High availability services

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Scalable ~~High availability~~ services

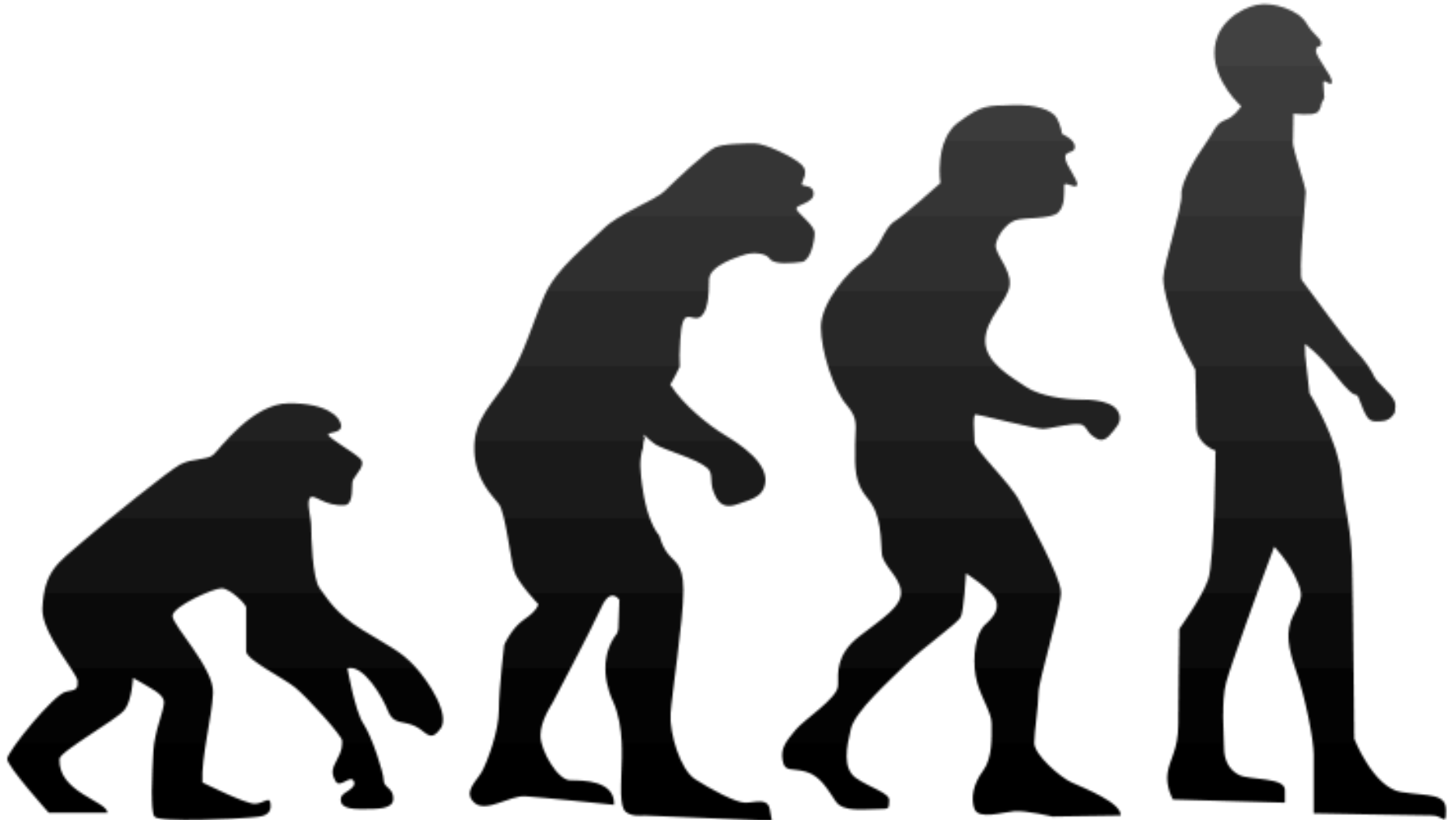Elliott Sprehn (Google, Inc.)
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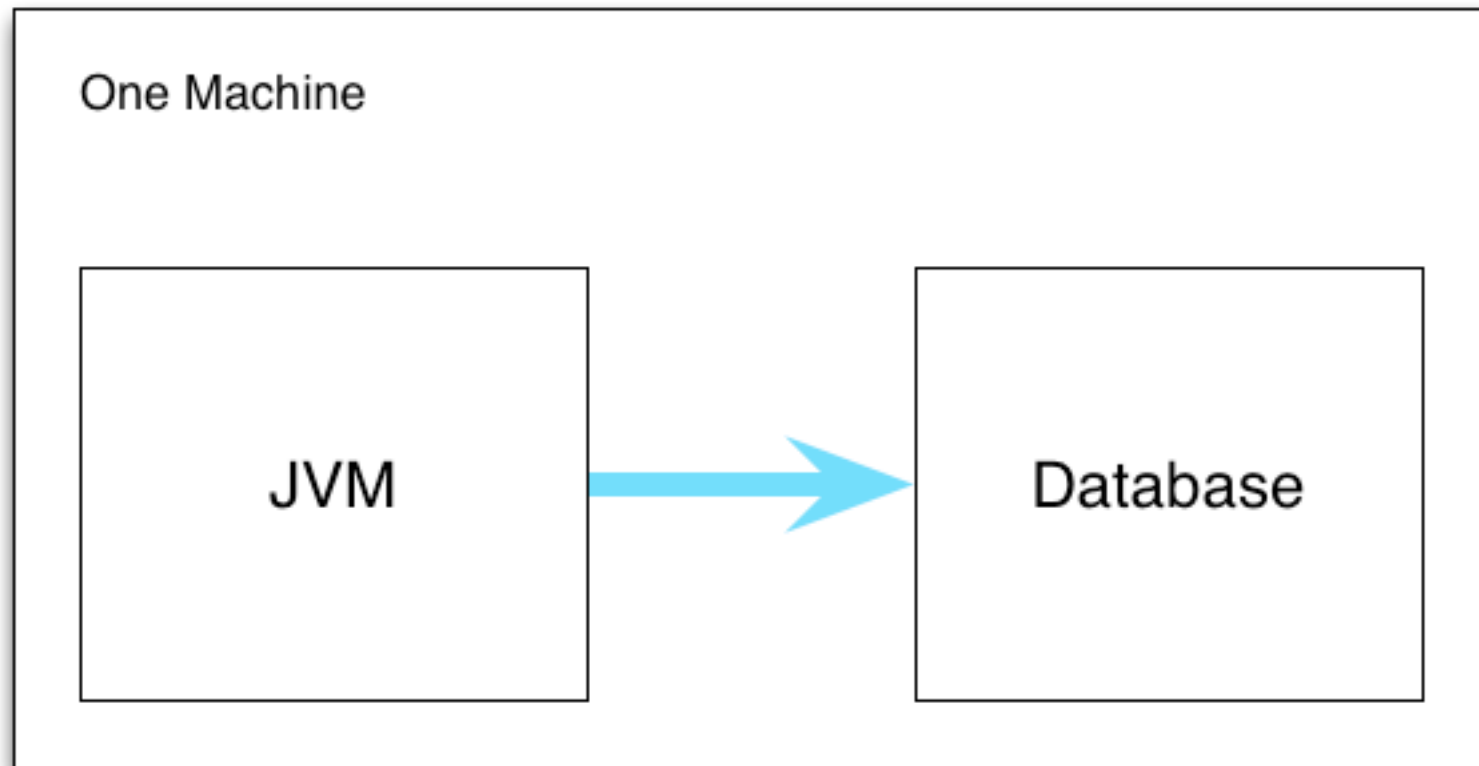
