Storm over Gearpump

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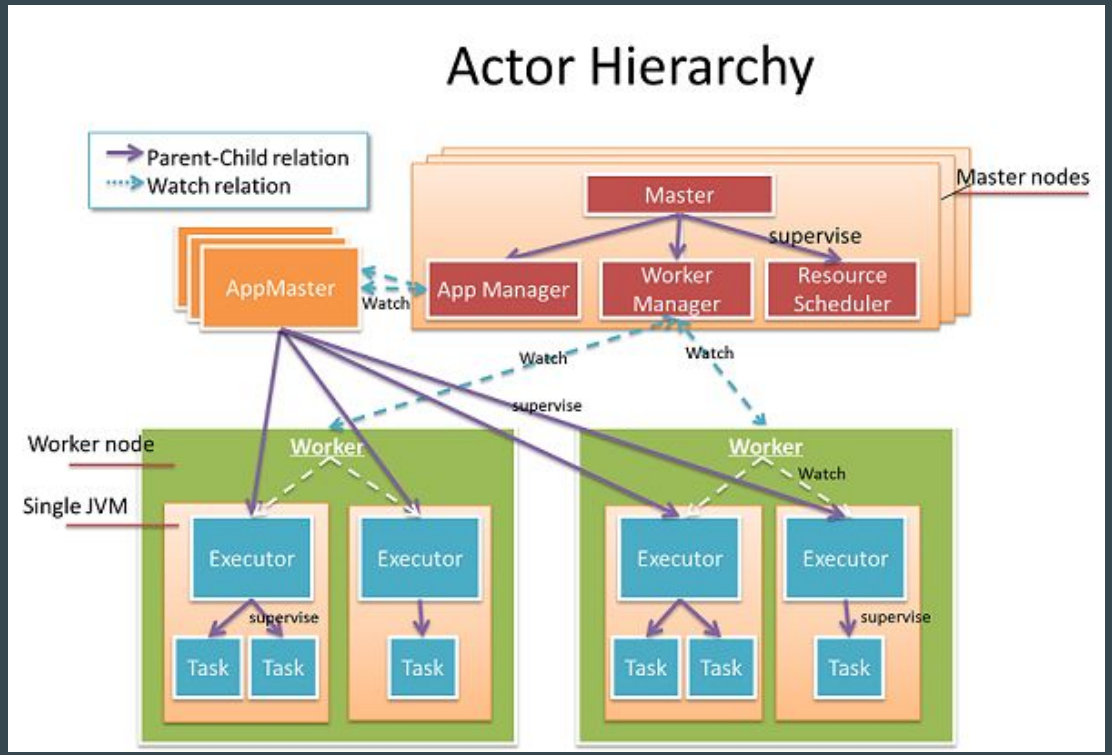
About Me

- Software Engineer at Big Data Technology Group, Intel
- contributor to hadoop-nativetask (https://github.com/apache/hadoop/tree/trunk/hadoop-mapreduce-project/hadoop-mapreduce-client/hadoop-mapreduce-client-nativetask)
- written storm-benchmark (https://github.com/intel-hadoop/storm-benchmark)
- working on Gearpump (kafka connector, storm compatibility, state)
- maintain a list of awesome-streaming (https://github.com/manuzhang/awesome-streaming)

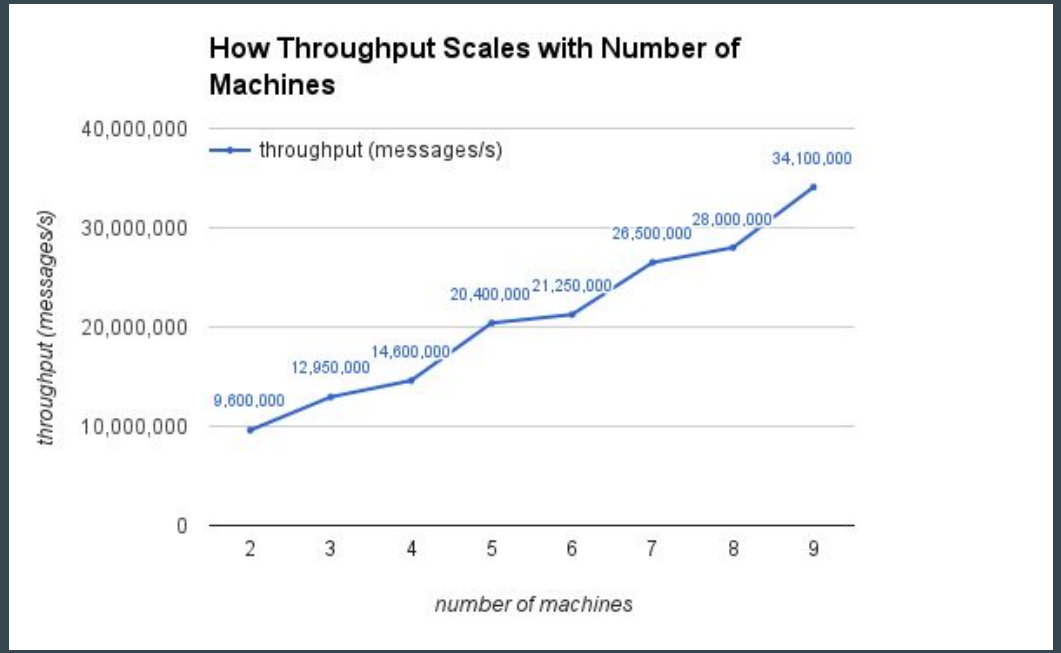
Gearpump - Distributed Real-time Streaming Engine



