Sean Christopherson
September 2022

Scaling KVM (and its community)

Google Cloud

I was told there would be cake.

Milton Waddams

KVM in 2022

6
architectures

300+
files

150,000+
lines of code

150+
contributors

1100+
commits

90,000+
lines of test code

What?

01

Development

More architectures. More features.
More use cases.

02

Maintenance

More contributions means more patches to review and more code to maintain.

03

Validation

More of *everything* means more things that can break.

The first step in solving a problem is recognizing there is one.

Unknown

How?

If KVM were a network...

- More cat videos!
- Delivered faster!
- Less downtime!

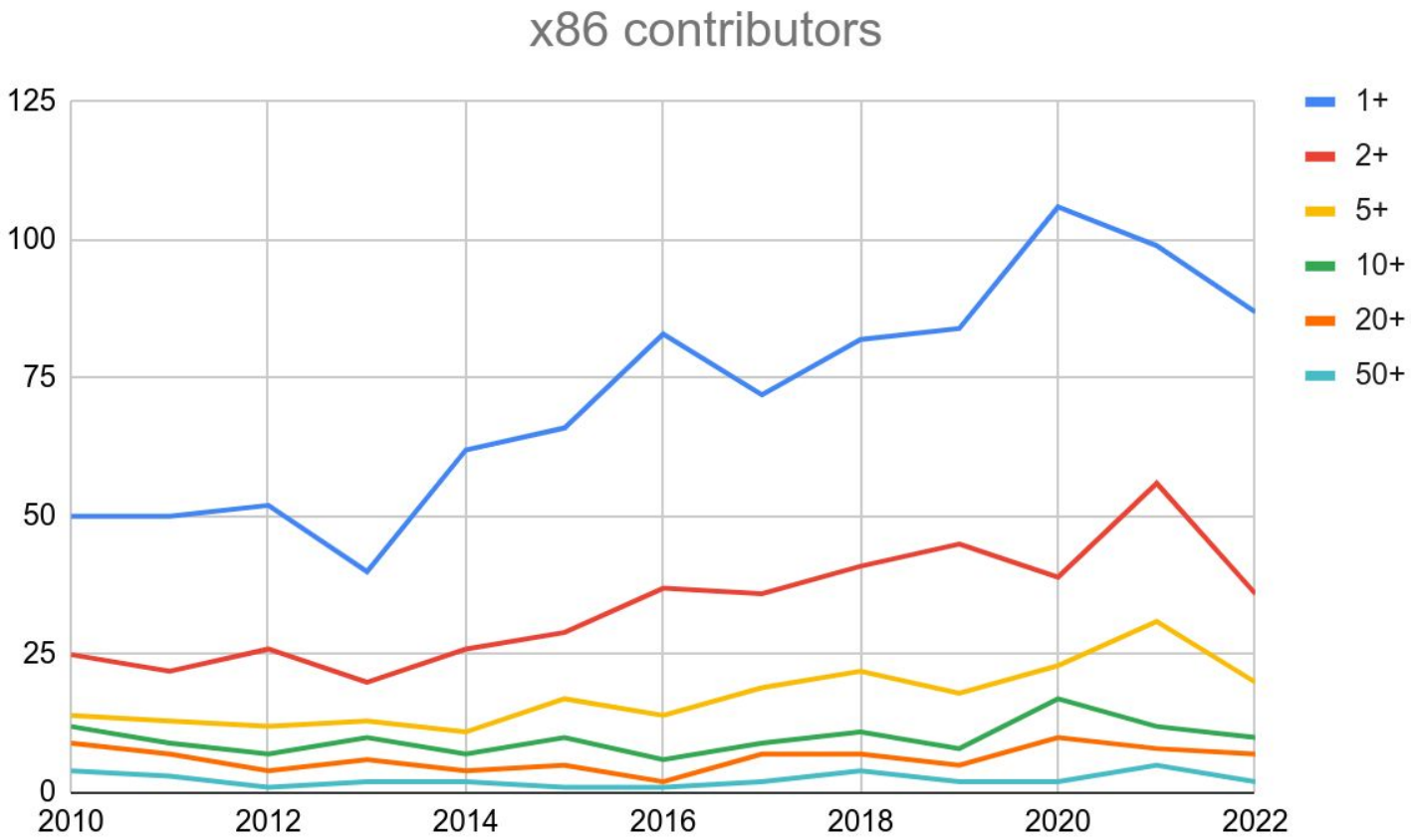
Google Cloud

Latency

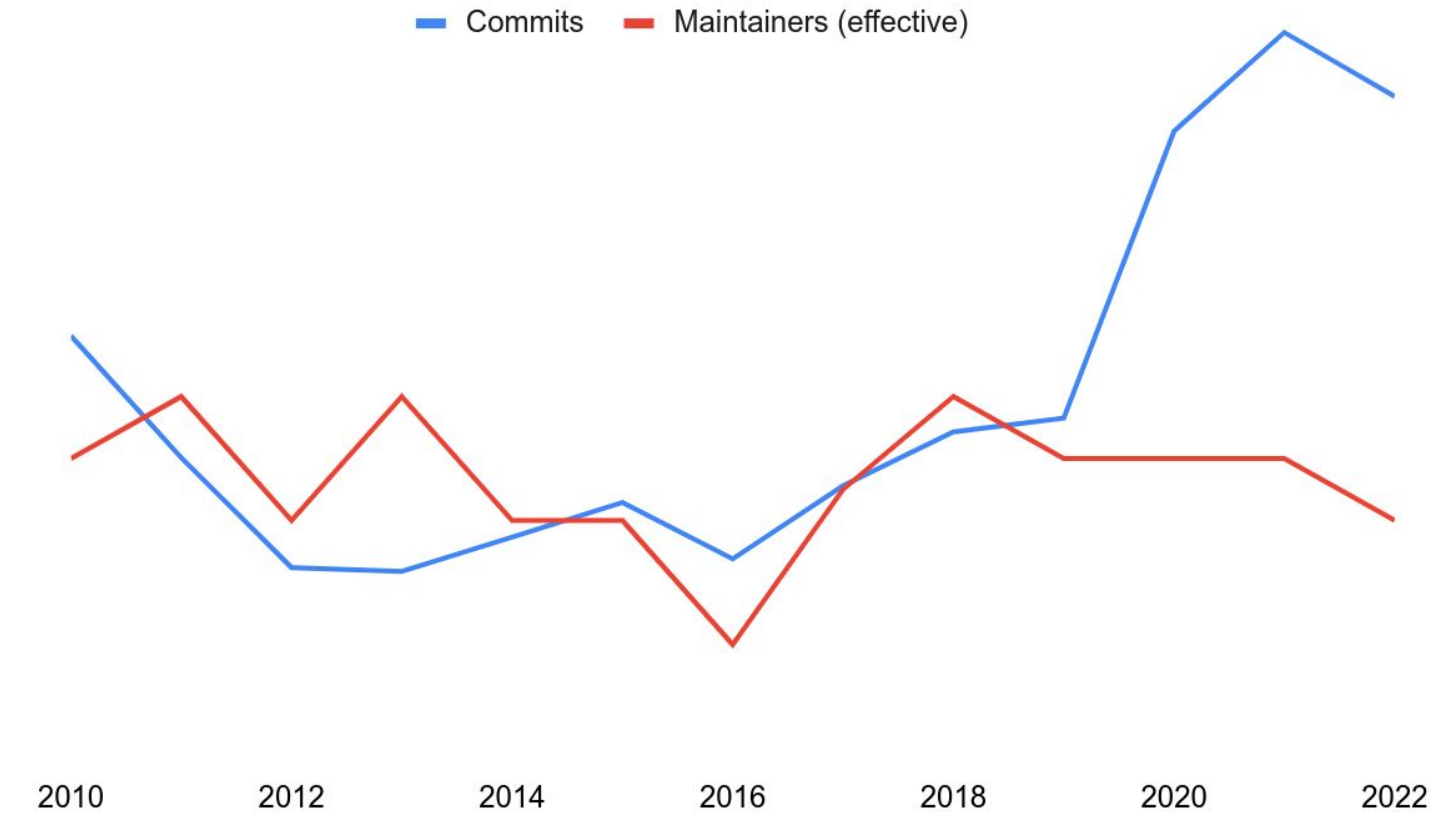
Google Cloud

Ping

Everyone Except Paolo



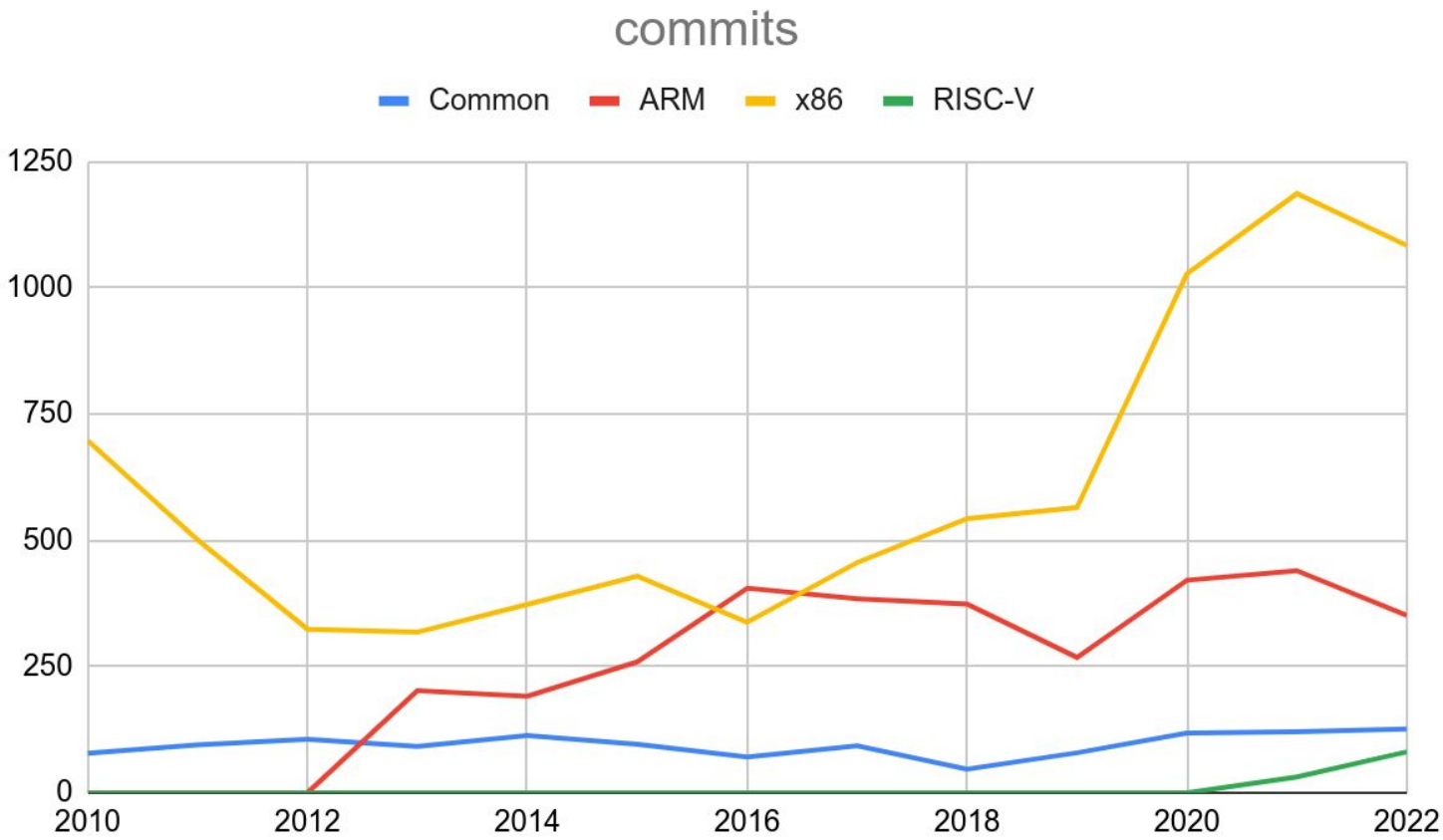
Google Cloud



Google Cloud

Efficiency

Google Cloud



Google Cloud

Queued, thanks.

