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Ruby Releases Ruby

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About Me



Hiroshi SHIBATA

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Technical Fellow

Profile

OSS programmer, Ruby committer, maintainer of many OSS such as ruby, rubygems, bundler, rake, rbenv, ruby-build, psych, and administrator of ruby-lang.org. He maintains the infrastructure that supports the development of the Ruby programming language. He is working in public relations of technology for ANDPAD Inc. and full time OSS developer for the Ruby programming language.

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Ruby Releases Ruby — Why?

- Ruby releases Ruby 2-3x more frequently
  - one person, ~1 hour
- RubyGems/Bundler 4.0
  - 10 releases in 4.0.x while 4 month, faster and more secure
- Infrastructure, CI, release scripts, distribution
  - all written in Ruby
- Human judgment + Ruby automation

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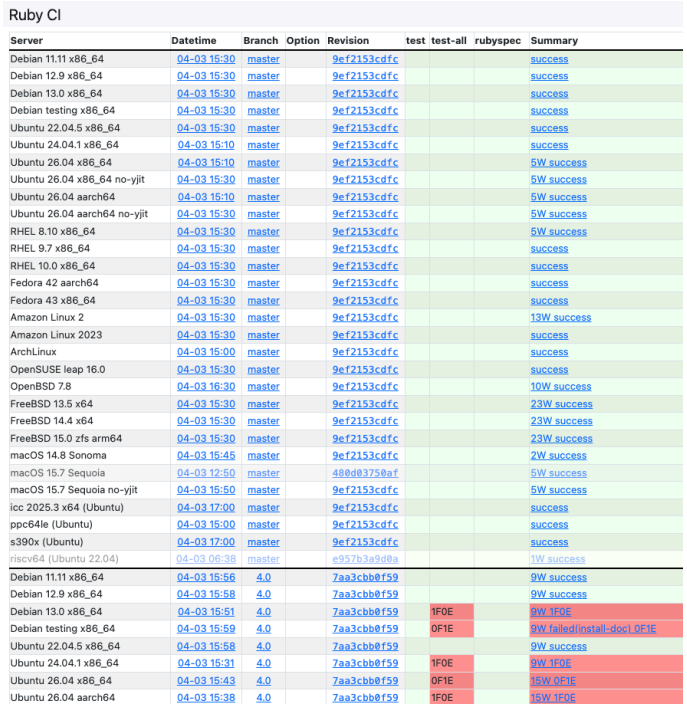
Part 1:
The Fortress

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Platform Matrix

Platforms × Build patterns × Configure options → Enormous matrix

- GitHub Actions (cloud, per commit, out-of-source build)
  - 120+ jobs run with each pull-request
- Ruby CI & chkbuild on VM (periodic, in-source build)
  - https://github.com/ruby/chkbuild
  - https://github.com/ruby/rubyci
  - https://github.com/ruby/ruby-infra-recipe



