Mandate

- 0% message loss!
- 100% message processing and delivery!
- Nirvana - Scalability, Availably, Elasticity

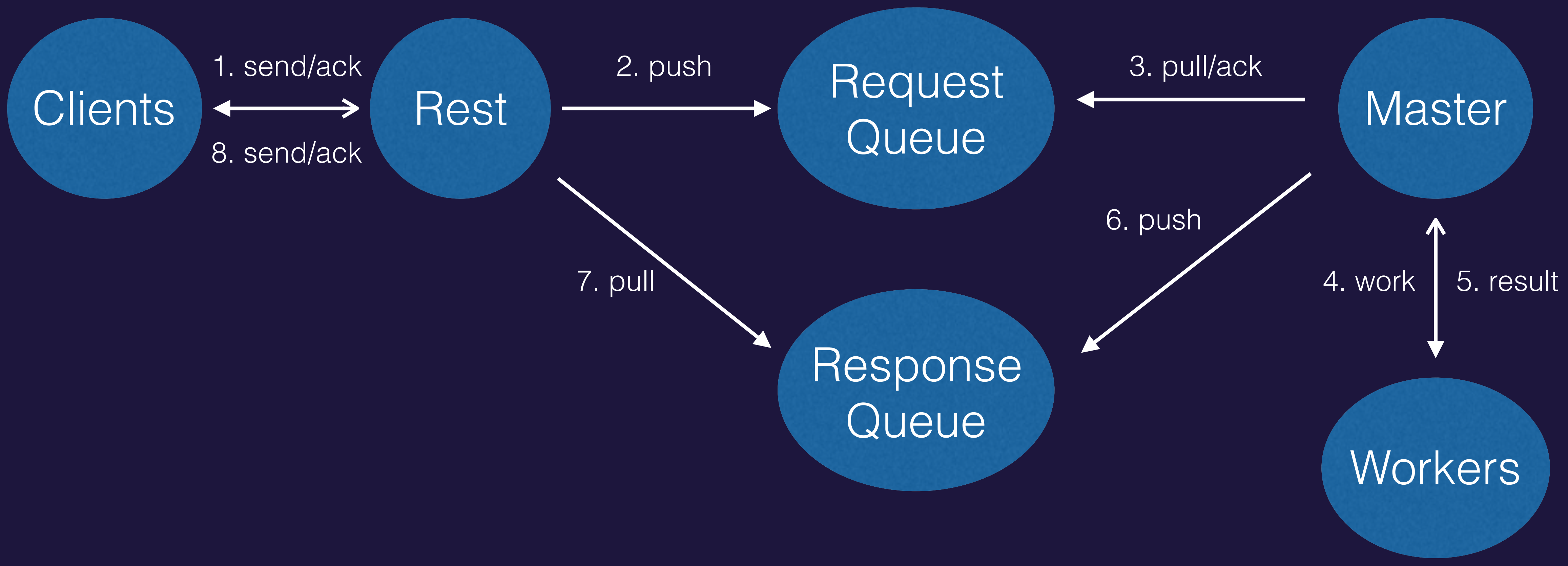
Akka

- Let it crash!
- Zero guarantees. Only best efforts.
- At least once message delivery ***is not*** exactly once message delivery.
- Supervisor strategies only resume, restart and stop broken actors. Or escalate errors.
- Persistent actors are for event sourcing only!