Paolo Bonzini

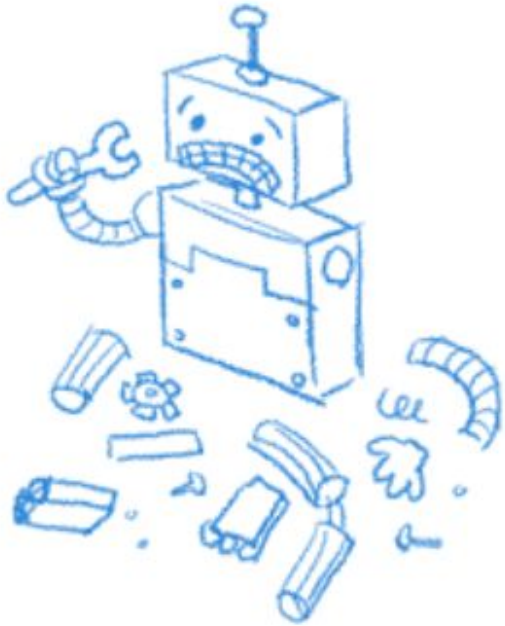
Monitoring

Google Cloud

Google

404. That's an error.

The requested URL /kvm_health was not found on this server. That's all we know.



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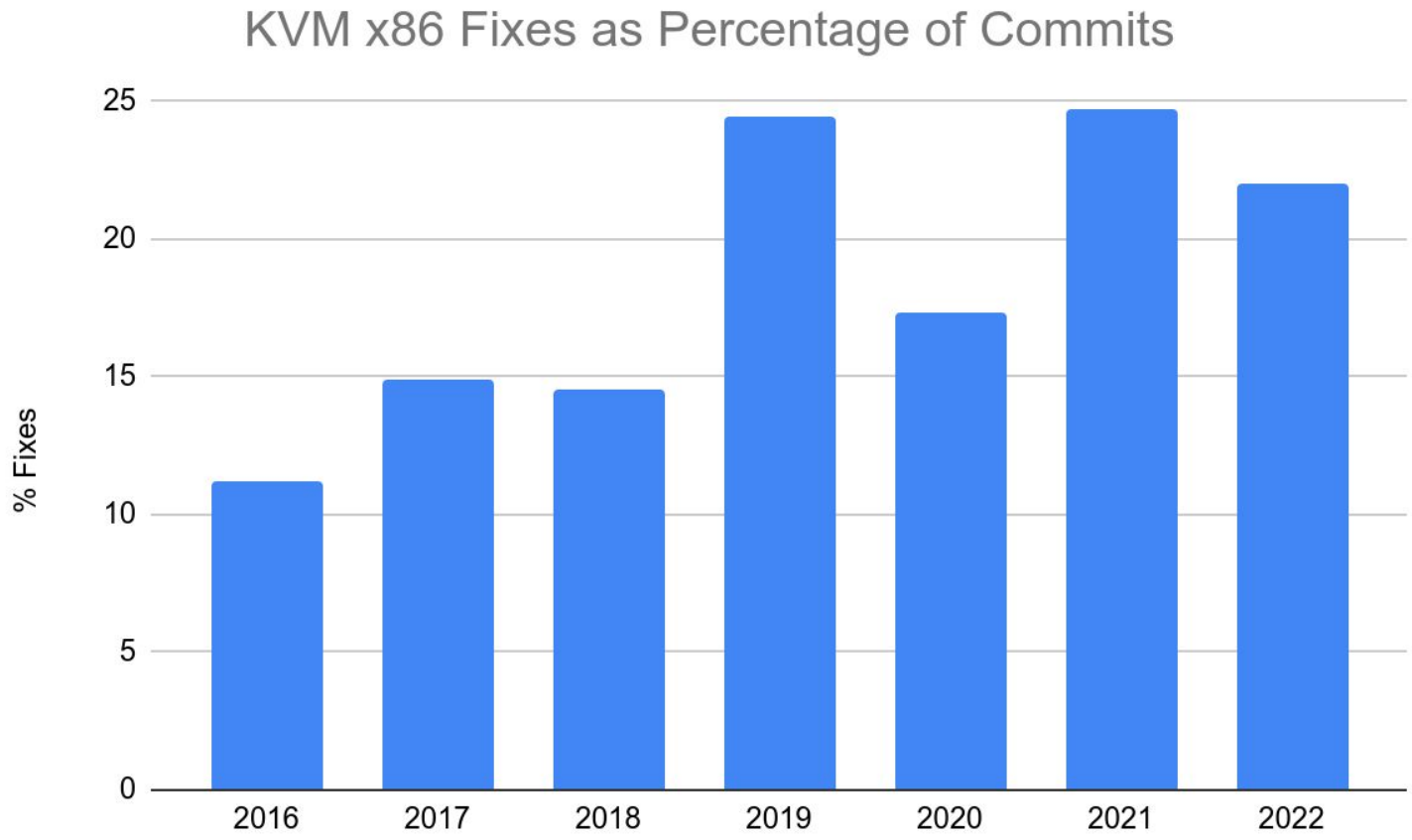