Evolution of an application
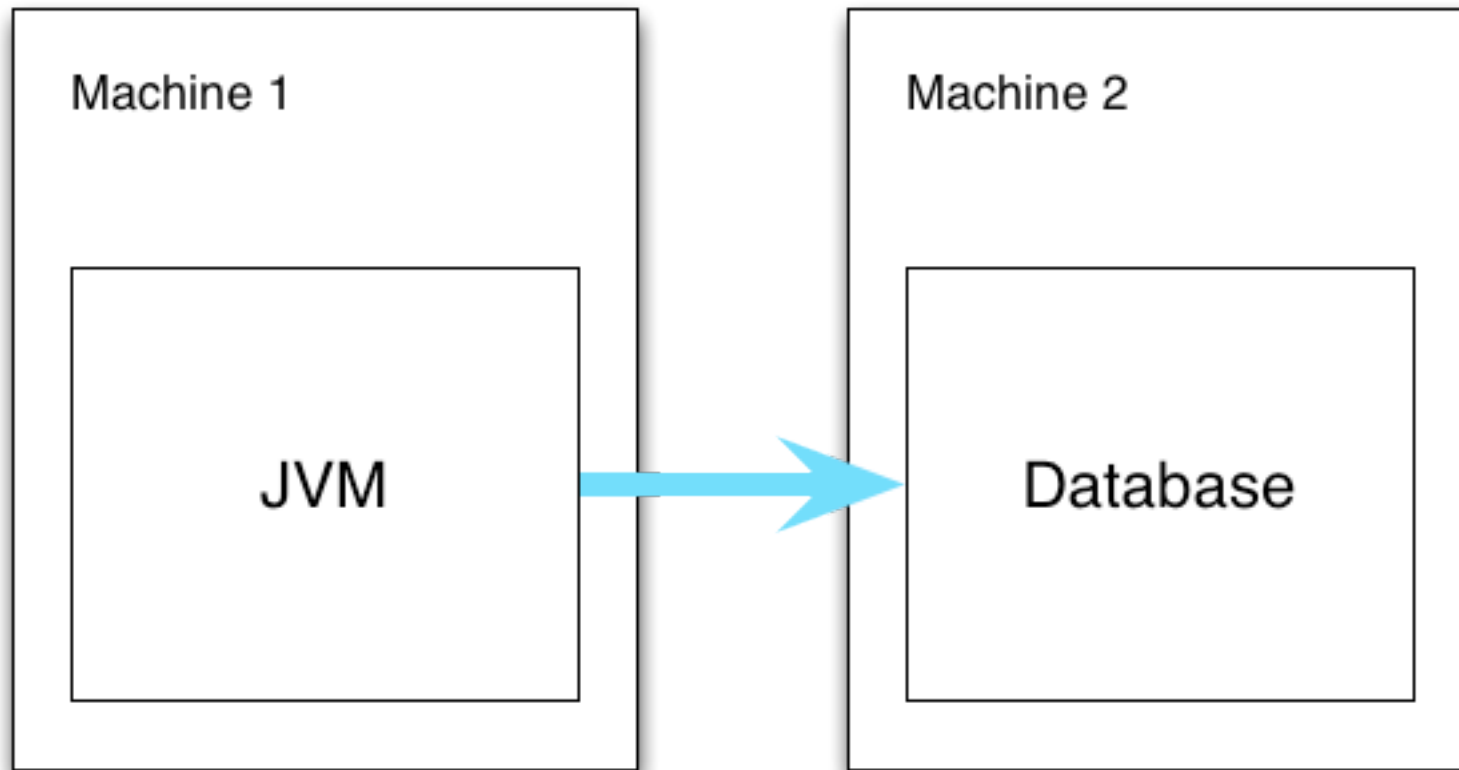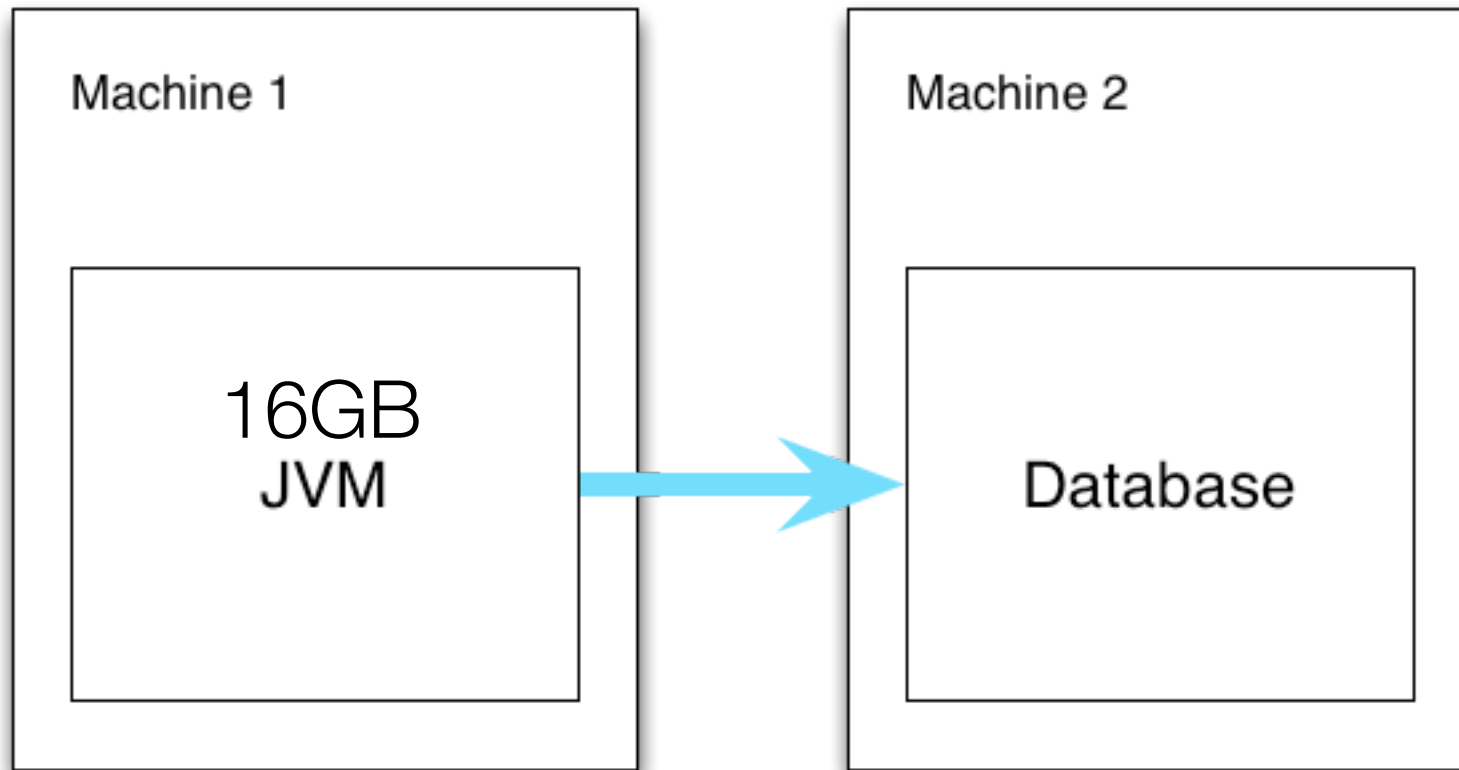
Evolution of an application

