

Debugging Services in Kubernetes With Linkerd 2.0

Risha Mars
mars@buoyant.io

Risha Mars (me. hi!)

Software Engineer at Buoyant

✉️ mars@buoyant.io

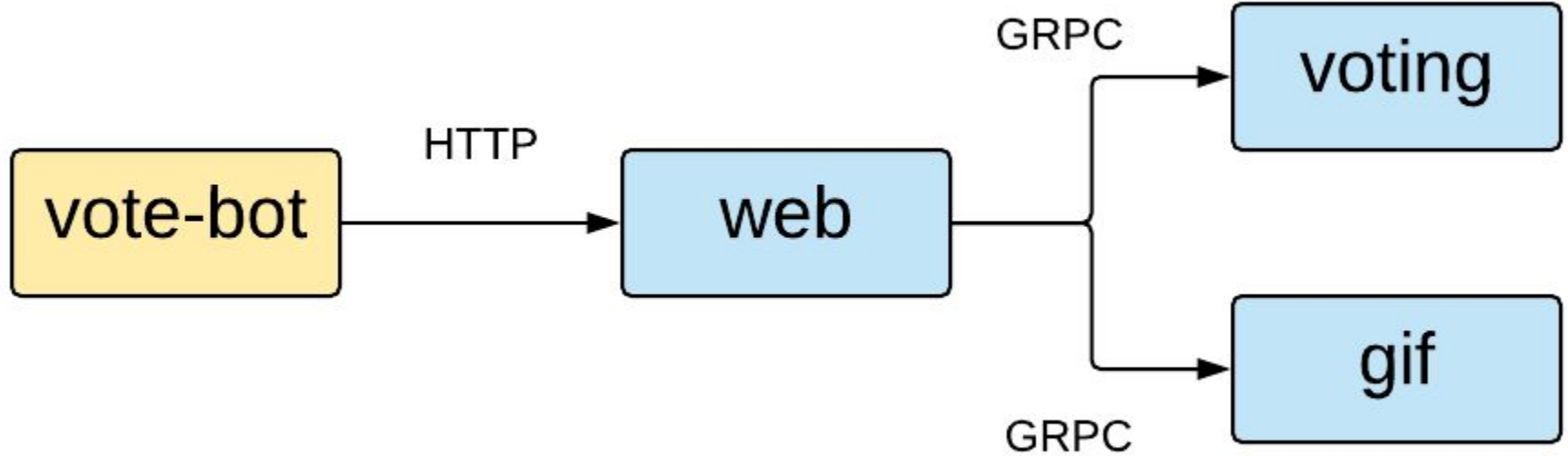
🐦 @marzipan





<http://bit.ly/linkerd-tutorial>

My application: nodevoto



Server on fire!

Today, 2:26 PM

Assigned to: Rachael Byrne

Service: PDT-RB

Incident Details

Timeline

SUBJECT

Server on fire!

DETAILS

INCIDENT SUMMARY

Server on fire!


ACK


RESOLVE


MORE



Honest Status Page

@honest_update

Follow



We replaced our monolith with micro services so that every outage could be more like a murder mystery.

4:10 PM - 7 Oct 2015

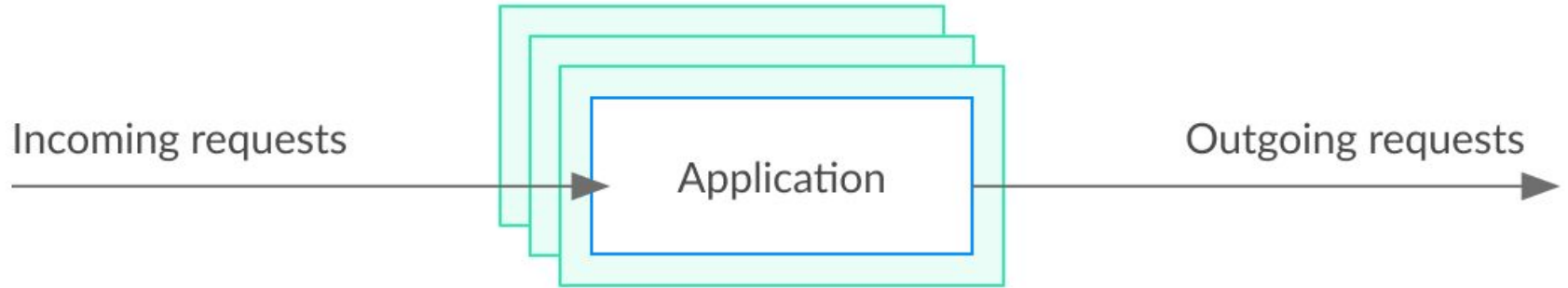
How do we solve this mystery?

