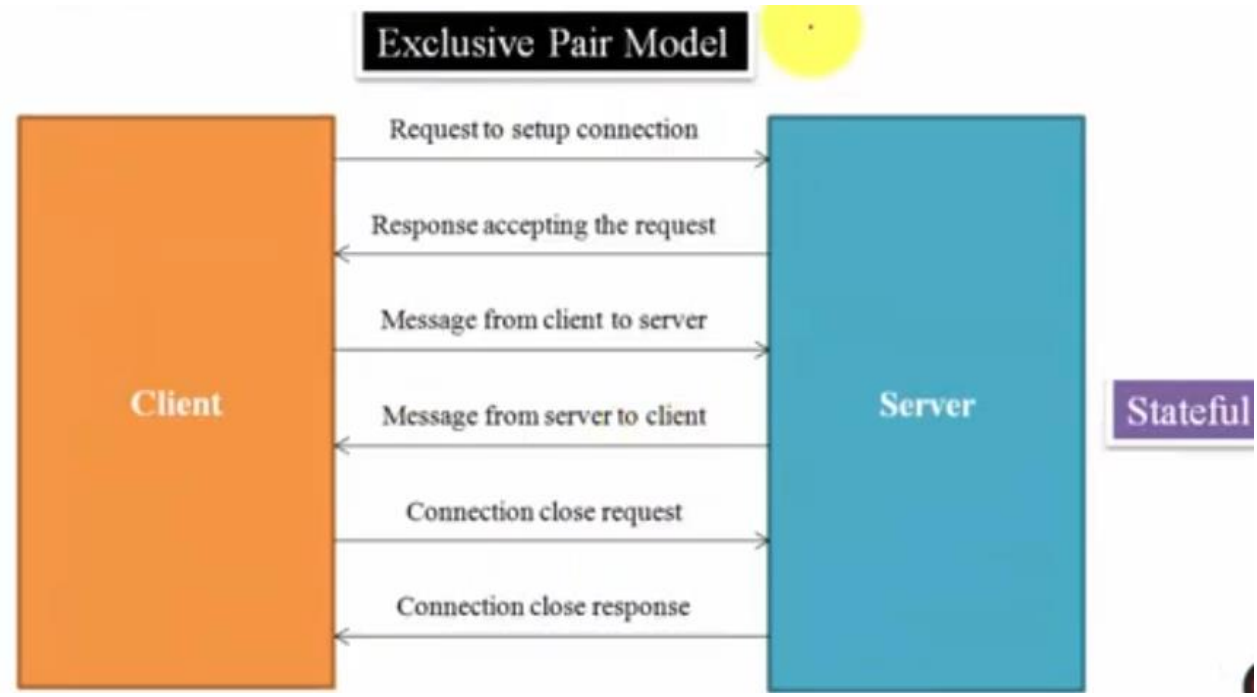
IoT Communication Models

- Request-Response Model
- Publish-Subscribe Model
- Push-Pull Model
- Exclusive Pair Model






Push-Pull Model
Publisher
Sends messages to topics
Queues
Consumer - 1
Messages Pushed to Queues
Messages Pulled from Queues
Consumer - 2


Exclusive Pair Model
Client
Request to setup connection
Response accepting the request
Message from client to server
Message from server to client
Connection close request
Connection close response
Server
Stateful

IoT Communication APIs

- REST-based Communication APIs
- WebSocket-based Communication APIs

- REpresentational State Transfer (REST) is a set of architectural principles by which we can design web services and web APIs that focus on a system's resources and how resource states are addressed and transferred
- REST APIs follow request-response model
- REST architectural constraints apply to components, connectors, and data elements within a system

REST-based Communication APIs

https://www.accuweather.com/weather?location=bhimavaran

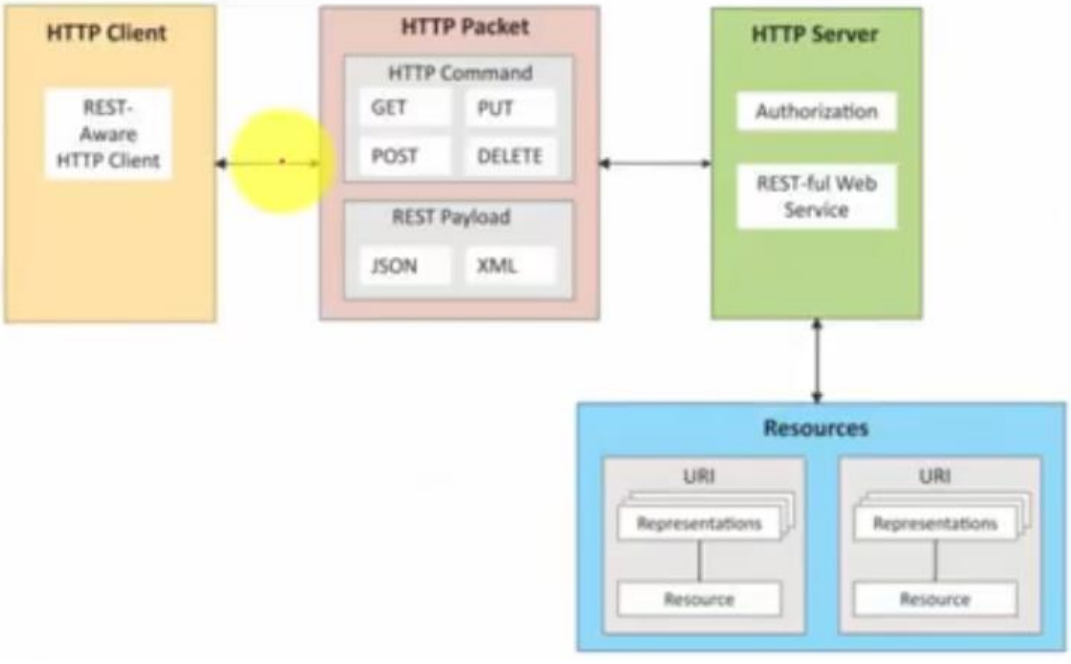
- REST architectural constraints are:
  - Client-Server
  - Stateless
  - Cacheable
  - Layered System
  - Uniform Interface
  - Code on Demand

- A RESTful web service is a web API implemented using HyperText Transfer Protocol (HTTP) and REST principles

- RESTful web service is a collection of resources which are represented by URIs

- Clients send requests to these URIs using HTTP methods like GET, POST, PUT, DELETE

Communication with REST APIs



WebSocket-based Communication APIs

- Allows full-duplex communication between clients and servers
- Follows exclusive pair communication model
- WebSocket-based communication is stateful
- No need to establish connection for each request
- Suitable for IoT applications that need low latency