Evolution of an application
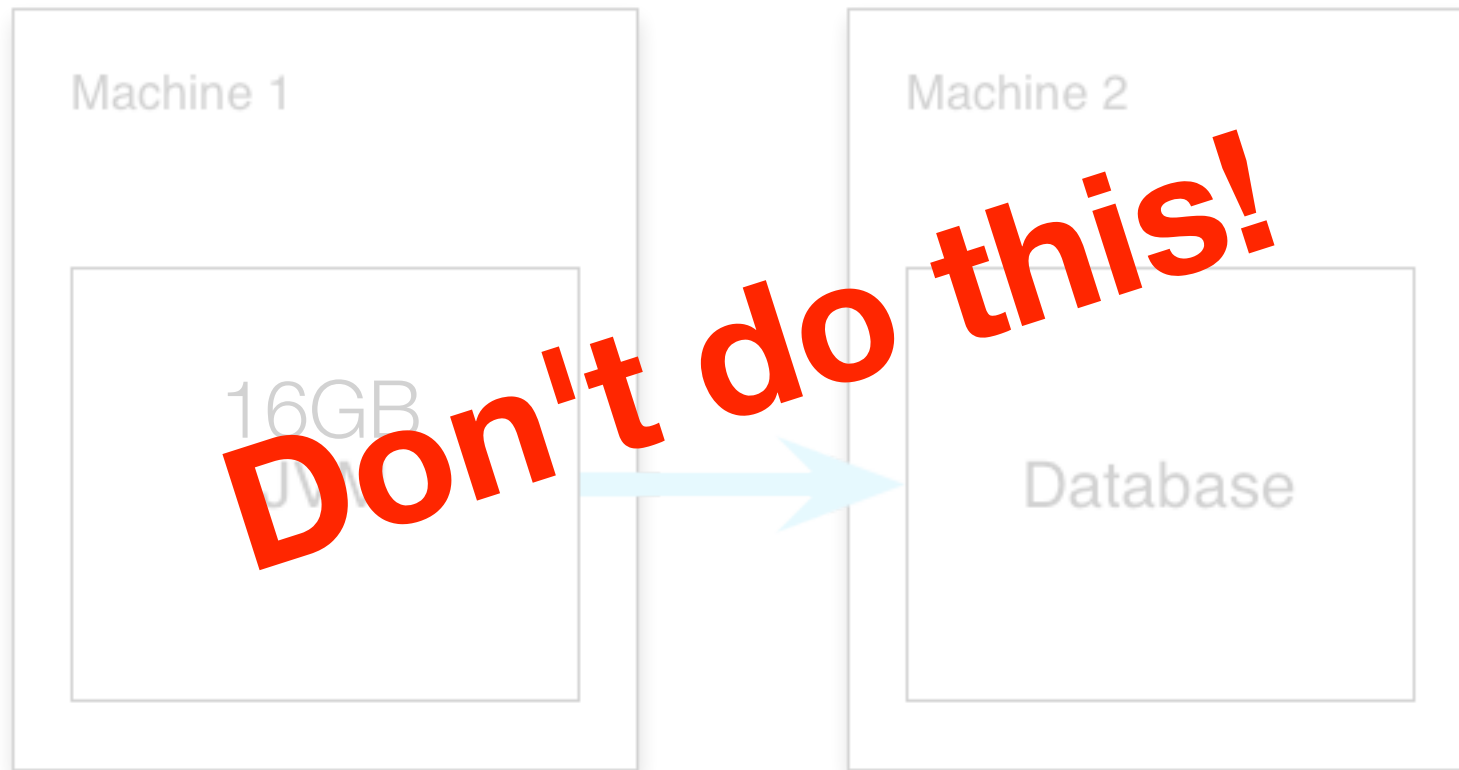
Evolution of an application

