
Creating Streams Topology

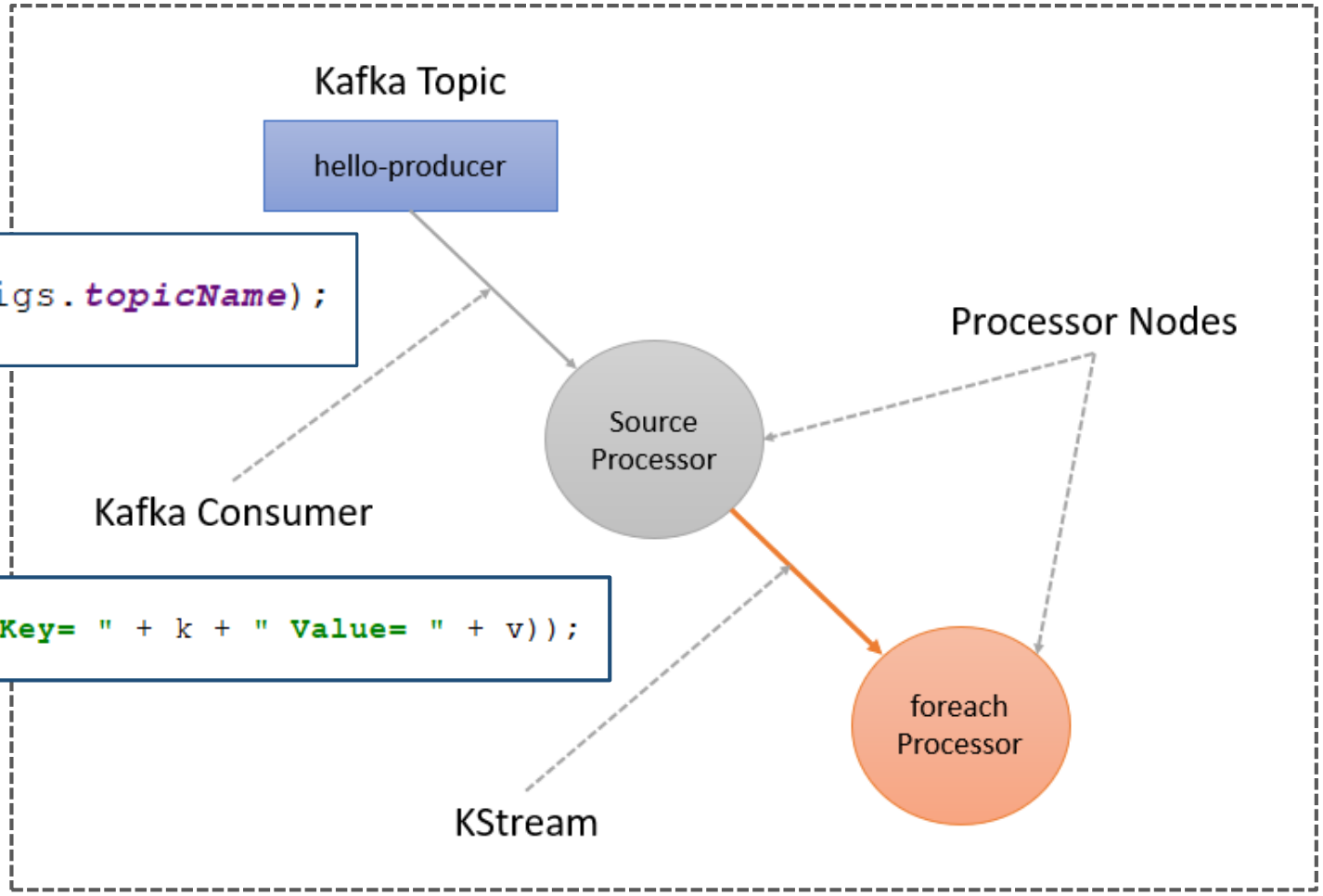
Creating Kafka Streams Application

- Create Configurations.
- Create Streams Topology.
- Start the Stream.
- Add shutdown hook.

