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jamwt on Mar 14, 2016 | parent | favorite | on: Dropbox's Exodus from the Amazon Cloud

> Dropbox rewrote Magic Pocket in Golang, and then rewrote it again in Rust, to fit on their custom built machines.

Actually, full disclosure, we really just rewrote a couple of components in Rust. Most of Magic Pocket (the distributed storage system) is still written in golang.

> No word on perf improvements, cost savings, stability, total number of servers, amount of data stored, or how the data was moved.

Performance is 3-5x better at tail latencies. Cost savings is.. dramatic. I can't be more specific there. Stability? S3 is very reliable, Magic Pocket is very reliable. I don't know if we can claim to have exceeded anything there yet, just because the project is so young, and S3s track record is long. But so far so good. Size? Exabytes of raw storage. Migration? Moving the data online was very tricky! Maybe we'll write a tech blog post at some point in the future about the migration.

james_cowling on Mar 14, 2016

Yup, Dropbox Infra is mostly a Go shop. It's our primary development language and we don't plan to switch off any time soon.

We're always about the right tool for the job tho, and there are definitely use cases where Rust makes a lot of sense. We've been really happy with it so far.

SeanDav on Mar 14, 2016

Without getting into any sort of religious war, what are typical use cases that make Rust a better choice?

james_cowling on Mar 14, 2016

I think @jamwt did a pretty good job of explaining this in <https://news.ycombinator.com/item?id=11283688>.

At a high level it's really a memory thing. There are a lot of great things about Rust but we're also mostly happy with Go's performance. Rust gave us some really big reductions in memory consumption (-> cheaper hardware) and was a good fit for our storage nodes where we're right down in the stack talking to the hardware.

Most of the storage system is written in Go and the only two components currently implemented in Rust are the code that runs on the storage boxes (we call this the OSD - Object Storage Device) and the "volume manager" processes which are the daemons that handle erasure coding for us and bulk data transfers. These are big components tho.

moomin on Mar 14, 2016

The really big deal is memory management. There's no GC, and there's pretty precise memory control, and it's not the Shub-Niggurath that dealing with C++ is.

In fact, just think of Rust as C++ for mortals. :)

rbranson on Mar 14, 2016

Curious about the specifics with how you interfaced Go with Rust.

jamwt on Mar 14, 2016

Right now, they talk over RPC. In the future, we might embed Rust libraries as C libraries into go and other languages.

mandeepj on Mar 14, 2016

Was not earlier it was Python? I guess Dropbox even hired Guido van Rossum due to this.

chirau on Mar 14, 2016

What happened to Python?

jamwt on Mar 14, 2016

We still have a ton of Python. James is referring to the infrastructure software layer--storage services, monitoring, etc. That particular part of Dropbox is mostly Go.

But our web controller code, for example, is millions of lines of Python. And we use Python in lots of other places as well.

illumin8 on Mar 14, 2016

I had to count carefully, but it appears you're claiming 12 9's of durability for magic pocket, which seems like a subtle jab at S3's 11 9's.

I think both durability numbers would be fine for customers, but I've also wondered about the math behind AWS S3 durability for a while, and how you would prove statistically that 11 9's was even possible.

toomuchtodo on Mar 14, 2016

I'd imagine that if Backblaze is realizing great cost savings building their own storage pods from commodity off the shelf components, Dropbox's costs we're even lower per GB. Well done.

atYevP on Mar 14, 2016

Yev here -> One of the reasons we started opening up about our Backblaze Pods and Hard Drive stats was so others would do so. We approve this message :D

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