- Akka / Actor Model
- Dynamic DAG
- Flow Control / Backpressure
- Low watermark
- At least once / Exactly-once
- High Availability
- Interactive Web UI

Gearpump Updates

- released 0.6.1 & 0.7.0
- new documentation site
- secure YARN and HBase support
- Akka-stream compatibility
- Storm binary compatibility



Storm over Gearpump - Why

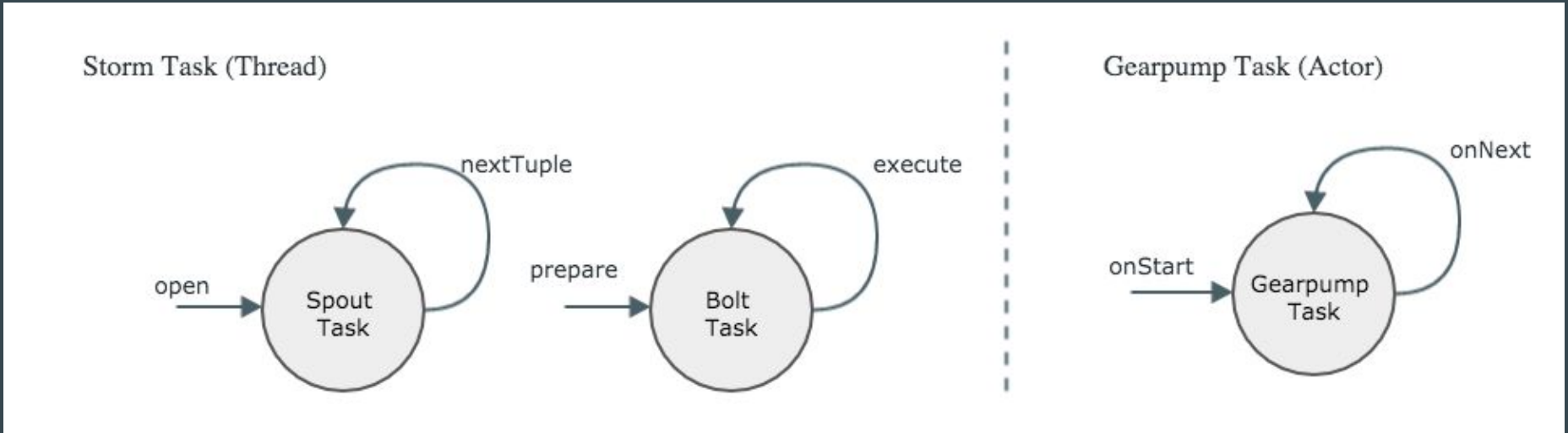
- Storm is widely used in the industry
- but has its limitations
- Gearpump is designed to overcome those limitations
- We want Storm users to benefit from Gearpump's advanced features *without any cost*