Ruby CI

Server	Datetime	Branch	Option	Revision	test	test-all	rubyspec	Summary
Debian 11.11 x86_64	04-03 15:30	master		9ef2153cdfc				success
Debian 12.9 x86_64	04-03 15:30	master		9ef2153cdfc				success
Debian 13.0 x86_64	04-03 15:30	master		9ef2153cdfc				success
Debian testing x86_64	04-03 15:30	master		9ef2153cdfc				success
Ubuntu 22.04.5 x86_64	04-03 15:30	master		9ef2153cdfc				success
Ubuntu 24.04.1 x86_64	04-03 15:10	master		9ef2153cdfc				success
Ubuntu 26.04 x86_64	04-03 15:10	master		9ef2153cdfc				5W success
Ubuntu 26.04 x86_64 no-yjit	04-03 15:30	master		9ef2153cdfc				5W success
Ubuntu 26.04 aarch64	04-03 15:10	master		9ef2153cdfc				5W success
Ubuntu 26.04 aarch64 no-yjit	04-03 15:30	master		9ef2153cdfc				5W success
RHEL 8.10 x86_64	04-03 15:30	master		9ef2153cdfc				5W success
RHEL 9.7 x86_64	04-03 15:30	master		9ef2153cdfc				success
RHEL 10.0 x86_64	04-03 15:30	master		9ef2153cdfc				success
Fedora 42 aarch64	04-03 15:30	master		9ef2153cdfc				success
Fedora 43 x86_64	04-03 15:30	master		9ef2153cdfc				success
Amazon Linux 2	04-03 15:30	master		9ef2153cdfc				13W success
Amazon Linux 2023	04-03 15:30	master		9ef2153cdfc				success
ArchLinux	04-03 15:00	master		9ef2153cdfc				success
OpenSUSE leap 16.0	04-03 15:30	master		9ef2153cdfc				success
OpenBSD 7.8	04-03 16:30	master		9ef2153cdfc				10W success
FreeBSD 13.5 x64	04-03 15:30	master		9ef2153cdfc				23W success
FreeBSD 14.4 x64	04-03 15:30	master		9ef2153cdfc				23W success
FreeBSD 15.0 zfs arm64	04-03 15:30	master		9ef2153cdfc				23W success
macOS 14.8 Sonoma	04-03 15:45	master		9ef2153cdfc				2W success
macOS 15.7 Sequoia	04-03 12:50	master		480d03750af				5W success
macOS 15.7 Sequoia no-yjit	04-03 15:50	master		9ef2153cdfc				5W success
icc 2025.3 x64 (Ubuntu)	04-03 17:00	master		9ef2153cdfc				success
ppc64le (Ubuntu)	04-03 15:00	master		9ef2153cdfc				success
s390x (Ubuntu)	04-03 17:00	master		9ef2153cdfc				success
riscv64 (Ubuntu 22.04)	04-03 06:38	master		e957b3a9d0a				1W success
Debian 11.11 x86_64	04-03 15:56	4.0		7aa3cbb0f59				9W success
Debian 12.9 x86_64	04-03 15:58	4.0		7aa3cbb0f59				9W success
Debian 13.0 x86_64	04-03 15:51	4.0		7aa3cbb0f59		1F0E		9W 1F0E
Debian testing x86_64	04-03 15:59	4.0		7aa3cbb0f59		0F1E		9W failed(install-doc) 0F1E
Ubuntu 22.04.5 x86_64	04-03 15:58	4.0		7aa3cbb0f59				9W success
Ubuntu 24.04.1 x86_64	04-03 15:31	4.0		7aa3cbb0f59		1F0E		9W 1F0E
Ubuntu 26.04 x86_64	04-03 15:43	4.0		7aa3cbb0f59		0F1E		15W 0F1E
Ubuntu 26.04 aarch64	04-03 15:38	4.0		7aa3cbb0f59		1F0E		15W 1F0E

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IaC: mitamae + ruby-infra-recipe

- https://github.com/itamae-kitchen/mitamae
  - mruby → single static binary for any platform, even niche ones (s390x, riscv64, FreeBSD/arm64)
- https://github.com/ruby/ruby-infra-recipe
  - Ruby DSL defines Ruby's own build requirements

```
node.reverse_merge!(
  rbenv: {
    user: 'chkbuild', global: '3.4.8',
    versions: %w[3.4.8],
    install_development_dependency: true,
  },
  'ruby-build': {
    build_envs: {
      'RUBY_CONFIGURE_OPTS': '--disable-install-doc',
    },
  },
)
include_recipe 'rbenv::user'
```

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chkbuild

- https://github.com/ruby/chkbuild by akr (Tanaka Akira)
  - Unified build environment + structured result log
  - Add a new platform = write a config block, deploy chkbuild

```
case ChkBuild.nickname
when 'openbsd-current'
  h[:autoconf_command] = 'autoconf-2.69'
when /riscv64/
  h[:timeout] = '4h'
  ENV["RUBY_TEST_TIMEOUT_SCALE"] = "5"
end
```

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Ruby's Stability Is Not Accidental

- AI lists infinite risks
  - humans decide what to defend within budget
- I actively maintains CI across all layers
  - Proactive security tooling: CodeQL, zizmor, SHA-pinned Actions
  - infrastructure: mitamae (Ruby), chkbuild (Ruby), RubyCI (Rails)
- CI errors/warnings
  - nobu, k0kubun, and I respond immediately

Ruby makes it possible

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Part 2: Releasing Ruby

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What Is a Release?