Add more RAM.

Evolution of an application

Evolution of an application

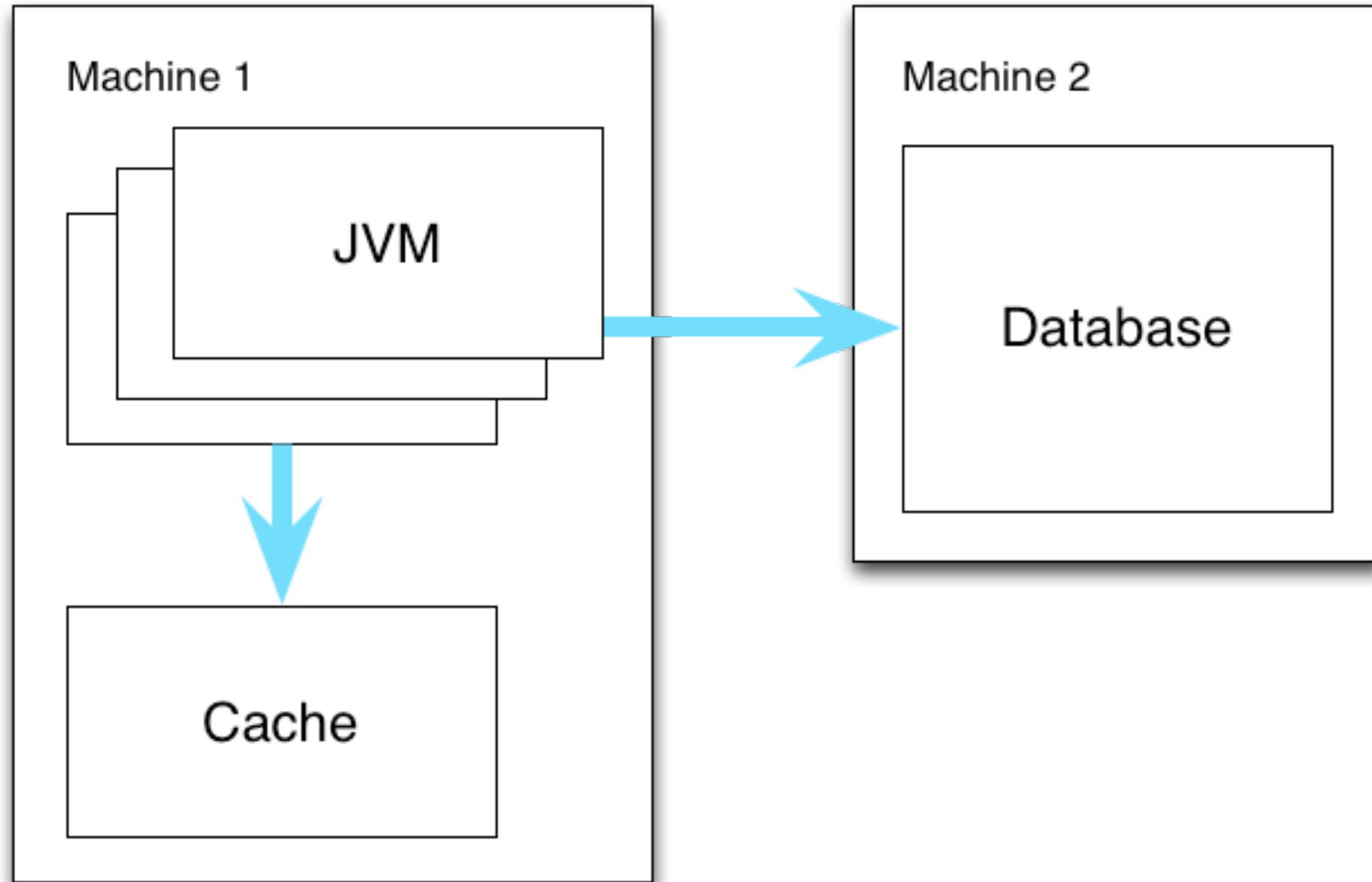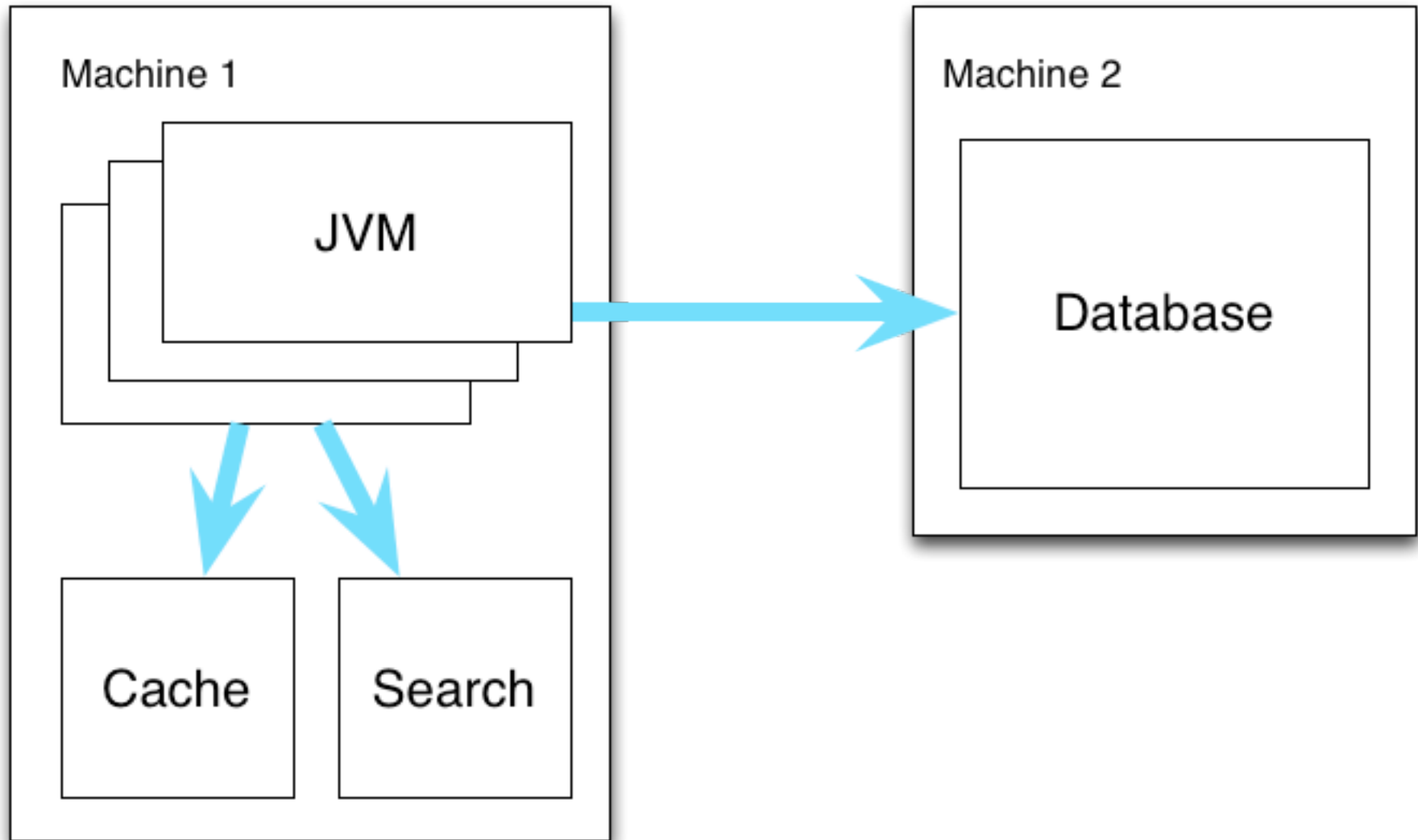# Evolution of an application