Storm over Gearpump - Features

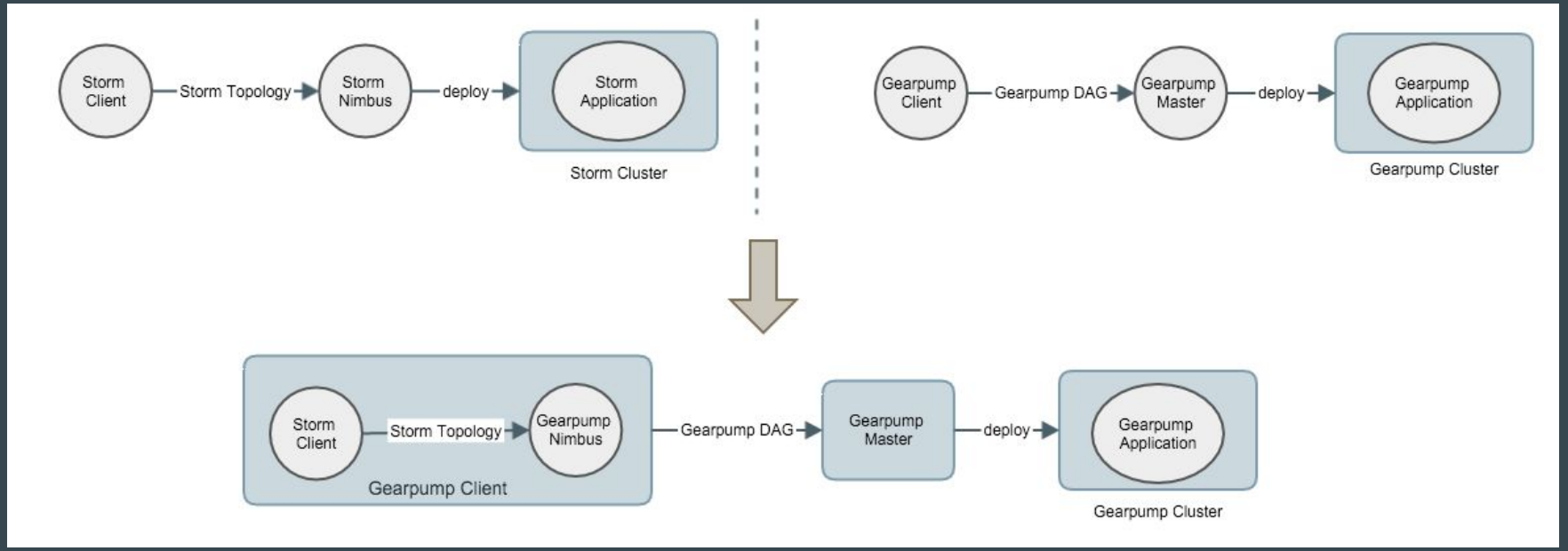
- ***binary compatible (no recompilation is required)*** with Storm 0.9.x
- multi-lang
- DRPC
- KafkaSpout / KafkaBolt
- Trident (WIP)

Similarities of Gearpump and Storm

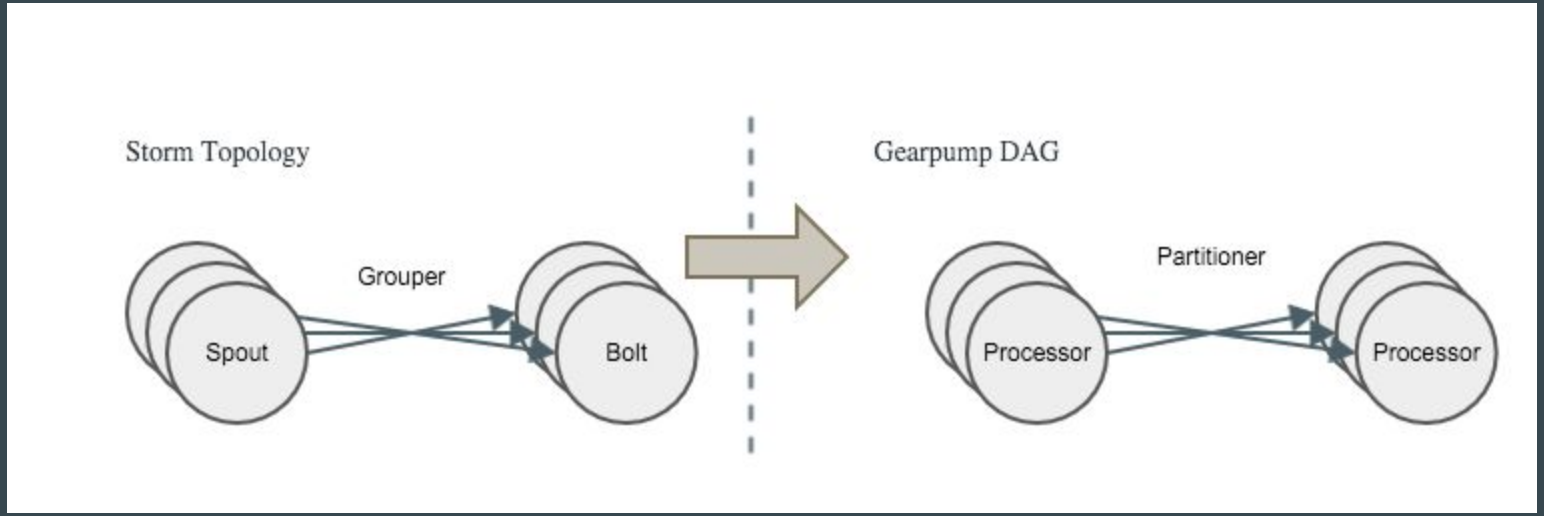
- per-message
- Topology / DAG
- similar user interface



