API Gateway

- AWS service to to create, publish, maintain, monitor, and secure APIs at any scale.
- Act as the "front door" for applications to access data, business logic, or functionality from your backend services.
- pay-as-you-go service
- Using API Gateway, you can create RESTful APIs and WebSocket APIs.
- can route requests to private resources in your VPC. Using HTTP APIs, APIs can be built for private ALBs, private NLBs, and IP-based services registered in AWS Cloud Map, such as ECS tasks.
- To achieve resiliency API gateway:
    - manages traffic by allowing to set throttling rules based on the number of requests / second for each HTTP method.
    - can also set up a cache with customizable keys and time-to-live in seconds to avoid hitting backend services for each request.
- After an API is deployed and in use, backend performance metrics such as API calls, latency, and error rates ca be visually monitored via dashboard. (API gateway integrated with CloudWatch)
- **API Gateway API integration type**
    - Depends on type of integration endpoint and data flows to and from integration endpoint.
    - Programmatically, we can choose integration type be setting the type property on the Integration resource.
    - Lambda function –
        - Lambda Proxy integration {type : AWS_PROXY} : do not set the integration request or the integration response. API Gateway passes the incoming request from the client as the input to the backend Lambda function.
        - Lambda Custom integration {type : AWS } : configure both the integration request and integration response and set up necessary data mappings from the method request to the integration request, and from the integration response to the method response.
    - HTTP Endpoint
        - HTTP proxy integration {type : HTTP_PROXY} : do not set the integration request or the integration response. API Gateway passes the incoming request from the client to the HTTP endpoint and passes the outgoing response from the HTTP endpoint to the client.
        - HTTP custom integration {type : HTTP } : you must configure both the integration request and integration response. You must set up necessary data mappings from the method request to the integration request, and from the integration response to the method response.
    - Mock integration {type : MOCK}
    - API Gateway returns a response without sending the request further to the backend.
    - Also used to return CORS-related headers to ensure that the API method permits CORS access.
    - API Gateway console integrates the OPTIONS method to support CORS with a mock integration.