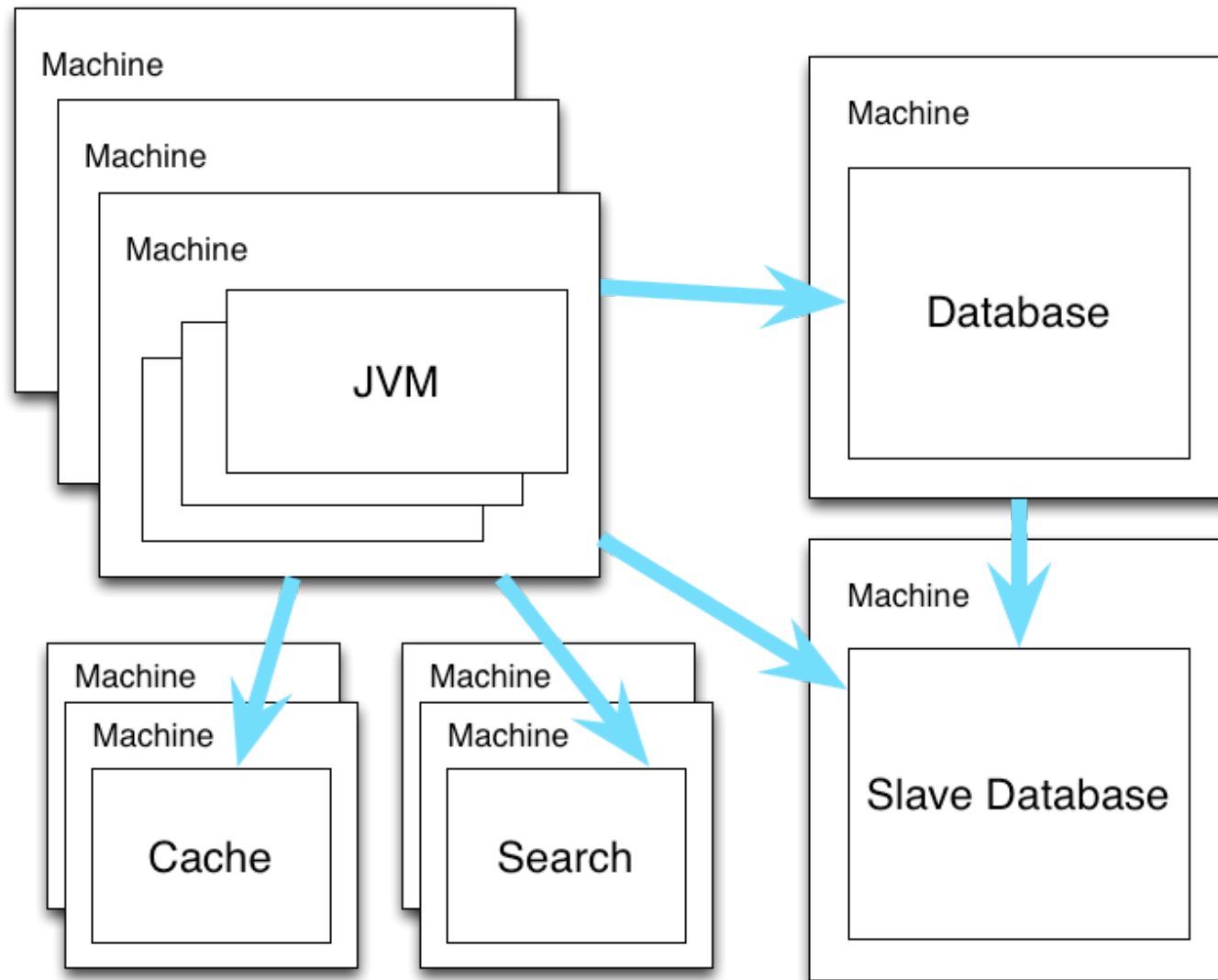# Evolution of an application

Evolution of an application

Evolution of an application

<p style="text-align: center; font-size: 2em; color: gray;">One big binary.</p>
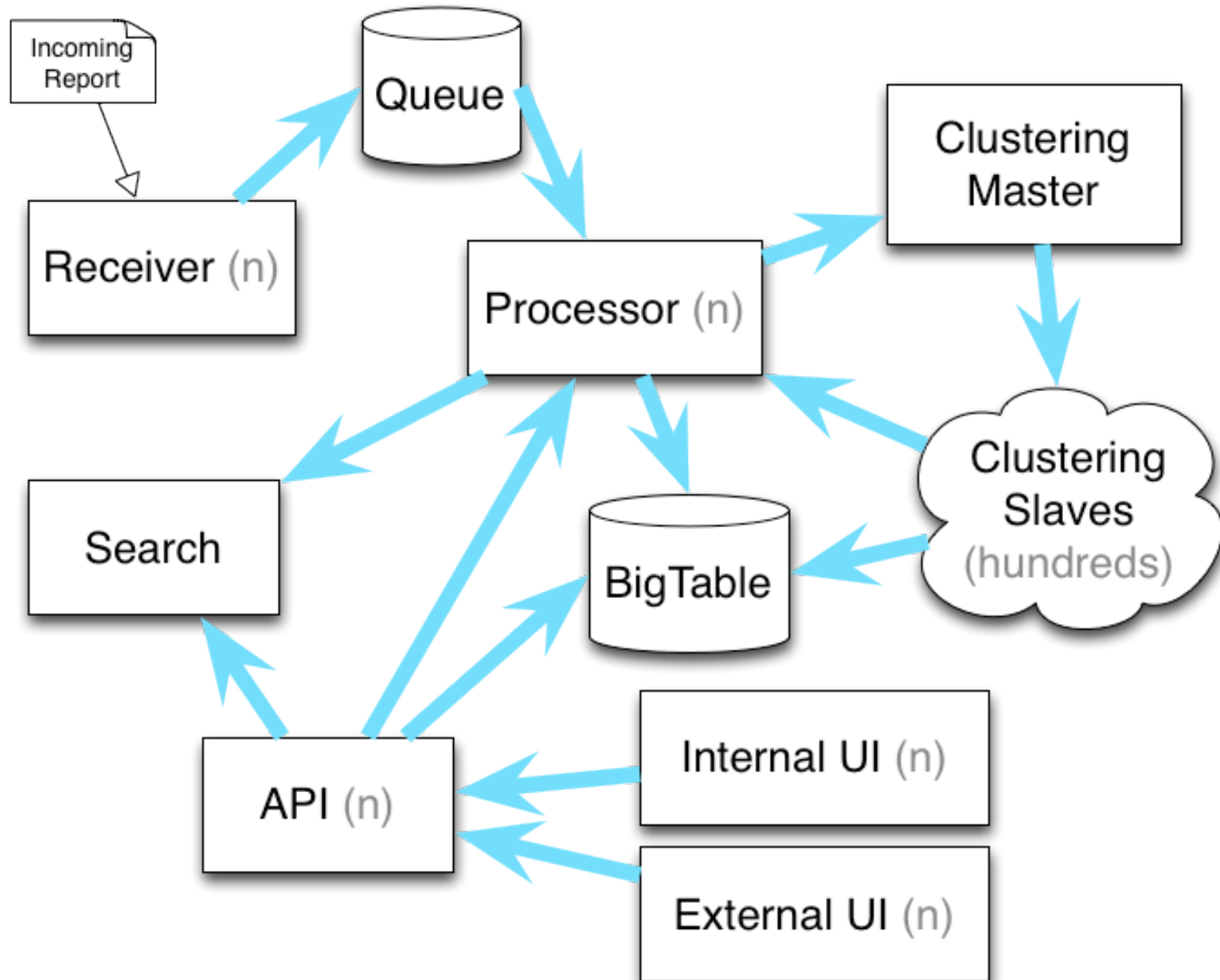
Change your mindset