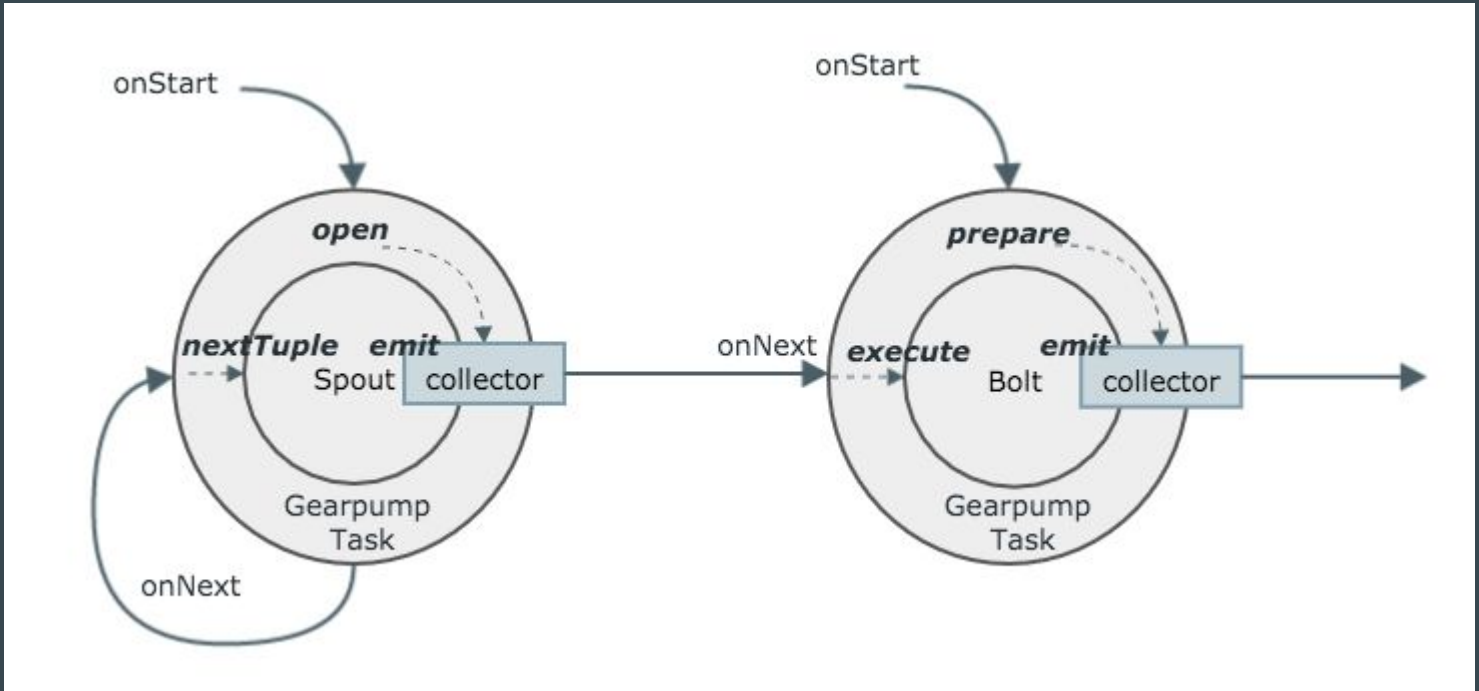
Storm over Gearpump - Overview



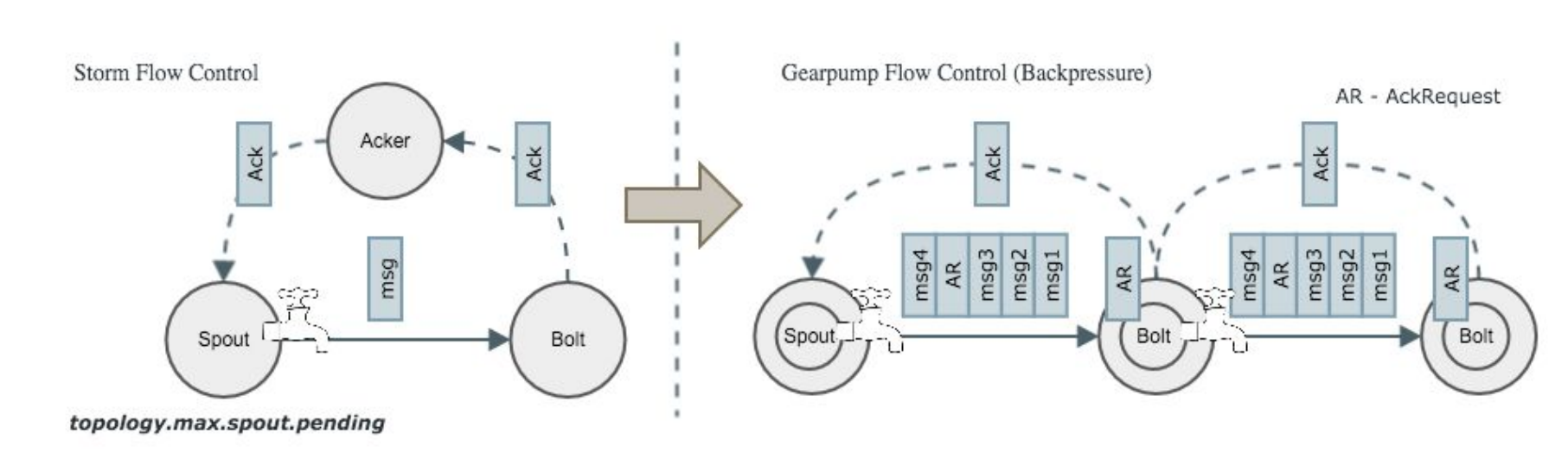
Storm over Gearpump - DAG Translation



Storm over Gearpump - Task Execution



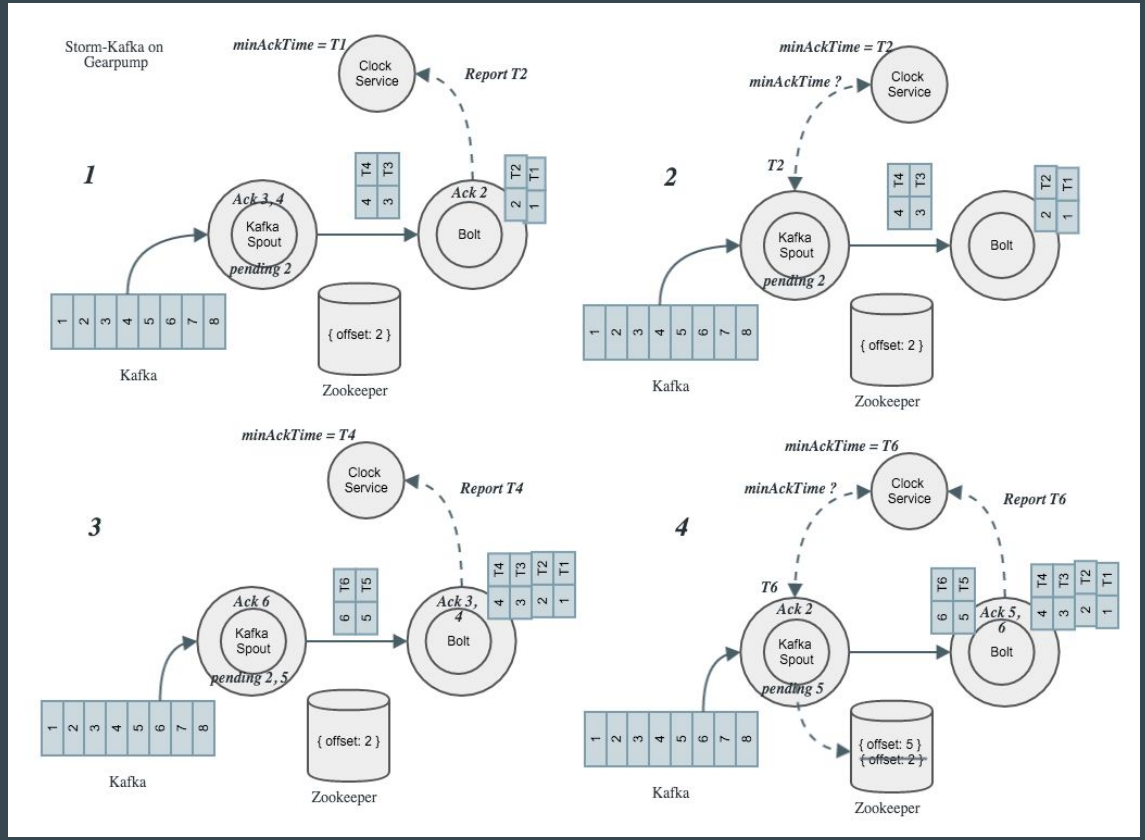
Storm over Gearpump - Flow Control



- Acker is removed
- Flow control with back pressure for both acked and unacked Storm topologies