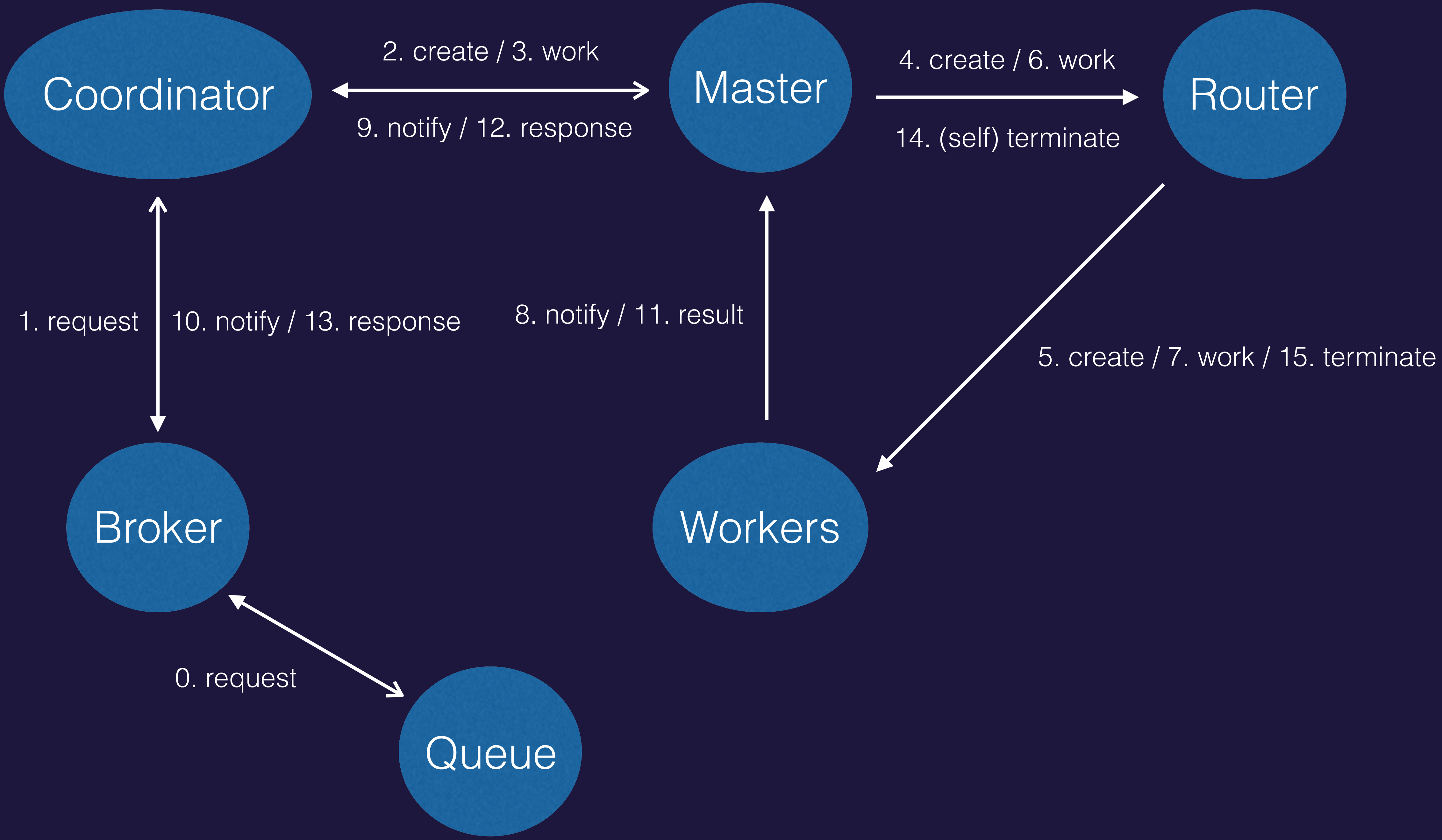
Questions

- Why not ***persist*** mission critical messages to durable queues?
- Why not ***process*** mission critical messages with Akka?
- Why not divide and conquer, guaranteeing 0% message loss,100% message processing and delivery - to include nirvana?