- Improve our logging
 - What if it's a service we don't control?
- We need visibility into our app!
 - Add instrumentation libraries to the code
 - Add monitoring (e.g. Prometheus)
 - Set up dashboard (e.g. Grafana)
- Is there an easier way?

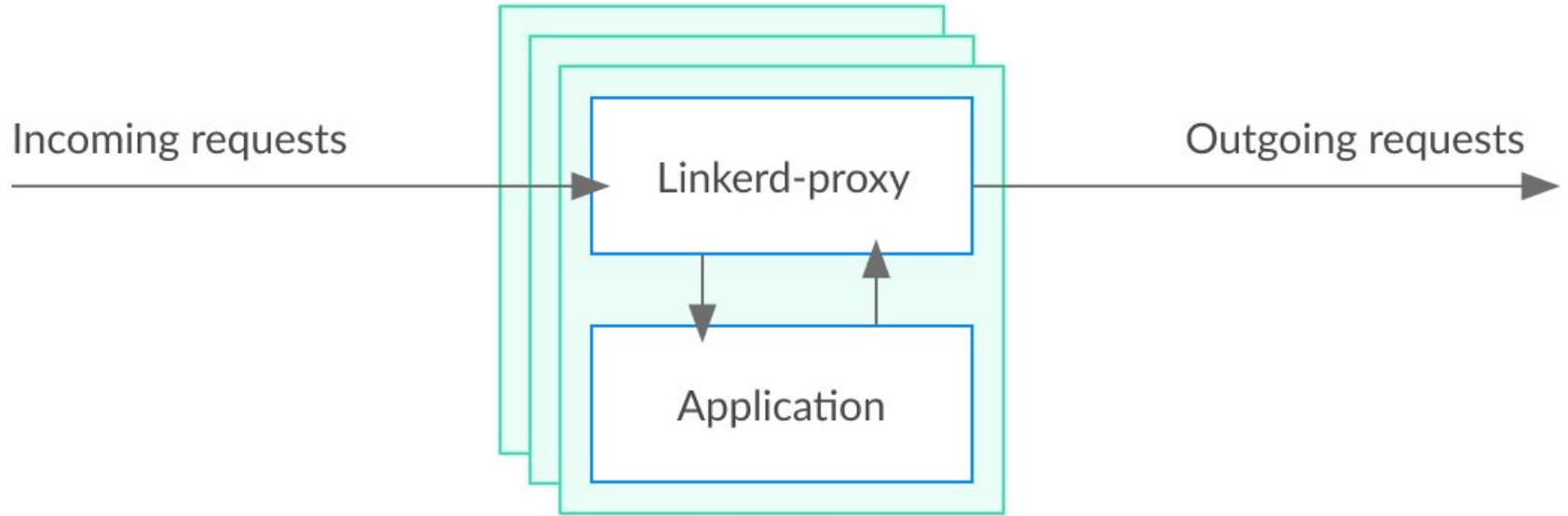
The background is a solid blue color with several diagonal stripes of varying shades of blue and cyan running from the bottom-left towards the top-right. The stripes are of different widths and are semi-transparent, creating a layered effect.

