

Bots Not Cattle



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third wave of automation?

1. software packages
2. configuration management
3. container orchestration?

third wave of automation?

1. software packages
2. a. configuration management
b. container orchestration
3. ???

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Treat Servers Like Cattle, Not Pets





the problem with cattle

- *dumb*
- move only in one direction
- require (smart) central management

central management limits

- infrastructure scale
- people scale (dev/ops split)
- communications lag
- application event response





Recipe

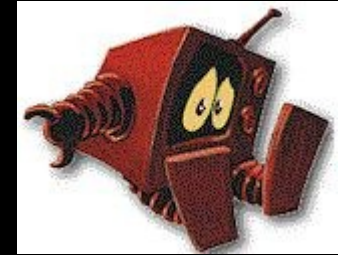
if this then that

Trigger

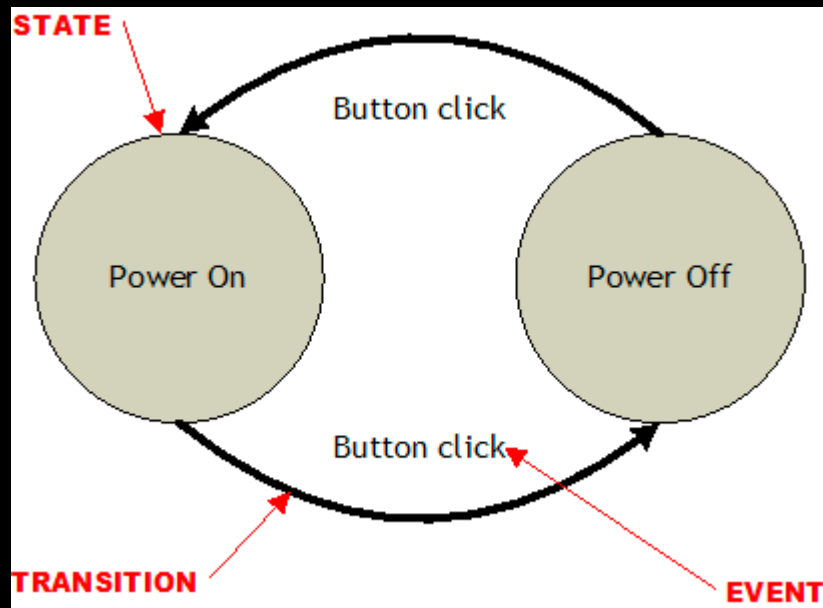
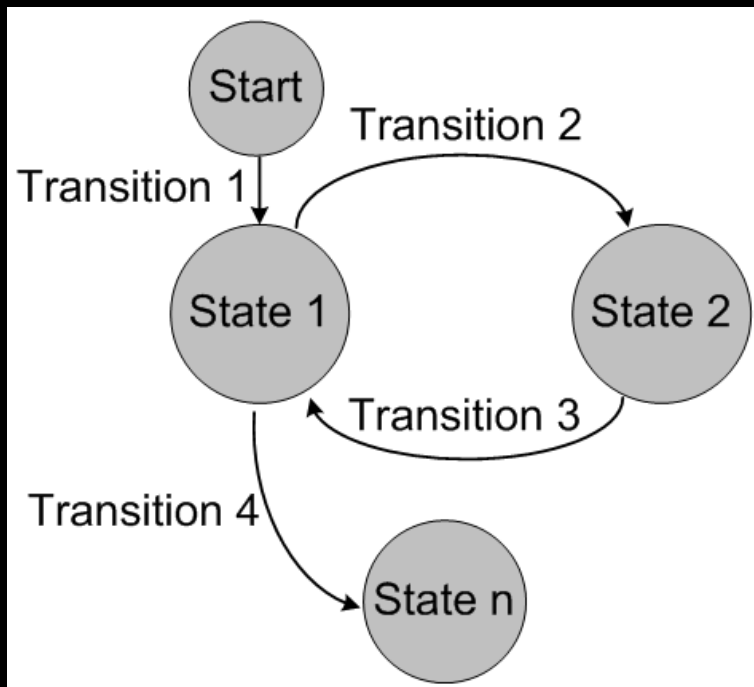
Action

intelligent "bots"

