**Q1. How to make Dynamic Setting persistent?**

In **Apache Kafka**, topics and broker settings can be either **static (configured at startup)** or **dynamic (changeable at runtime without restart)**.

If you want **persistent dynamic settings** for topics and brokers, here’s how you can do it:

**1. Broker-Level Dynamic Settings**

Kafka brokers support **dynamic configuration changes** via ZooKeeper (pre-KRaft) or the **Kafka Controller (KRaft mode)**.

**Steps:**

* Use the Kafka CLI:

kafka-configs --bootstrap-server <broker>:9092 \

--entity-type brokers \

--entity-name <broker-id> \

--alter \

--add-config <key>=<value>

Example (change log retention for broker 1):

kafka-configs --bootstrap-server localhost:9092 \

--entity-type brokers \

--entity-name 1 \

--alter \

--add-config log.retention.hours=72

**Notes:**

* These changes are stored in **ZooKeeper/KRaft metadata** and are **persistent across restarts**.
* To reset a property to the default:

kafka-configs --bootstrap-server localhost:9092 \

--entity-type brokers \

--entity-name 1 \

--alter \

--delete-config log.retention.hours

**2. Topic-Level Dynamic Settings**

Topics can have their own overrides (like partitions, replication, retention).

**Change topic configs dynamically:**

kafka-configs.sh --bootstrap-server <broker>:9092 \

--entity-type topics \

--entity-name my-topic \

--alter \

--add-config retention.ms=604800000

This sets retention to **7 days** for my-topic.  
Again, stored in metadata → survives broker restarts.