Google Cloud

Durability

Google Cloud

Close only counts in horseshoes and hand grenades. And KVM.

Frank Robinson

Google Cloud

Years with 20+ commits (since 2008)

3+

Maxim Levitsky

Takuya Yoshikawa (*)

Marcelo Tosatti (*)

4+

Xiao Guangrong (*)

Radim Krčmář (*)

Joerg Roedel (*)

5+

Wanpeng Li

Sean Christopherson

Vitaly Kuznetsov

Gleb Natapov (*)

6+

Paolo Bonzini (10)

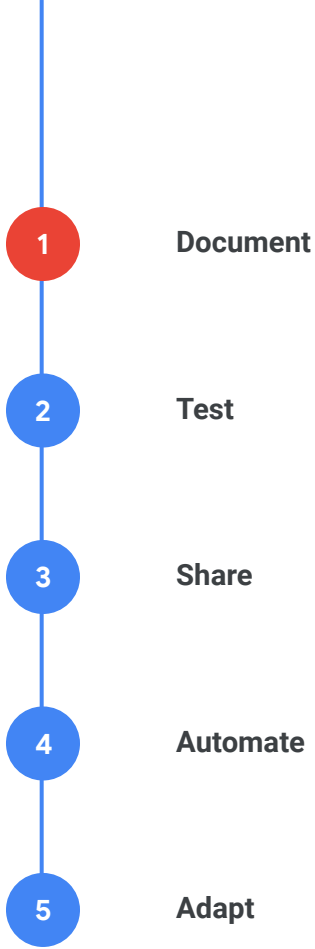
Avi Kivity (*)

Jan Kiszka (*)

No, really. How?

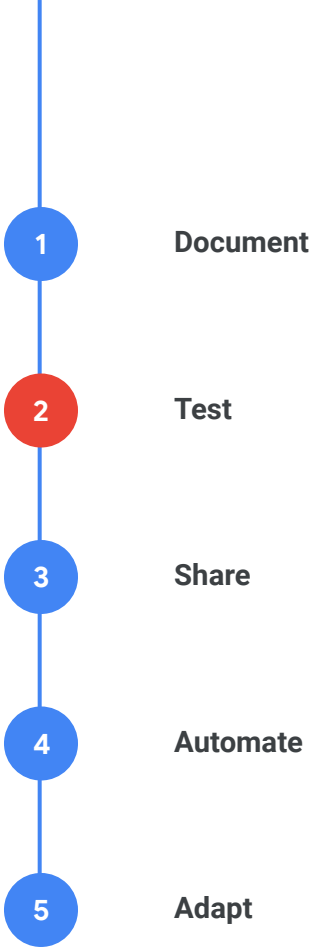
Document

- Processes
  - Key dates, e.g. KVM's effective merge window
  - KVM patch lifecycle
- Expectations
  - KVM "health" requirements
  - Preferred coding style
  - Preferred shortlog scope
- Errata
  - Deviations from architectural specification