A declaration: "use this point of development" published to users

- The Old Way: manual checklist, human-knowledge procedures
- Security releases: all maintained branches must ship simultaneously
  - 2024/4: 4-branch simultaneous release (CVE-2024-27282) worked until midnight

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The Release Flow — Today

- Release Manager tags → auto: package build + test + changelog
  → Slack → publish
  - Auto follow: docker, snap, ruby-build, all-ruby via repository_dispatch
- Default/bundled gems:
  - Independent release by each maintainer (kou, naitoh, ...)
  - Security advisories: 2022: 3, 2023: 3 → 2024: 9, 2025: 6
- Human judges twice; Ruby automates the rest; gem maintainers ship independently
  - Result: 2022: 9 releases → 2024: 13, 2025: 14 — one person, ~1 hour

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Tool Evolution Cycle

hsbt: prototype → k0kubun: robustness
→ nobu: rewrite in unreadable Ruby → repeat

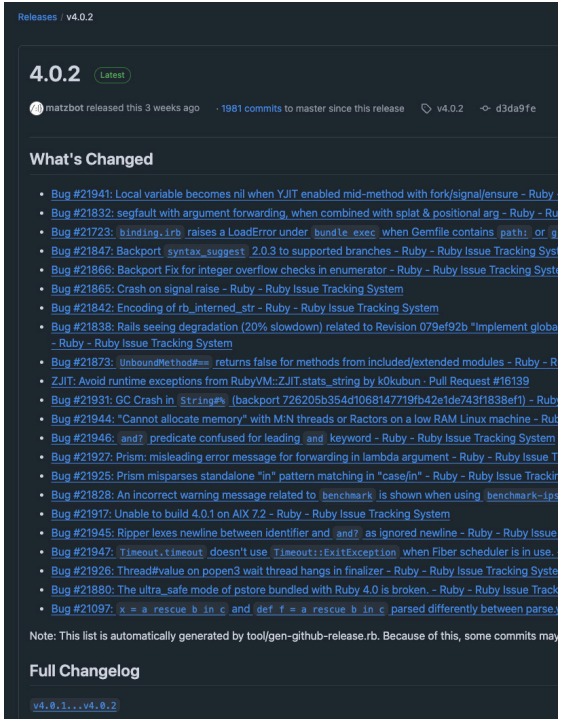
```ruby
# tool/sync_default_gems.rb — nobu-style commit message rewriting
def message_filter(repo, sha, log, context: nil)
  subject, log = log.split(/\A.+\.\K\n(?=\S)|\n(?:[ \t]*(?:\n|\z))/, 2)
  conv = proc do |s|
    s.gsub!(/\b(?:(?i:fix(?:e[sd])?|close[sd]?|resolve[sd]?) +)\K#(?=\d+\b)/) {
      "#{repo_url}/pull/"
    }
  end
  subject = "[#{repo}] #{subject}"
  # ...rewrite PR refs, append commit URL, preserve Co-authored-by
end
```