- •Many small binaries

- •Many small JVMs

- •Connected with RPC

Google Feedback

- 4 data centers

- 8+ types of jobs

- Processing queue

Google Feedback

Issues

- •Delay in processing queue

- •Single points of failure

- •Master election
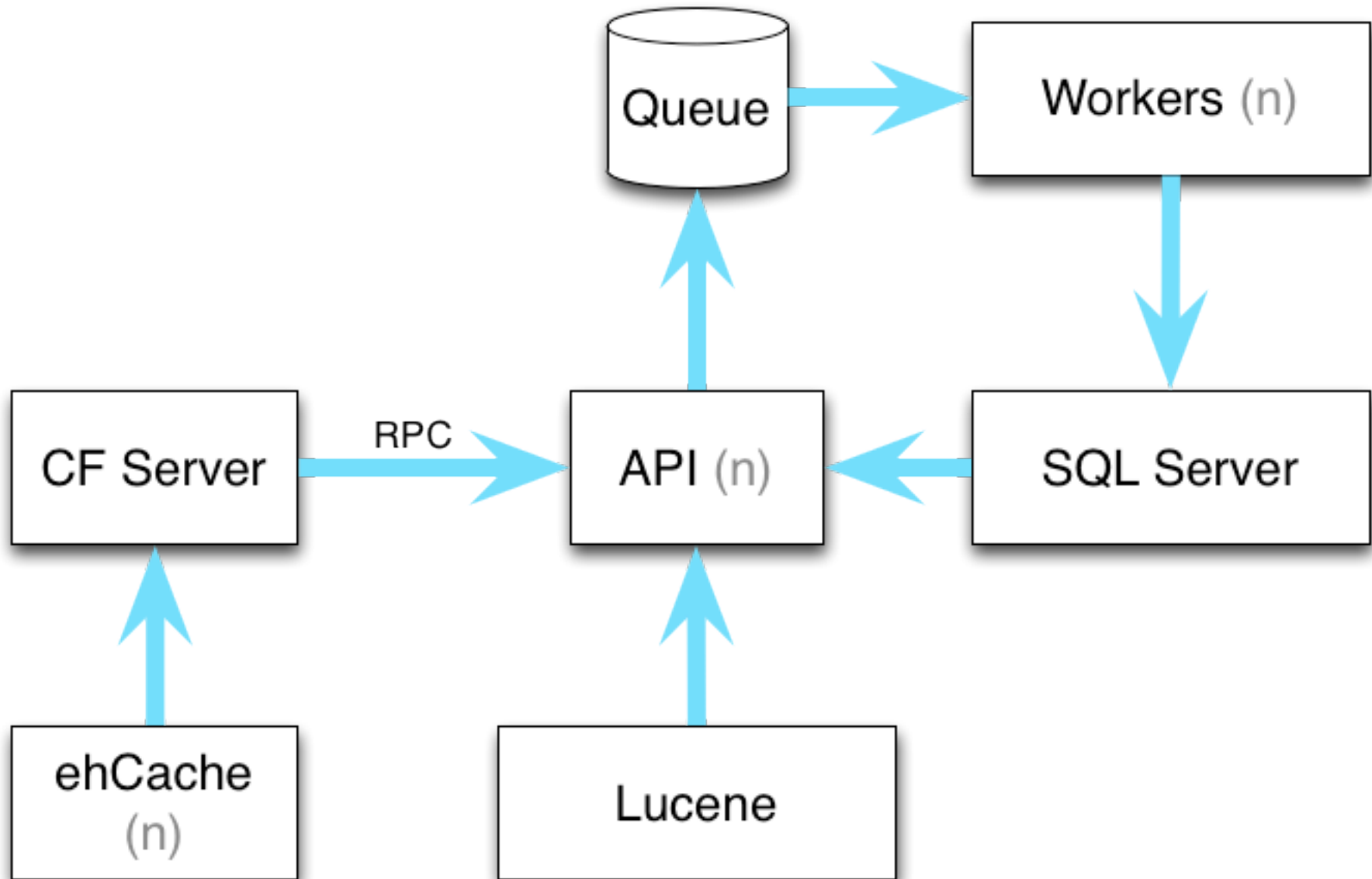
Scalable ColdFusion

- Many small binaries

- Many small JVMs

- Connected with RPC

Scalable ColdFusion

Purpose built jobs

- Async processing queue

- Many small JVMs

- End request as fast as possible

Kinds of jobs

- Virus scanning

- Image processing

- Data transforms

- Index updates

Pros

•Reliability

•Scalability

•Performance (distribute latency)
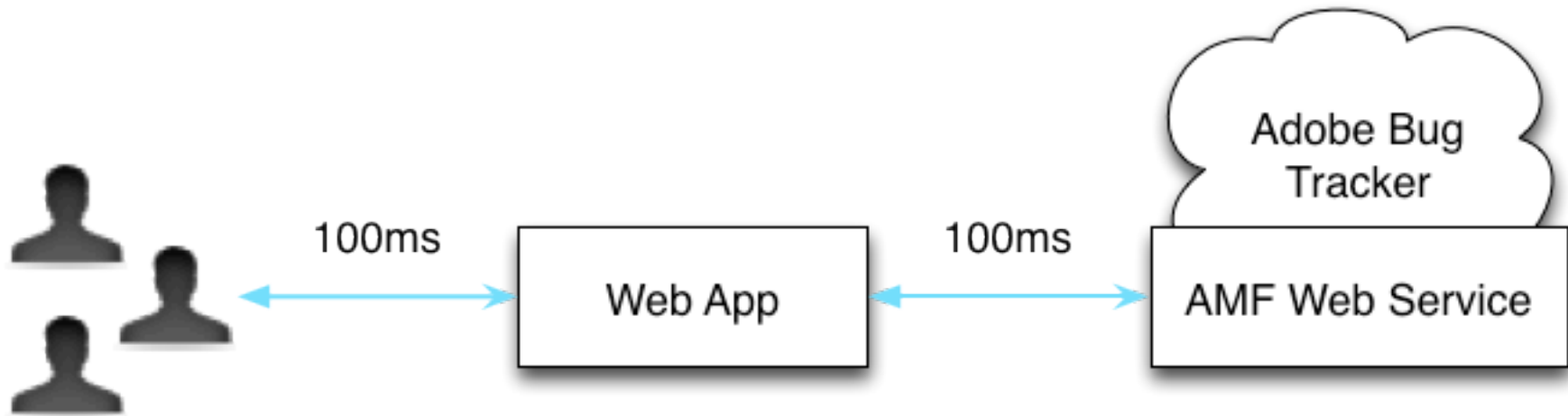
Cons

- •Complicated push