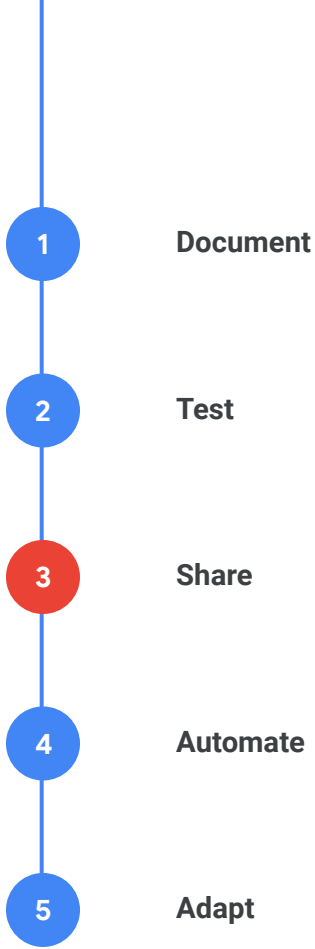
Test

- Run existing tests
- Improve coverage of tests
  - Verify tests find bugs
  - Use brute force when possible
- Improve quality of tests
  - Make it easier to develop tests
  - Make it easier to maintain tests



Share

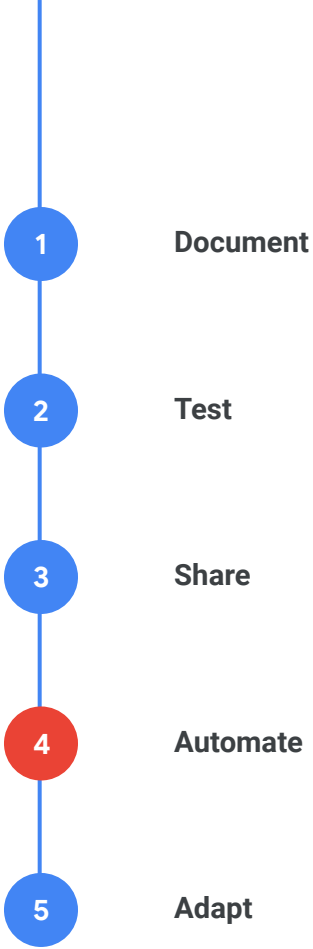
- Tips and Tricks
  - Methodologies, scripts, aliases, etc…
  - https://github.com/sean-jc/settings
- Code
  - Solve common problems once
  - Consolidate code instead of copy+pasting
- Maintainers
  - Reduce Paolo's x86 responsibilities
  - Train next generation on multiple architectures



Google Cloud

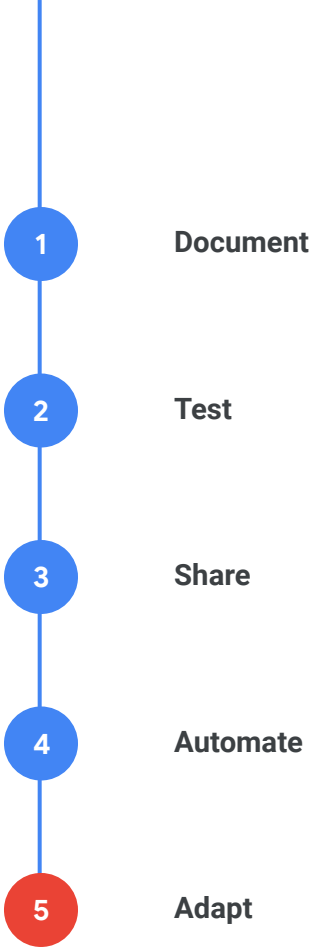
Automate

- Integration Testing
  - Automated testing of “queued” patches
  - Automated reporting and bisection of failures
- Developer Testing
  - Automated testing of individual series!
  - Manual “automation” as a rough facsimile



Adapt

- Mindset
  - Pursue perfection, not “good enough”
  - Implement to hardware specifications
  - Don’t make assumptions about the guest
- Speak up!
  - Propose process changes
  - Request documentation



Google Cloud

Job is done. Figured it was time for a little chat.

Malcolm Reynolds

Thank You!