

Elegantly Dumb, Powerfully Backed Mirroring

Community over Complexity

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Howdy y'all, I'm Jonathan

- Infrastructure Lead @ AlmaLinux
- ALESCo Member
- Fedora Packager, Sponsor
- EPEL Steering Committee Member
- 20+ years as open source consumer
- 4 years as open source contributor



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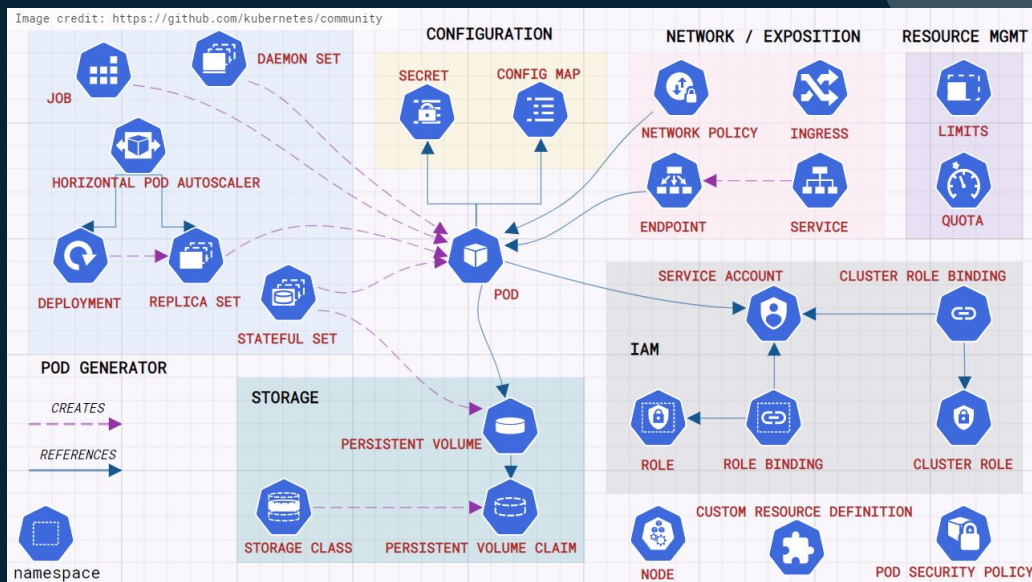
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The Cult of Complexity

- The allure of the "Modern Stack"
- Complexity = Fragility
- The high cost of "smart" features you don't use
- Large bills



Defining "Elegantly Dumb"

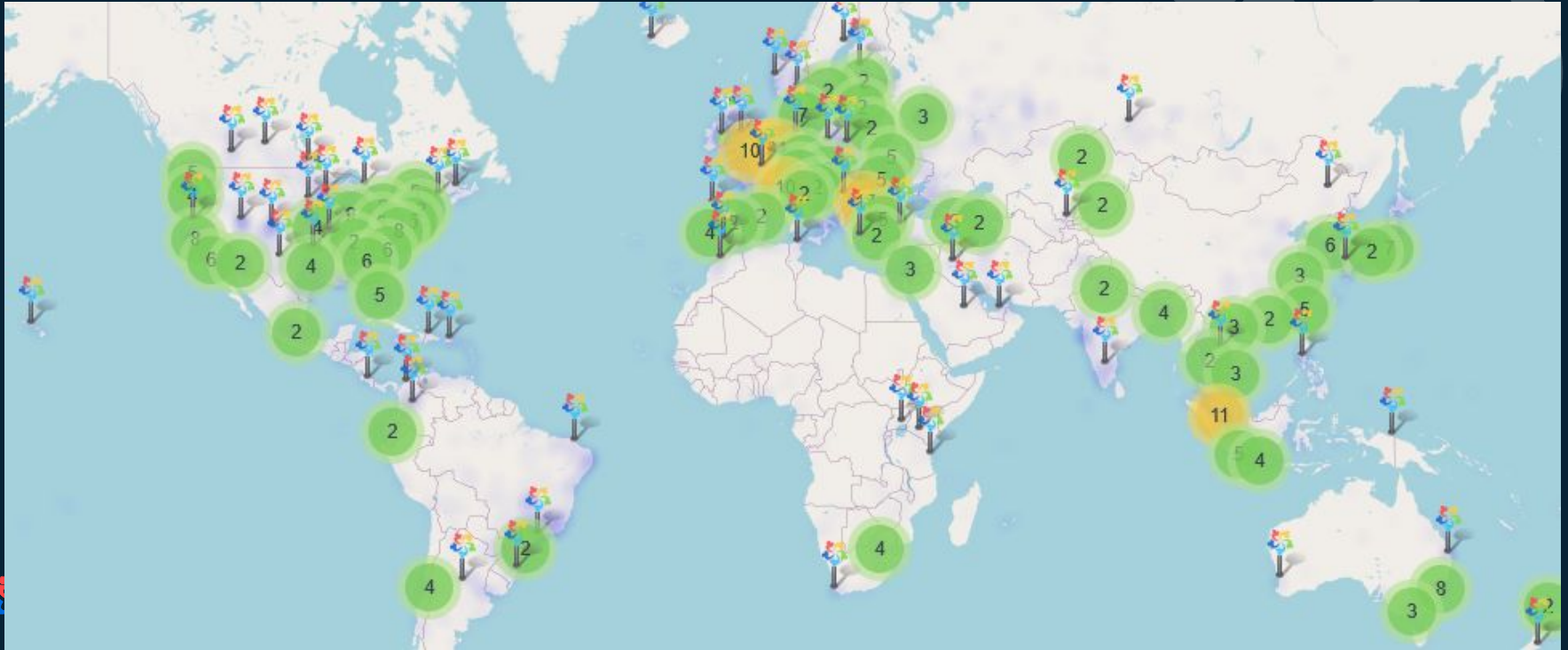
- The Mirrorlist: Our custom-built "Brain."
- The Protocol: RSYNC and HTTP—the old reliables.
- The Goal: Move bits from A to B with zero interference.
- Simple does not mean inferior (or slower)

