Here is the full representation of an **AMQP record** from **Azure Event Hubs**, including all relevant attributes such as **AMQP properties**, **Event Hub system properties**, **application properties**, and **message body**.

### **Complete AMQP Record Schema**

#### **Full Attribute Schema**

json

Copy code

{  
 "systemProperties": { // Metadata added by Azure Event Hubs  
 "x-opt-sequence-number": "integer", // Sequence number within the partition  
 "x-opt-offset": "string", // Offset of the event  
 "x-opt-enqueued-time": "timestamp", // Time event was enqueued in UTC  
 "x-opt-partition-key": "string|null", // Partition key (if specified)  
 "partition": "integer", // Partition ID of the event  
 "publisher": "string|null" // Publisher ID (if configured)  
 },  
 "properties": { // Standard AMQP message properties  
 "message\_id": "string", // Unique identifier for the message  
 "user\_id": "string|null", // Optional user ID associated with the message  
 "to": "string", // Destination address  
 "subject": "string", // Message subject or description  
 "reply\_to": "string|null", // Reply-to address (optional)  
 "correlation\_id": "string|null", // ID to correlate request and response messages  
 "content\_type": "string|null", // MIME type of the message payload  
 "content\_encoding": "string|null", // Encoding used for the message body  
 "absolute\_expiry\_time": "timestamp|null", // Expiry time of the message (optional)  
 "creation\_time": "timestamp|null", // Creation time of the message  
 "group\_id": "string|null", // Identifier for message grouping (optional)  
 "group\_sequence": "integer|null" // Sequence number within the group  
 },  
 "applicationProperties": { // Custom application-defined properties  
 "key1": "string", // Example metadata key-value pair  
 "key2": "integer" // Additional metadata as required  
 },  
 "body": { // The actual message payload  
 "field1": "type", // Example field (e.g., string, number)  
 "field2": "type" // Additional fields as required  
 }  
}

### **Example AMQP Record from Azure Event Hubs**

json

Copy code

{  
 "systemProperties": {  
 "x-opt-sequence-number": 123456,  
 "x-opt-offset": "00000123ABCDEF",  
 "x-opt-enqueued-time": "2023-12-03T16:00:00Z",  
 "x-opt-partition-key": "partitionKey123",  
 "partition": 2,  
 "publisher": "publisher-service-1"  
 },  
 "properties": {  
 "message\_id": "message-001",  
 "user\_id": "user-123",  
 "to": "/eventhubs/orders",  
 "subject": "order\_created",  
 "reply\_to": "/response\_queue",  
 "correlation\_id": "correlation-001",  
 "content\_type": "application/json",  
 "content\_encoding": "utf-8",  
 "absolute\_expiry\_time": "2023-12-03T17:00:00Z",  
 "creation\_time": "2023-12-03T15:59:59Z",  
 "group\_id": "group-01",  
 "group\_sequence": 1  
 },  
 "applicationProperties": {  
 "event\_type": "order\_created",  
 "priority": "high",  
 "region": "us-west"  
 },  
 "body": {  
 "order\_id": "001",  
 "customer\_id": "12345",  
 "order\_total": 150.75,  
 "order\_date": "2023-12-03T15:00:00Z",  
 "items": [  
 {  
 "item\_id": "A1",  
 "quantity": 2,  
 "price": 50.25  
 },  
 {  
 "item\_id": "B2",  
 "quantity": 1,  
 "price": 50.25  
 }  
 ]  
 }  
}

### **Explanation of All Attributes**

1. **System Properties (Event Hub Metadata)**:
   1. **x-opt-sequence-number**: A unique, incremental number for the event within the partition.
   2. **x-opt-offset**: A unique identifier for the position of the event within the partition.
   3. **x-opt-enqueued-time**: The UTC timestamp when the event was enqueued in Event Hubs.
   4. **x-opt-partition-key**: A user-defined key for routing messages to specific partitions.
   5. **partition**: The partition ID to which the event was assigned.
   6. **publisher**: The ID of the publisher service that sent the event (if applicable).
2. **AMQP Properties**:
   1. **message\_id**: A unique identifier for the message.
   2. **user\_id**: Optional identifier for the user associated with the message.
   3. **to**: Destination address of the event (e.g., Event Hub name).
   4. **subject**: Description of the event type or purpose.
   5. **reply\_to**: Optional address for responses in a request-response pattern.
   6. **correlation\_id**: A unique ID used to link request and response messages.
   7. **content\_type**: MIME type of the message payload (e.g., application/json).
   8. **content\_encoding**: Encoding format (e.g., utf-8).
   9. **absolute\_expiry\_time**: Timestamp indicating when the message expires.
   10. **creation\_time**: The UTC timestamp when the message was created.
   11. **group\_id**: Identifier for grouping related messages (optional).
   12. **group\_sequence**: Sequence number within the group (optional).
3. **Application Properties**:
   1. Custom metadata defined by the application, such as event\_type, priority, or region.
4. **Body**:
   1. The actual data payload, which could be structured (JSON, XML) or unstructured (binary data).