What is Streams Topology?

```
kStream = streamsBuilder.stream(AppConfigs.topicName);
```

```
kStream.foreach((k, v) -> System.out.println("Key= " + k + " Value= " + v));
```



Step-by-step computational logic of a stream processing application.

What is KStream?

KStream

Abstraction of a stream of Kafka message records.

- filter()
- map()
- flatmap()

→ KStream

- foreach()
- to()

→ Void

Creating Topology

Problem Statement

- Use the POS Simulator Application to generate a continuous stream of Invoices.
- Create a stream processing application for the following

Business Requirement

XYZ is a Home Furniture and Kitchen utensils retailer. They have twenty retail stores spread all over the country. XYZ management decided to transform themselves into a real-time data-driven organization. As a first step towards that goal, they started sending their invoices to a Kafka cluster in real-time. The POS machines in all their stores are now sending invoices to a Kafka topic – POS. As a next step, they want to create the following automated services.

1. Shipment Service
2. Loyalty Management Service
3. Trend Analytics

While other teams are working on the implementation details of these three services, you are asked to create a Kafka Streams application that does following.

1. Select Invoices where DeliveryType = "HOME-DELIVERY" and push them to the shipment service queue.
2. Select Invoices where CustomerType = "PRIME" and create a notification event for the Loyalty Management Service. The format for the new notification event is given here.
3. Select all Invoices, mask the personal information, and create records for Trend Analytics. When the records are ready, persist them to Hadoop storage for batch analytics. The format for the new Hadoop record is also given.

Creating Topology


```
{
  "InvoiceNumber": "xx",
  "CustomerCardNo": "xx",
  "TotalAmount": "xx",
  "EarnedLoyaltyPoints": "xx"
}
```



```
{
  "InvoiceNumber": "xx",
  "CreatedTime": "xx",
  "StoreID": "xx",
  "PosID": "xx",
  "CustomerType": "xx",
  "PaymentMethod": "xx",
  "DeliveryType": "xx",
  "City": "xx",
  "State": "xx",
  "PinCode": "xx",
  "ItemCode": "xx",
  "ItemDescription": "xx",
  "ItemPrice": "xx",
  "ItemQty": "xx",
  "TotalValue": "xx"
}
```