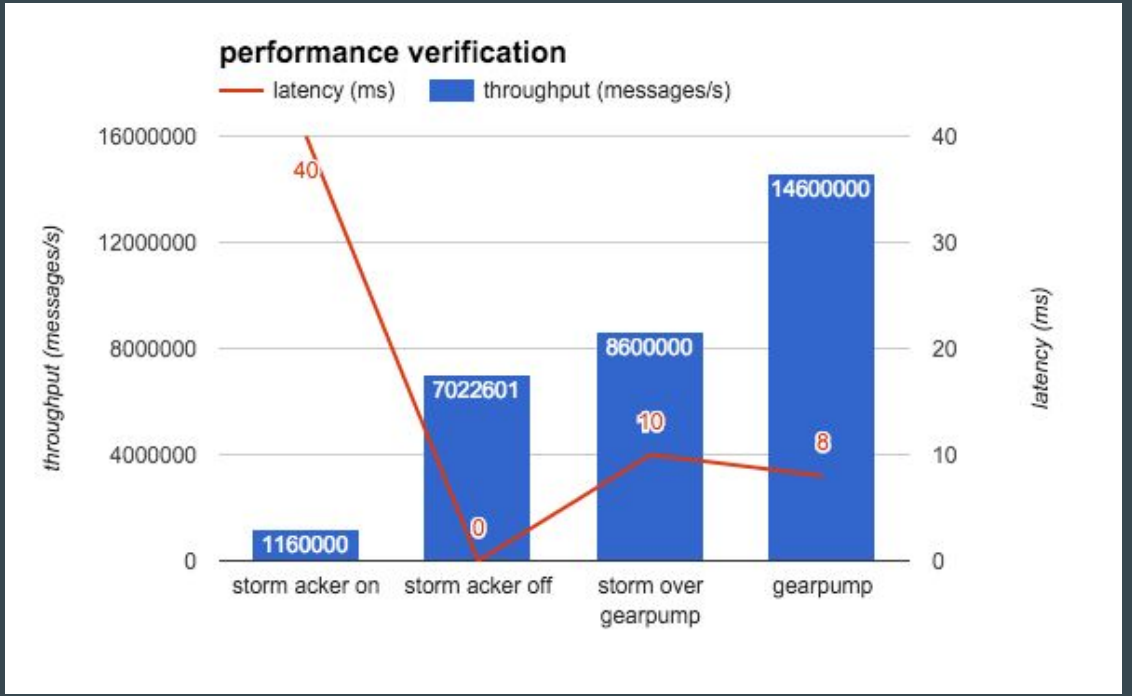
Storm over Gearpump - At Least Once

- each message is tagged with system time
- asynchronous non-blocking ack through tracking global minimum ack time
- support KafkaSpout for now



Performance

- SOL from storm-benchmark
- Storm 0.9.6
- 4-node 10GbE cluster
- 16 workers
- 48 Spouts and 48 Bolts



Future work

- submit Storm Job through Web UI
- Storm 0.10 support
- At Least Once support for more spouts
- Trident support

References

1. https://github.com/gearpump/gearpump
2. https://gearpump.io
3. https://storm.apache.org
4. How to use Akka to make a PERFECT Streaming system
5. https://www.typesafe.com/blog/gearpump-real-time-streaming-engine-using-akka
6. http://akka.io/docs/