**ActiveMQ**

In **ActiveMQ**, the terms **queue size**, **producer**, **consumer**, and **enqueue numbers** refer to different aspects of how messages are handled within the message broker. Here’s what they mean:

### ﻿✅ **1. Queue Size**

* The **queue size** refers to the number of **pending (unconsumed)** messages in the queue.
* It shows how many messages are currently waiting to be processed by consumers.
* A large or constantly growing queue size may indicate that consumers are slow, unavailable, or overwhelmed.
* **Formula:** Queue size = Enqueued messages - Dequeued messages

### ✅ **2. Producer**

* A **producer** is the client or application that **sends (produces)** messages to the ActiveMQ broker.
* Multiple producers can send messages to the same queue or topic.
* In monitoring tools, you might see metrics like:**Producer count:** The number of producers actively sending messages.
* **Producer rate:** The rate at which messages are being sent to the broker.

### ✅ **3. Consumer**

* A **consumer** is the client or application that **receives (consumes)** messages from the queue or topic.
* Consumers can operate in different modes (synchronous or asynchronous).
* Metrics to watch:**Consumer count:** The number of consumers actively subscribed to the queue.
* **Consumer rate:** The speed at which consumers process messages.

### ✅ **4. Enqueue Numbers**

* **Enqueue count** refers to the **total number of messages added** to the queue over time.
* It indicates the message inflow rate.
* **Dequeued count** refers to the **total number of messages removed** (consumed or expired) from the queue.
* The difference between enqueue and dequeue counts gives you the current queue size.

### 💡 **Example Scenario**

If you see:

* **Queue size:** 500
* **Enqueue count:** 1000
* **Dequeue count:** 500
* This means there are 500 messages currently waiting to be processed, as 1000 messages were added but only 500 were consumed.

﻿﻿Here’s a detailed explanation of the common ActiveMQ attributes you’ll find in the attributes section, including terms like producer flow control, store message size, min enqueue size, max page size, and max message size:﻿---﻿✅ 1. Producer Flow Control﻿Meaning:﻿This is a throttling mechanism that prevents producers from overwhelming the broker with too many messages.﻿When enabled, if the queue is full or reaches a memory limit, producers are paused until the broker has enough capacity to accept more messages.﻿Use case:﻿Helps prevent out-of-memory errors and keeps the broker stable under heavy load.﻿Configurable Attribute:﻿producerFlowControl="true" → enables flow control.﻿producerFlowControl="false" → disables it.﻿---﻿✅ 2. Store Message Size﻿Meaning:﻿The total size of persistent messages currently stored by the broker (in bytes).﻿Persistent messages are written to disk, while non-persistent messages remain in memory.﻿Use case:﻿Helps you track how much storage space the broker is using, which is useful for capacity planning.﻿---﻿✅ 3. Min Enqueue Size﻿Meaning:﻿The minimum number of messages the queue will retain before considering it eligible for garbage collection or removal.﻿This attribute ensures that a queue always maintains a minimum message count, even if messages are being consumed or expired.﻿Use case:﻿Helps prevent queues from being prematurely cleaned up or removed when you want to keep some messages available for future consumers.﻿---﻿✅ 4. Max Page Size﻿Meaning:﻿The maximum number of messages the broker will page from disk into memory at once when processing a queue.﻿Paging reduces memory consumption by loading only part of the queue into RAM.﻿Default value:﻿Typically, the default is 200 messages per page, but it can be configured.﻿Use case:﻿Balances memory usage and performance by controlling how many messages are loaded at a time.﻿---﻿✅ 5. Max Message Size﻿Meaning:﻿The maximum size (in bytes) of a single message that the broker will accept.﻿This limits the size of individual messages to prevent large messages from consuming excessive memory or disk space.﻿Use case:﻿Protects the broker from running out of memory due to oversized messages.﻿Example:﻿maxMessageSize="10485760" → allows messages up to 10 MB.﻿---﻿💡 Other Useful Attributes﻿Memory Limit: The total memory the broker is allowed to use for messages (both persistent and non-persistent).﻿Temp Usage: The memory allocated for temporary messages (non-persistent).﻿Store Usage: The memory allocated for persistent messages.﻿Consumer Priority: Allows prioritizing certain consumers over others.