Creating Topology

Sample Invoice


```
{   "InvoiceNumber":"2798495",
    "CreatedTime":1552393659955,
    "StoreID":"STR7188",
    "PosID":"POS825",
    "CashierID":"OAS329",
    "CustomerType":"PRIME",
    "CustomerCardNo":"7051101351",
    "TotalAmount":3529.0,
    "NumberOfItems":2,
    "PaymentMethod":"CASH",
    "TaxableAmount":3529.0,
    "CGST":88.22500000000001,
    "SGST":88.22500000000001,
    "CESS":4.41125,
    "DeliveryType":"HOME-DELIVERY",
    "DeliveryAddress":{
       "AddressLine":"House No 727, 9696 Ullamcorper, Road",
       "City":"Dabgram",
       "State":"West Bengal",
       "PinCode":"953658",
       "ContactNumber":"4166559042"
    },
    "InvoiceLineItems":[
       {   "ItemCode":"213",
          "ItemDescription":"Infant bed",
          "ItemPrice":1755.0,
          "ItemQty":1,
          "TotalValue":1755.0
       },
       {   "ItemCode":"628",
          "ItemDescription":"Window Scarf",
          "ItemPrice":1774.0,
          "ItemQty":1,
          "TotalValue":1774.0
       }
    ]
}
```



```
{
  "InvoiceNumber": "xx",
  "CreatedTime": "xx",
  "StoreID": "xx",
  "PosID": "xx",
  "CustomerType": "xx",
  "PaymentMethod": "xx",
  "DeliveryType": "xx",
  "City": "xx",
  "State": "xx",
  "PinCode": "xx",
  "ItemCode": "xx",
  "ItemDescription": "xx",
  "ItemPrice": "xx",
  "ItemQty": "xx",
  "TotalValue": "xx"
}
```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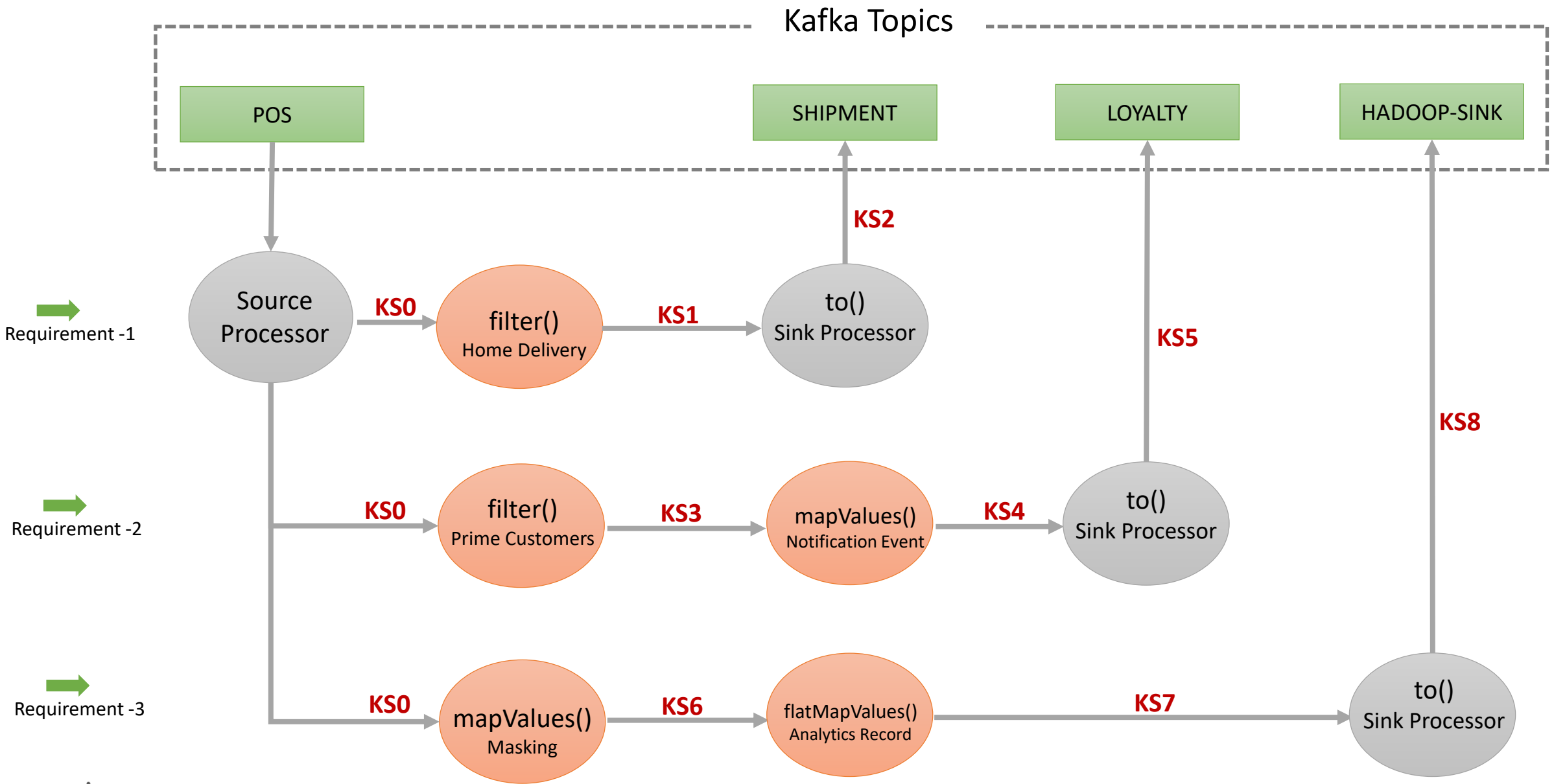

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