Linkerd

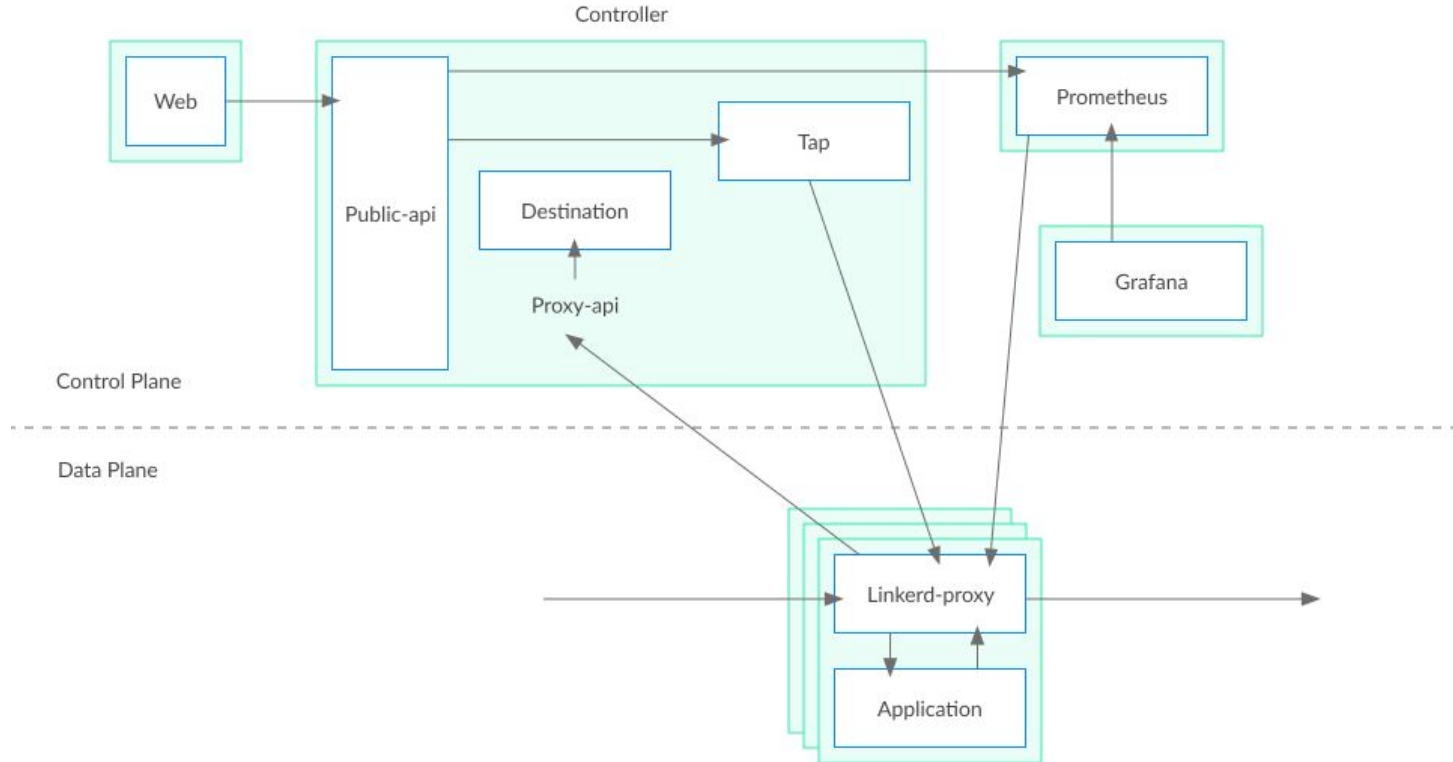
Linkerd 2.0: a service sidecar



Linkerd 2.0: a service sidecar




Linkerd 2.0 architecture



Mystery solved!



What did we do?

- Installed linkerd control plane
- Added web to the linkerd data plane
- Got the observability we needed! 
 - Used dashboard to find problematic endpoint
 - Inspected Grafana dashboards
 - Viewed live requests through the system

What did we NOT do?

- No code changes!
- No config changes!
- No bothering of other service owners!
- No bothering of ops / platform owners!

Linkerd is a tool for service owners

Not just a mesh, a “service sidecar”:

- ✓ Works on just one service
- ✓ No cluster-wide permissions
- ✓ Zero config, 60 seconds to install
- ✓ Focus on visibility and debugging
- ✓ Unix-Like CLI tools (tap, stat)

Solve problems. No permission required.

The screenshot shows the Linkerd UI with a sidebar on the left containing links for Overview, Tap, Top, Service Mesh, Resources, Documentation, and Help. The main content area is titled 'Deployments' and displays a table of deployment metrics. Below this, a 'Pods' section shows a table of pod status.

