

1. The same hotel/room can be booked by a different channel /app other than the app we are designing
2. Hotel DB Locking mechanism should handle this concurrency in DB side with a timeout (e.g 10 min)
3. Hotel db may also reserve some booking for our app
3. Phone Call/Walking will be manual booking through staff/CSR
4. Check -in ( Can be Automated by face recognition, check in desk , mobile/smart device)
5. Cleaning cart will have one device supplied by the company which will allow housekeeping staff to enter the particular room

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- The diagram illustrates a complex system architecture for a hotel booking system, organized into several layers and components:
- Actors:**
    - Hotel staff:** Interacts with the API Gateway and the Housekeeping Service.
    - Customer:** Interacts with the Web and Mobile/Smart/Device interfaces.
    - Housekeeping Staff:** Interacts with the Housekeeping Service and the Cleaning Kit/proprietary Device.
  - Frontend & Mobile:**
    - Web:** Serves the customer interface, utilizing */Frontend Caching/Varnish Hotel Images/videos/*.
    - Mobile/Smart/Device:** Provides a mobile interface for the customer.
  - Backend Services & APIs:**
    - API Gateway:** Acts as the central entry point for all requests.
    - App Server:** The core application logic, including:
      - User Onboarding Service:** Manages user registration and login.
      - Authorization Authentication Service:** Handles user authentication and permissions.
      - Search/View Service (type of rooms):** Provides room search and viewing capabilities.
      - Booking Service (Can be used by customer/ hotel staff):** Manages room bookings.
      - Room Check -In Service (System):** Manages room check-in and status.
    - Onboarding Service (Onboarding of Hotels):** Manages hotel onboarding.
    - Logstash:** Collects and processes logs.
    - ELK (Elasticsearch, Logstash, Kibana):** Provides a centralized logging and monitoring solution.
  - Cloud & External Services:**
    - Azure Notification Hub Service:** Manages notifications for mobile devices.
    - Azure AD (Active Directory):** Provides identity and access management.
    - Azure Redis Cache:** Provides distributed caching for the application.
    - Azure Cosmos DB:** Stores hotel data, including names, addresses, and images.
    - Customer Data and booking Data RDBMS (Azure SQL):** Stores customer and booking data.
    - Recommendation Engine (Hadoop/Spark/Big Data):** Provides personalized recommendations based on user behavior.
    - 3rd party integration payment (already existing):** Handles payment processing.
  - Internal Services & Workflow:**
    - Use Case 1: Customer Walks In - Auto Check In:** Automates the check-in process.
    - Use Case 2: Smartphone Checkin:** Allows for mobile check-in.
    - Use Case 3: Manual Desk Checkin:** Provides a manual check-in option.
    - Room Status (to be discussed in presentation):** A component for managing room status.
    - Worker nodes:** Handle background tasks like invoice generation, notifications, and booking status checks.
    - Scheduled job (check nearing the checkout time):** Triggers actions for upcoming checkouts.

1. low latency
2. availability
3. fault tolerance

Capacity planning : Not done