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tool/gen-github-release.rb

```ruby
# bundler/inline + Octokit + Nokogiri
gemfile do
  source "https://rubygems.org"
  gem "octokit"; gem "faraday-retry"; gem "nokogiri"
end

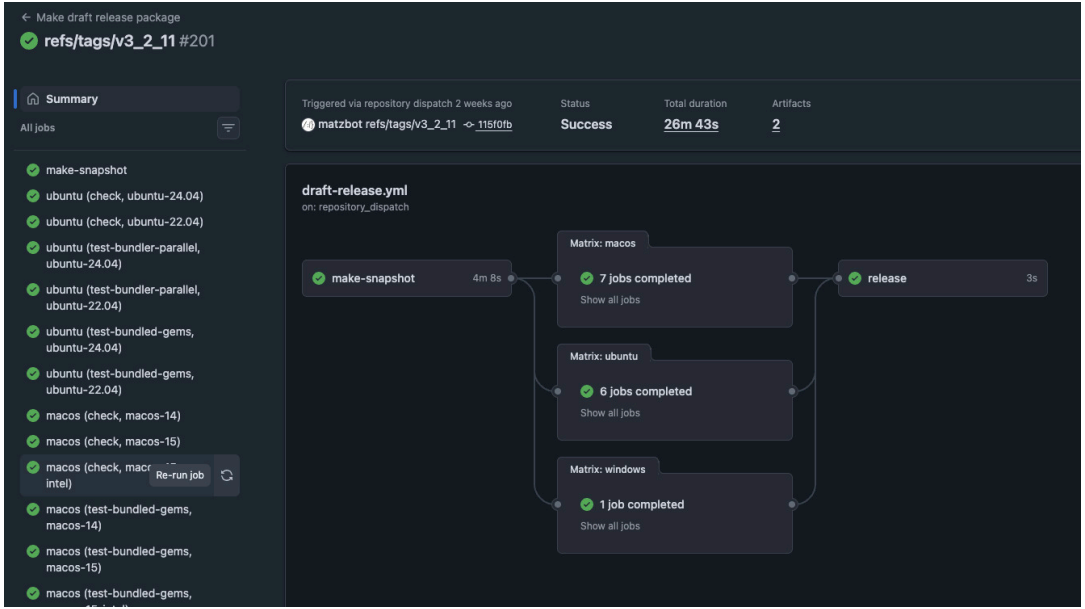
diff = client.compare("ruby/ruby", ARGV[0], ARGV[1])
diff[:commits].each do |c|
  if c[:commit][:message] =~ /\[(Backport|Feature|Bug) #(\d*)\]/
    url = "https://bugs.ruby-lang.org/issues/#{$2}"
    title = Nokogiri::HTML(URI.open(url)).title
    notes << "* [#{title}](#{url})"
  end
  (snip)
end
client.create_release("ruby/ruby", tag, name:, body: note, prerelease:)
```



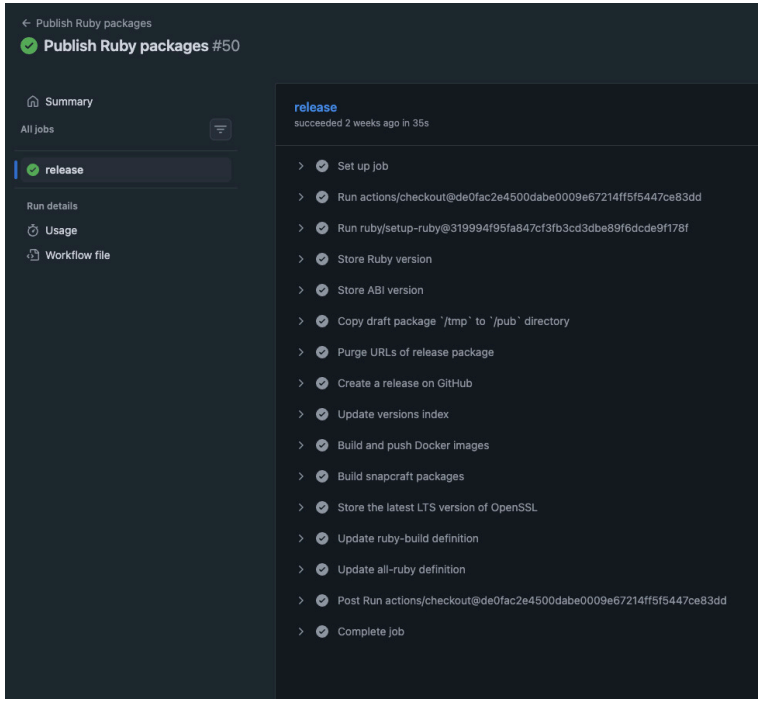
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Distribution Pipeline: repository dispatch