- capable of reacting to deployment, configuration, and availability events
- programmed to "do the right thing" in each case



state machines



state machines

- simpler, testable logic
- avoid unhandled events
- much simpler scheduling

new bot rules

1. bots initialize themselves
2. bots know their own state
3. bots share their state
4. bots change their state in response to events

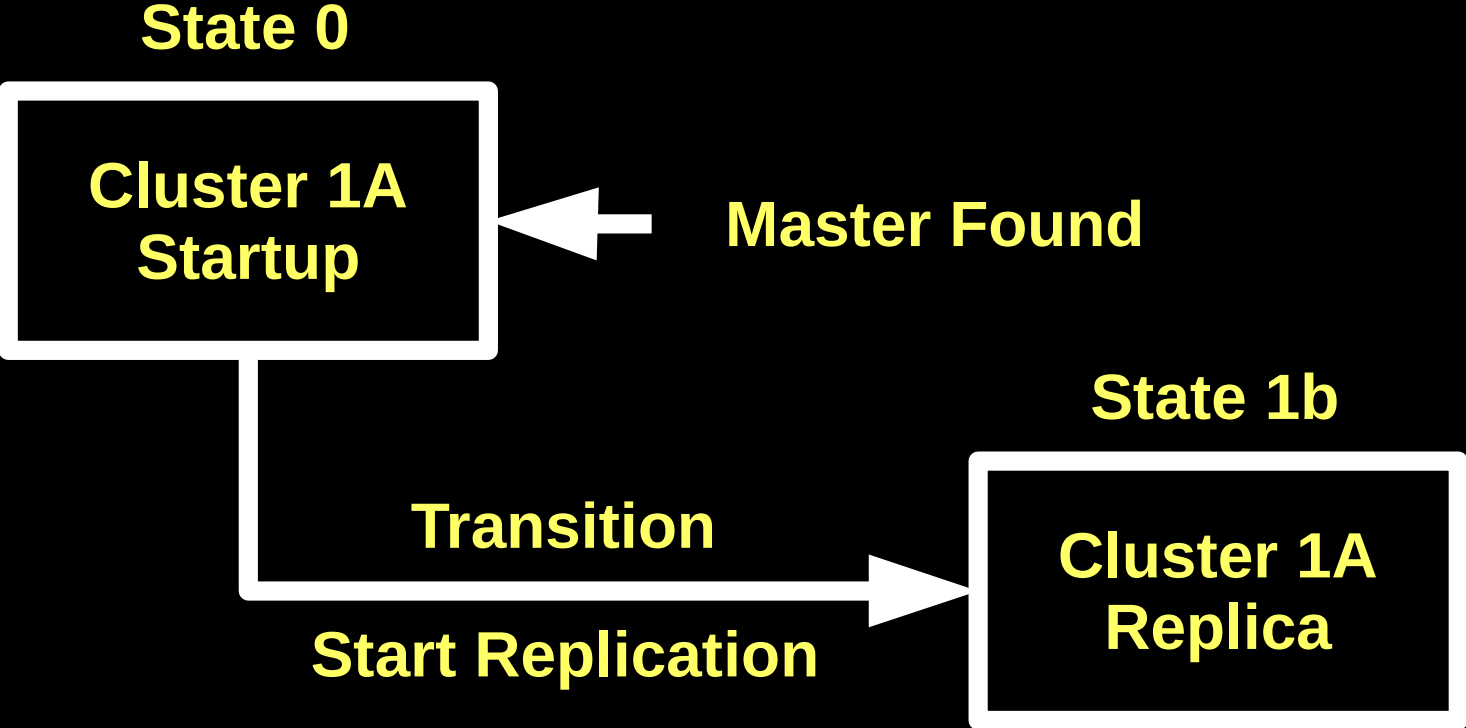
new bot rules

1. self-configuration
2. local state store
3. distributed configuration
4. event-driven response loop