Deployment	Method	Success Rate	Request Rate	P50 Latency	P95 Latency	P99 Latency	TLS	Status
git	1/1	100.00%	1.89	2ms	41ms	48ms	0.0%	🟢
vote-bot	1/1	—	—	—	—	—	—	🟡
voting	1/1	82.14%	0.93	1ms	77ms	95ms	0.0%	🟡
web	1/1	91.15%	1.89	10ms	100ms	280ms	0.0%	🟡

Pod	Method	Success Rate	Request Rate	P50 Latency	P95 Latency	P99 Latency	TLS	Status
git-4b6d747b-7dsgn	1/1	100.00%	1.89	2ms	41ms	48ms	0.0%	🟢
vote-bot-845dcd46d-6xbvk	1/1	—	—	—	—	—	—	🟡
voting-584c6bffd-4vffk	1/1	82.14%	0.93	1ms	77ms	95ms	0.0%	🟡
web-5b64db75b4-ggnp7	1/1	91.15%	1.89	10ms	100ms	280ms	0.0%	🟡

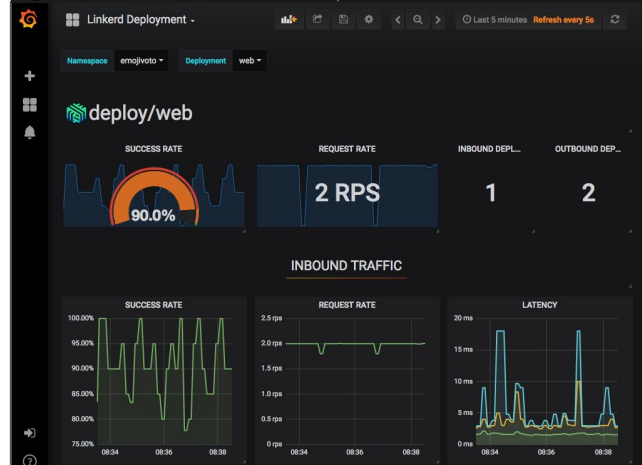
The screenshot shows the output of the 'linkerd stat all' command in a terminal. It displays statistics for various deployments, including success rates, request rates, and latencies.

NAME	MESHED	SUCCESS	RPS	LATENCY_P50	LATENCY_P95	LATENCY_P99	TLS
deploy/gif	1/1	100.00%	1.9rps	1ms	21ms	28ms	0%
deploy/vote-bot	1/1	76.79%	0.9rps	1ms	15ms	19ms	0%
deploy/web	1/1	88.50%	1.9rps	20ms	55ms	91ms	0%

NAME	MESHED	SUCCESS	RPS	LATENCY_P50	LATENCY_P95	LATENCY_P99	TLS
po/gif-b48cd747b-7dsgn	1/1	100.00%	1.9rps	1ms	21ms	28ms	0%
po/vote-bot-845dcd46d-6xbvk	1/1	—	—	—	—	—	—
po/voting-584c6bffd-4vffk	1/1	78.95%	0.9rps	1ms	15ms	19ms	0%
po/web-5b64db75b4-ggnp7	1/1	88.50%	1.9rps	20ms	55ms	91ms	0%

NAME	MESHED	SUCCESS	RPS	LATENCY_P50	LATENCY_P95	LATENCY_P99	TLS
svc/gif-svc	1/1	—	—	—	—	—	—
svc/voting-svc	1/1	—	—	—	—	—	—
svc/web-svc	1/1	—	—	—	—	—	—

NAME	MESHED	SUCCESS	RPS	LATENCY_P50	LATENCY_P95	LATENCY_P99	TLS
au/gif-svc.nodevoto:8080	—	100.00%	1.9rps	1ms	21ms	28ms	0%
au/voting-svc.nodevoto:8080	—	78.95%	0.9rps	1ms	15ms	19ms	0%
au/web-svc.nodevoto	—	88.50%	1.9rps	20ms	55ms	91ms	0%



Try it yourself!

<https://bit.ly/linkerd-get-started>



24+ months in production

2k+ Slack channel members

7,000+ GitHub stars

20m+ DockerHub pulls

80+ contributors

400b+ production requests/mo



credit karma



<http://github.com/linkerd>



Contribute!

<http://github.com/linkerd>

Golang, Javascript, Rust, Scala

Learn more!

Slides: <http://bit.ly/debug-with-linkerd>

Try it yourself!

- <https://bit.ly/linkerd-get-started>
- <https://bit.ly/linkerd-tutorial>

Ask questions!

- <https://bit.ly/LinkerdMailingList>
- <https://slack.linkerd.io/>

Risha: mars@buoyant.io / @marzipan

Linkerd User Studies

(if selected, \$50 Amazon gift card)

<https://bit.ly/LinkerdUserStudy>

Upcoming Events!

- 12/10: Linkerd in Production 101:
<https://sched.co/GyOx>
- 12/11-13: KubeCon:
<http://bit.ly/linkerd-kubecon>



We're hiring!

<https://buoyant.io/careers/>



Questions!?