- •Complicated failures

- •Relaxed consistency

CFBug Mirror

FreshBot

- Search engine spider
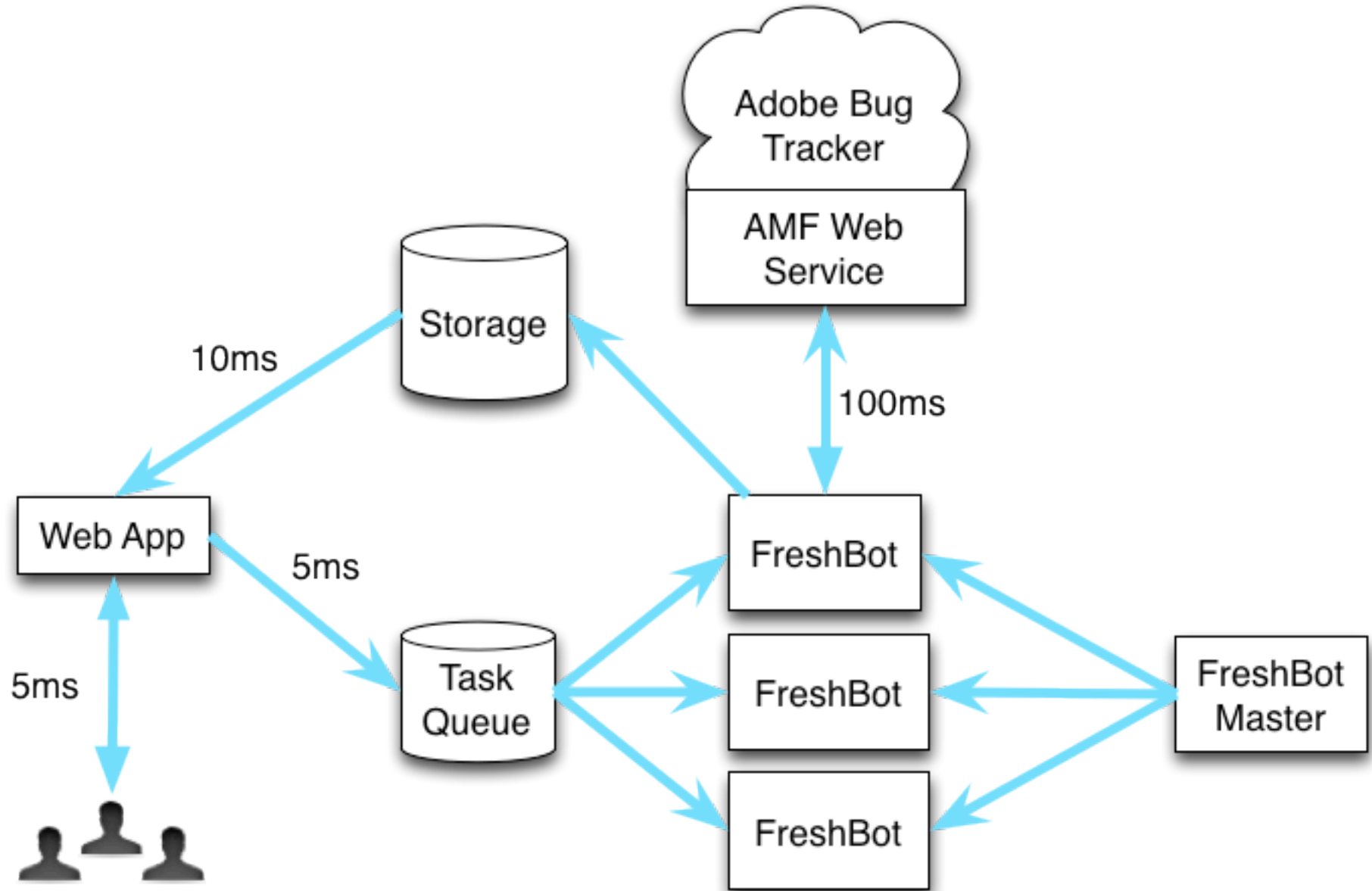
- 3 modes
  - Full
  - Recent
  - Freshness

FreshBot indexing

- Full
  - 1-2 hours (once a day)

- Recent
  - 200ms (every n minutes)

- Freshness
  - 100ms (item) + 100ms (page)

CFBug Mirror (Freshbot)

vs 1 JVM and many threads (and RAM)

•Bad failures modes

•Slow restarts

vs 1 JVM and work queue in memory

- Bad failures modes

- Consistency

Benefits

Use the right language.

Pro tip: Rolling updates

- Avoid downtime

- Never show
  "We're down for maintenance"

Debugging distributed systems is hard.

Questions

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