

1. Describe the following:

- Sink and Source connectors.
- A source connection is a software component that gathers data from a system. Databases, streaming tables, and message brokers are all examples of source systems. A source connection might also gather metrics from application servers and store them in Kafka topics, allowing for low-latency stream processing.

A sink connection sends data from Kafka topics to other systems, which might be indexes like Elasticsearch, batch systems like Hadoop, or databases of any sort.

- The applications/advantages of using Kafka Connectors with data storage.
- Data from external systems may be imported into Kafka topics, and data from Kafka topics can be exported to external systems, which is one of the advantages of Kafka connectors.
- How do Kafka connectors maintain availability?
- Kafka connections keep the system available by allowing it to be deployed as a solo application or as a distributed application.
- List the popular Kafka converters for values and the properties/advantages of each.
- The popular Kafka converters for values include: ProtobufConverter, JsonSchemaConverter, and AvroConverter.

Advantages of the ProtobufConverter include:

- Compact data storage
- Available for many different programming languages
- Quick parsing
- Automatically-generated classes help optimize functionality

Advantages of the JsonSchemaConverter Include:

- The structure and validation limitations of JSON documents are described using JSON Schema.

Advantages of the AvroConverter include:

- Helps convert data in and out of Avro format for Kafka Connect.

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2. Search the internet to answer the following question:

- What's a Key-Value (KV) database?

A key-value database is a nonrelational database that stores data using a simple key-value mechanism. Data is stored in a key-value database as a collection of key-value pairs, with a key serving as a unique identifier. Both keys and values can be any type of object, from basic to sophisticated compound objects.

- What are KV databases' advantages and disadvantages?
 - Advantages Include:
 - Simplicity
 - Reliability
 - Speed
 - Convenience
 - Disadvantages include:
 - Only works with data that has a single key and value. Multiple values must be stored, which necessitates the use of a parser.
 - Lookup isn't optimal. Lookup necessitates either a full scan of the collection or the creation of individual index values.

- List some popular KV databases.

A few Key-value databases are:

- Amazon DynamoDB
- Oracle NoSQL
- Riak KV
- Voldemort
- Redis