### **Notes on Missing Partition in AMQP:**

* The **partition** is not a direct part of the AMQP protocol but is included as metadata (systemProperties) by Azure Event Hubs.
* Ensure your consumer application explicitly fetches this metadata from the Event Hub record when consuming messages.

Would you like additional details on how to access or parse this data programmatically?

4o

##### **You said:**

please show the same for a KAFKA record in entirety with an example

###### **ChatGPT said:**

ChatGPT

Here is the **complete schema and an example of a Kafka record**, incorporating all relevant metadata, headers, and payload details typical of Kafka messages consumed from Azure Event Hubs.

### **Complete Kafka Record Schema**

#### **Full Attribute Schema**

json

Copy code

{  
 "key": "string|null", // Optional key for partitioning  
 "value": "object", // The actual message payload  
 "headers": { // Optional key-value metadata  
 "headerKey1": "string",  
 "headerKey2": "integer"  
 },  
 "topic": "string", // Kafka topic name  
 "partition": "integer", // Partition ID  
 "offset": "integer", // Offset of the message in the partition  
 "timestamp": "timestamp", // Message creation or ingestion time  
 "timestampType": "string", // Type of timestamp (CreateTime or LogAppendTime)  
 "producerId": "integer|null", // Producer ID (if applicable)  
 "producerEpoch": "integer|null", // Epoch for transactional producers  
 "sequence": "integer|null" // Sequence number for ordering within a transaction  
}

### **Example Kafka Record from Azure Event Hubs**

json

Copy code

{  
 "key": "partitionKey123",  
 "value": {  
 "order\_id": "001",  
 "customer\_id": "12345",  
 "order\_total": 150.75,  
 "order\_date": "2023-12-03T15:00:00Z",  
 "items": [  
 {  
 "item\_id": "A1",  
 "quantity": 2,  
 "price": 50.25  
 },  
 {  
 "item\_id": "B2",  
 "quantity": 1,  
 "price": 50.25  
 }  
 ]  
 },  
 "headers": {  
 "event\_type": "order\_created",  
 "priority": "high",  
 "region": "us-west"  
 },  
 "topic": "orders",  
 "partition": 2,  
 "offset": 123456,  
 "timestamp": "2023-12-03T16:00:00Z",  
 "timestampType": "CreateTime",  
 "producerId": 7890,  
 "producerEpoch": 1,  
 "sequence": 456  
}

### **Explanation of All Attributes**

1. **Key**:
   1. Used to determine the partition to which the record is sent.
   2. If specified, Kafka hashes the key to select a partition.
   3. Null if the producer doesn’t specify a key.
2. **Value**:
   1. The actual message payload (e.g., JSON object, string, binary data).
   2. In the example, it's structured data representing an order.
3. **Headers**:
   1. Key-value pairs for optional metadata.
   2. Used to provide additional context (e.g., event\_type, region, or priority).
4. **Topic**:
   1. The Kafka topic to which the message belongs (e.g., orders).
5. **Partition**:
   1. The ID of the partition where the record resides (e.g., 2).
   2. Determined by the producer's partitioning logic or Kafka's default partitioning strategy.
6. **Offset**:
   1. A unique identifier for the record within the partition.
   2. In the example, the offset is 123456.
7. **Timestamp**:
   1. Time associated with the record (e.g., 2023-12-03T16:00:00Z).
   2. Either the creation time (CreateTime) or the log append time (LogAppendTime).
8. **TimestampType**:
   1. Indicates whether the timestamp is the creation time (CreateTime) or when the broker appended the message to the log (LogAppendTime).
9. **Producer Metadata** (Optional):
   1. **ProducerId**: ID of the producer that created the message (e.g., 7890).
   2. **ProducerEpoch**: Epoch number for transactional producers (e.g., 1).
   3. **Sequence**: Sequence number for maintaining order in transactions (e.g., 456).

### **Kafka-Specific Notes:**

* Kafka does not automatically expose **partition keys** as part of the message body but uses them internally for partitioning logic.
* The Kafka client libraries provide access to partition, topic, offset, and other metadata when consuming records.

Would you like guidance on how to parse or access this metadata programmatically in a Kafka consumer application?

4o