Aalto University
School of Science

Data Ingestion with Apache NiFi[1] [2]

Hong-Tri Nguyen
Department of Computer Science
hong-tri.nguyen@aalto.fi

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[1] https://nifi.apache.org/components/
[2] https://github.com/rdsea/bigdataplatforms/tree/master/tutorials/nifi

Outline

NiFi

Basic cases

Architecture

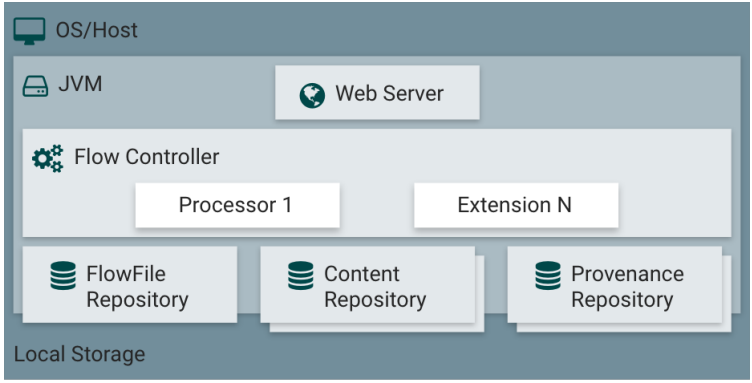


Figure: NiFi architecture

How NiFi works?

A NiFi dataflow consists of atomic elements which can be in a group or individual processor connecting each others

- A Processor has it own task like ingess data, transform data, or load data
- Data
  - The FlowFile Repository contains metadata for all the current FlowFiles in the flow.
  - The Content Repository holds the content for current and past FlowFiles.
  - The Provenance Repository holds the history of FlowFiles.
- A FlowFile is an abstract layer of actual any data, including attribute and content
- A Connection is a Queue for FlowFiles to link processors to formalize a dataflow
- A Controller Service is a shared service used by a proccesor, like a DB connection or credential service

Details of components

Life cycle of FlowFile

- FlowFiles are persisted at the current system and communcation is passed-by-reference
- A new FlowFile is created since there are updates or changes from the content after ingesting data from src

Types of processors

- Data ingestion processors
- Data transformation processors
- Data egress/sending data processors
- Database access processors
- Routing and mediation processors
- Attribute extraction processors

Ready for Dirty Hand?

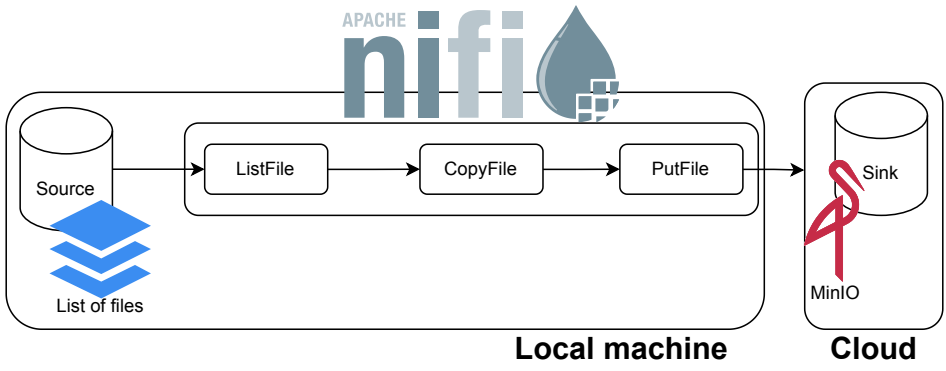
Basic cases

1. Define a flow for ingesting data into storage bucket
2. Define a flow for ingesting data via AMQP
3. Capture changes in legacy databases, filter the records, and do ingestion to a message queue

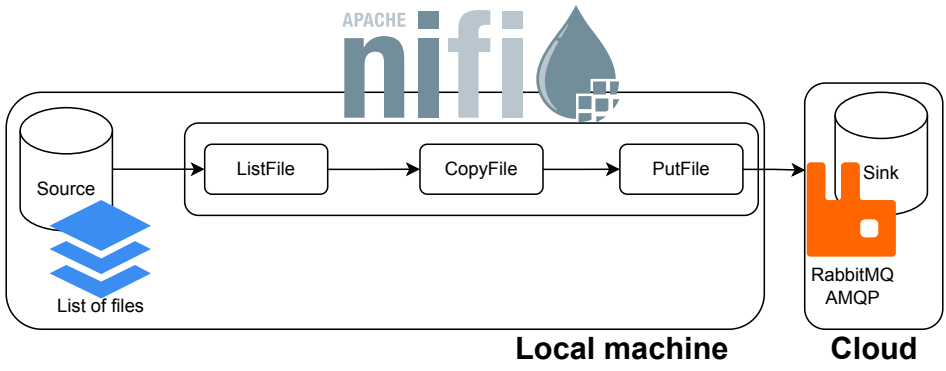
Pre-Requisites

- Pre-Requisites
  - A storage bucket
  - A storage message queue
  - A rational database
  - Apache NiFi installed and running
- NiFi canvas:
  - ListFile lists files in a specified directory
  - FetchFile fetches those files
  - PutS3Object/PutGCSObject stores the files into a storage bucket
  - PublishAMQP stores the data in a queue
  - CaptureChangeMySQL captures the changes from mySQL

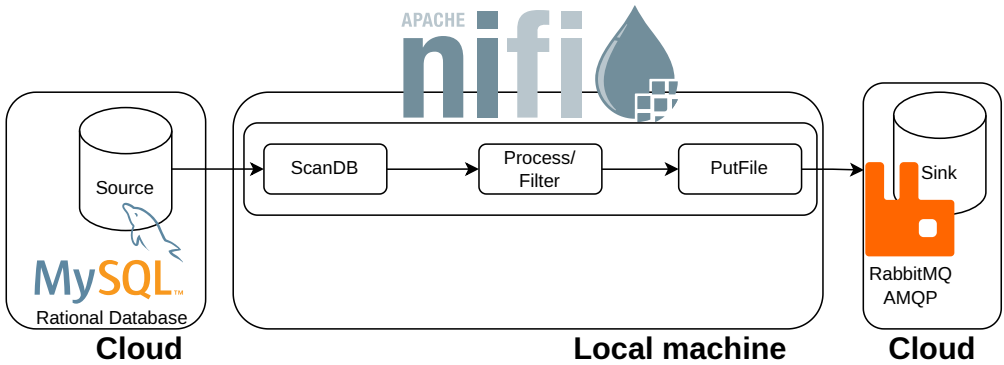
1. Ingesting data into bucket



2. Ingesting data to AMQP



3. Capturing changes from legacy database



Time now is for you