The Architecture of Restraint

- Near-stateless: No massive database dependencies.
- Geo-Awareness: Simple, fast IP-based routing.
- Self-Healing: If a mirror is down, it's simply ignored.
- Only direct hosts as mirrors, no CDNs

Powerfully Backed: The Community

- 400+ mirrors globally
- No CDN bills
- A "hydra" architecture.
- Automatic local mirroring





ARCHITECTS

KE-CLARK.TUMBLR

The Infrastructure Lead's Manifesto

- Prioritize Maintainability over Cleverness.
- Build for the 2 AM Wake-up Call
- Infrastructure should be Boring
- Kubernetes is not usually the solution



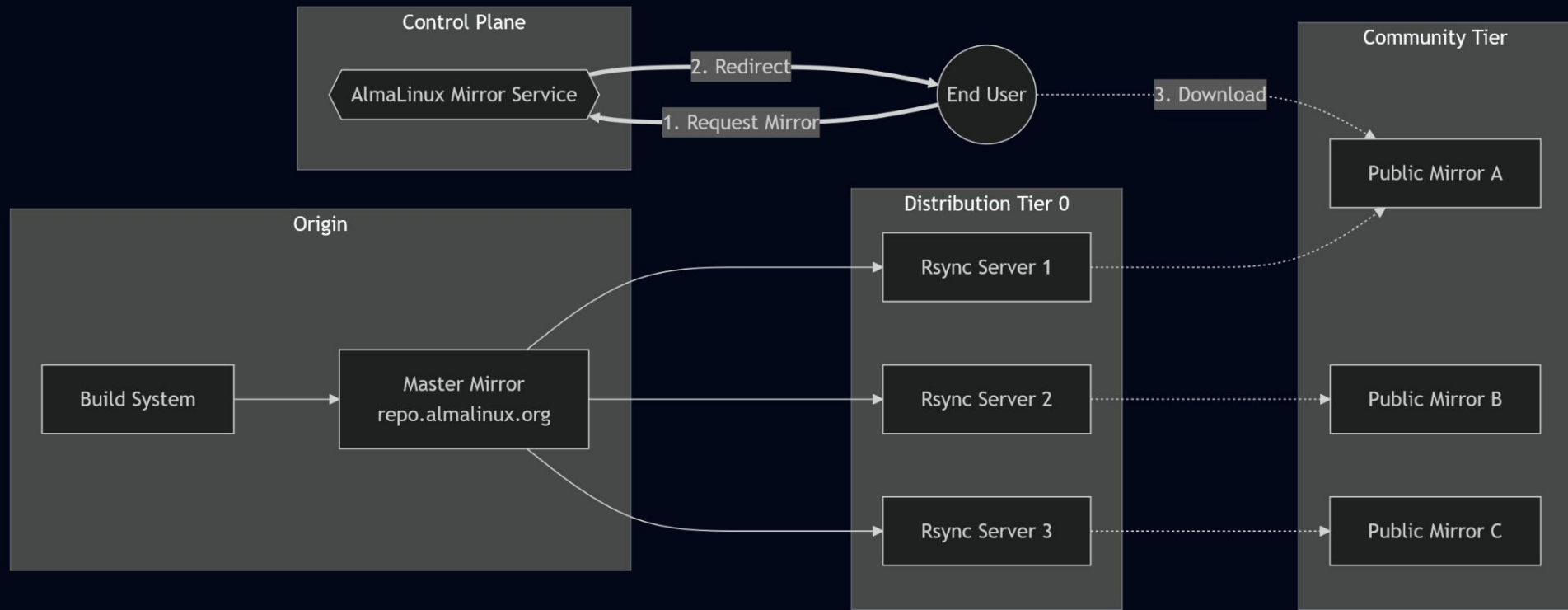
The Tech Stack

- Mirrorlist
 - Python (asyncio)
 - Valkey (formerly Redis)
 - Sqlite
 - Nginx
 - Ansible
 - IPInfo geoIP data
- Master/tier 0 servers
 - rsync
- Mirrors
 - Virtually any http server
 - rsync

- Infrastructure
 - AWS autoscaling VMs
 - AWS load balancer
 - AWS ElastiCache Valkey
 - AWS Route53 geo-DNS (for tier0/rsync only)

We use this stack out of convenience thanks to AWS's generous infrastructure contributions, but it can all be done with FOSS.

dnf Request Flow



The "How It's Going" Scorecard

- 400+ community mirrors
- 3,118,248,201 requests in 2026
- 99.99% uptime since January 2023
- \$0 spent on CDNs
- Supporting nearly 2.5 million installed systems
- Average bandwidth per mirror <100Mbps

Join the Network: Host an AlmaLinux Mirror

- Automatic ASN-based routing keeps local update traffic on your own network
- Zero client-side configuration; our mirrorlist handles the logic for private mirrors too!
- Reduce expensive "northbound" transit by serving OS updates locally
- Support the ecosystem that powers 2.5 million systems worldwide
- We can manage your mirror if desired!

Dumb Code. Genius Community. Join Us.

<https://almalinux.org/mirror>

~Infrastructure or ~Mirrors on chat.almalinux.org

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Questions?