Brokers Configuration

- The Kafka cluster consists of 3 Kafka brokers.
- Each broker has a unique `KAFKA_BROKER_ID`, and every broker connects to **zookeeper** service running at port `2181`
- All brokers use `PLAINTEXT` protocol for communication
- Brokers replicate the `__consumer_offsets` topic 3 times using the environment variable `KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR`
- Brokers have Default replication factor of 3 for automatically created topics. This is set using `KAFKA_DEFAULT_REPLICATION_FACTOR` environment variable.

Listeners

This tells a Kafka broker which **network addresses and ports to listen on** for incoming messages.

- the setup uses `0.0.0.0` network address for all brokers which means “listen on all available network interfaces.”
- One listener is for internal (Docker) communication.
- The other is for external (host machine) communication.
- The first broker listens on port 9092 for external communication and 19092 for internal communication
- The second broker listens on port 9093 for external communication and 29092 for internal communication
- The first broker listens on port 9094 for external communication and 39092 for internal communication

Advertised Listeners

This tells a Kafka brokers **how it should advertise itself to others** — like clients or other Kafka brokers.

- The first broker has 2 values for this:

    - `PLAINTEXT://kafka1:19092`: Used **inside Docker**. Other Docker containers can reach Kafka via `kafka1:19092`.
    - `PLAINTEXT_HOST://localhost:9092`: Used **outside Docker**, like from your laptop. You can connect via `localhost:9092`.
- The second broker uses `PLAINTEXT://kafka2:29092` for internal communication and `PLAINTEXT_HOST://localhost:9093` for external communication
- The third broker uses `PLAINTEXT://kafka3:39092` for internal communication and `PLAINTEXT_HOST://localhost:9094` for external communication

Topics configuration

Metrics topic

- **Number of partitions = 3**
- **Replication Factor = 3**
- **Retention period = 1 Day**

Logs topic

- **Number of partitions = 2**
- **Replication Factor = 3**
- **Retention period = 1 Day**