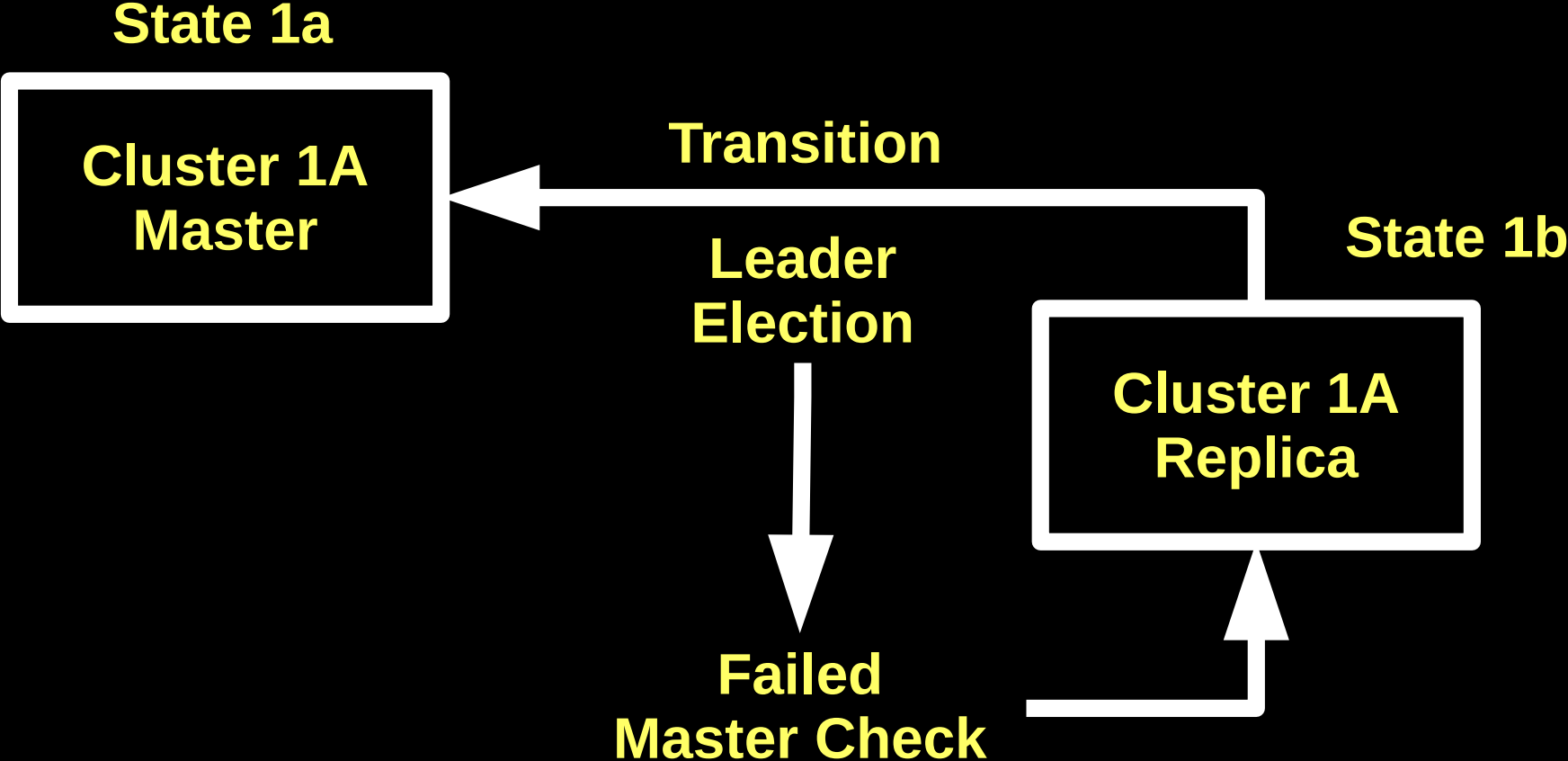
new bot rules

1. sophisticated init code
2. local daemon which maintains state
3. write state to etcd
4. watch etcd for changes

patroni: postgres automation



patroni: postgres automation



bot-ish platforms

- Postgres: patroni, manatee, flynn.io
- Chef Habitat
- Nomad, Kubernetes custom schedulers
- Mesos Frameworks

boticizing



- How can it initialize and self-configure?
- How can it store state about its part of the infrastructure?
- Use a DCS.
- Rewrite management as a set of state transitions.

boticizing a web app: init

1. initialize with DCS connection & node name
2. query DCS for DB connection & CDN
3. pull new code from git
4. launch
5. update DCS with state



bot problems

- lagginess:
event watch, gossip
- race conditions: DCS locking
- resource usage:
resource events?
- frameworks for writing state machines?

let's build some bots!



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