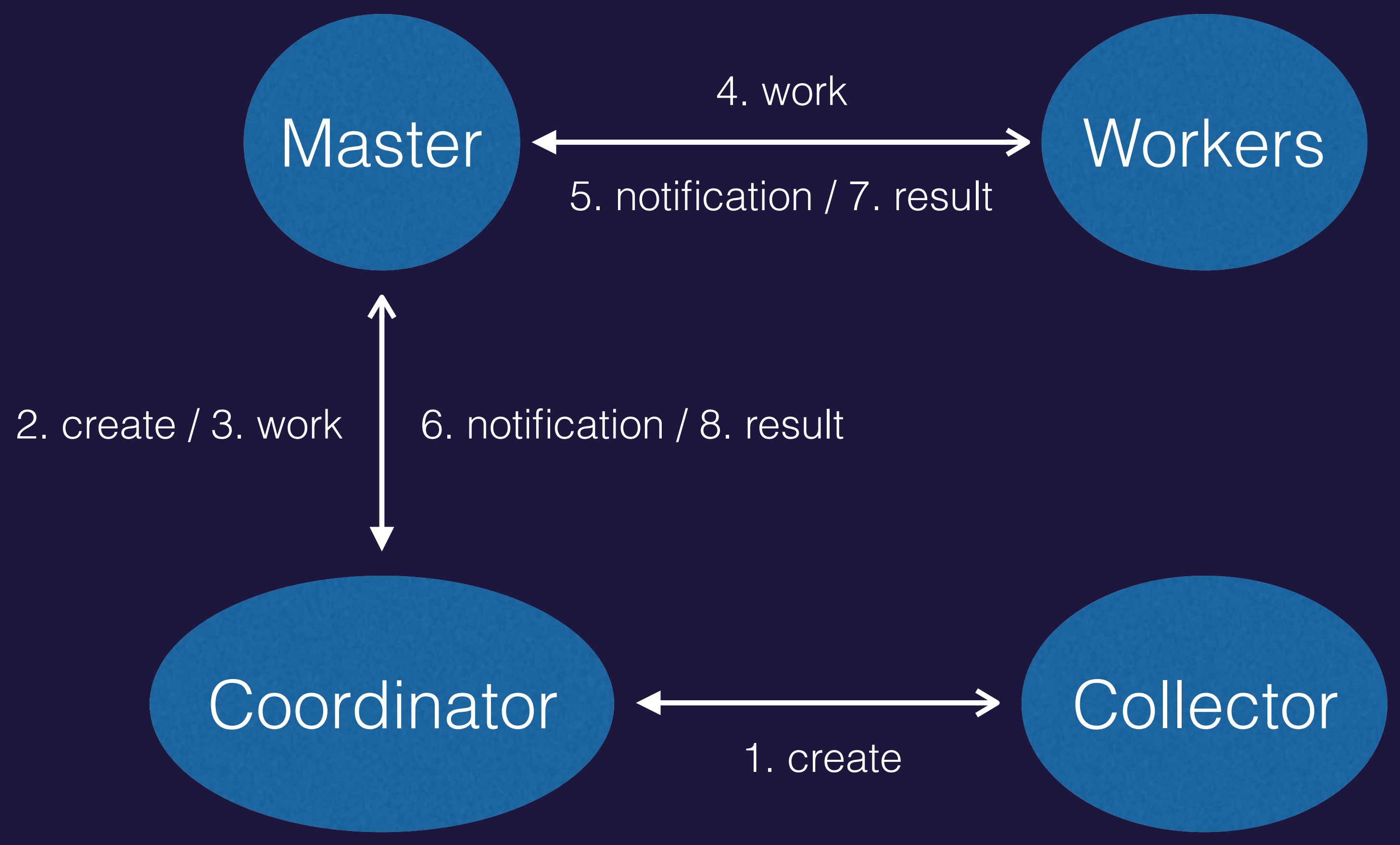
Abstract


Clients
1. send/ack
8. send/ack
Rest
2. push
Request Queue
3. pull/ack
Master
6. push
7. pull
4. work
5. result
Response Queue
Workers

Master-Worker



Collector



A Collector collects partial work results from Workers. For each partial work result, Master sends a CollectorEvent to Coordinator, detailing an *n* ***of*** *n* work count and *data*. Once work is completed, Collector data is merged by Master and sent to Coordinator.

Technologies

- Rest - Akka Http
- Queue - RabbitMQ
- Processing - Akka

Nirvana

- Rest - HAProxy Load Balancing
- Queue - RabbitMQ Cluster
- Processing - Akka Cluster

* Elastic node policies apply to all technologies.

Nirvana…

- Akka Cluster
    - Add one or more master nodes, dynamically creating master-worker groups per request.
    - Add two or more worker nodes, dynamically hosting workers just-in-time per request.
    - Achieve parallel work distribution and processing by master-worker groups across nodes.

Apps

- Akka Http Rest
- RabbitMQ Cluster
- Akka Cluster

Libraries

- EVA Legacy Dependencies (Nexus)

Testing

- ScalaTest
- Multi-JVM Test (Todo)
- DevOps Environment with Management and Monitoring

Management

- Lightbend ConductR - Developer-free and Docker-friendly
- Mesos

Monitoring

- Lightbend Monitoring
- Takipi
- Kamon
- VisualVM
- Java Mission Control / Flight Recorder

Risks

- Configuration Tuning
- Router Tuning
- Deployment, Management and Monitoring

Lessons

- In Akka, never ask - always tell!

Notes

- See Confluence ***EVA Technology Spike*** for more info, code and pdf of this presentation.

Code

- Anyone interesting in seeing ***the*** code?
- See: https://github.com/objektwerks/akka