Pre-release



Release & Post-release



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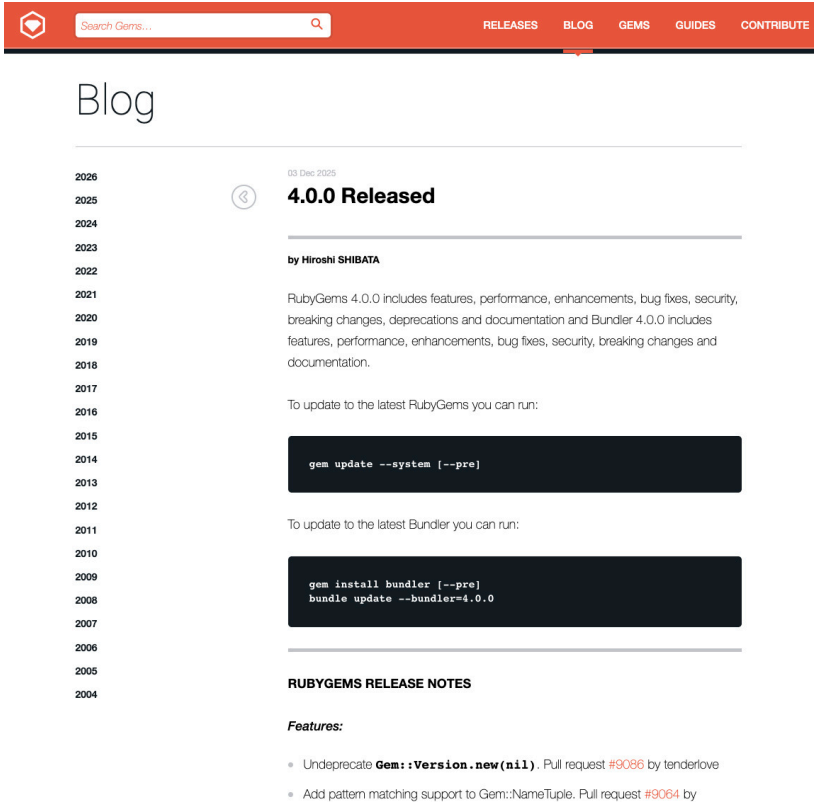
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Part 3: RubyGems/Bundler 4

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RubyGems/Bundler 4.0

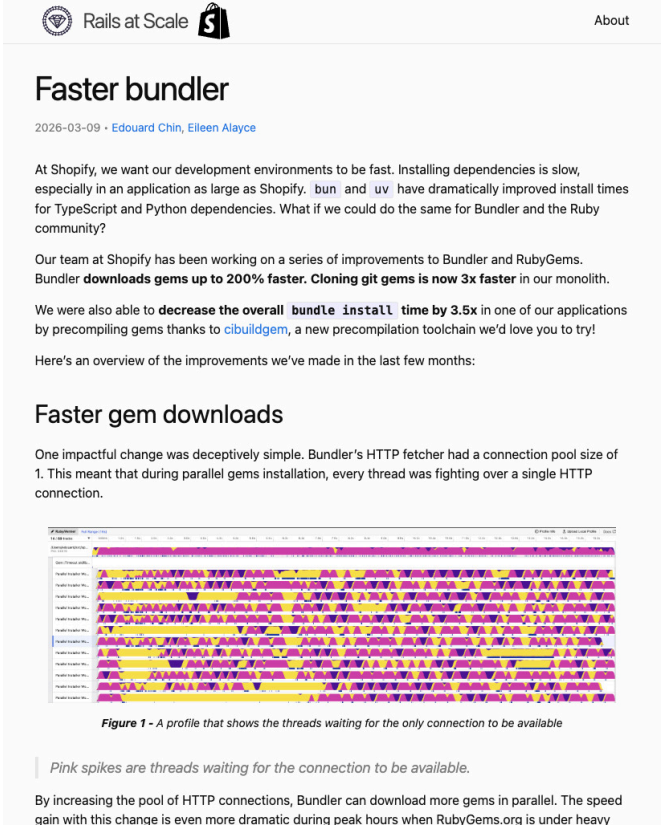
- 2025/11 beta → 2025/12/3 GA → 4.0.10 (2026/4)
  - bundle gem —ext=go
  - bundle list —format=json
  - bundle install --no-lock
- Backport policy: behavior-unchanged improvements flow from 4.1 → 4.0
- The foundation of Ruby's dependency resolution — just upgrade



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4.0: Performance: Faster gem install & bundle install

- Parallel build with C extension:
  - MAKEFLAGS=-j auto (Etc.nprocessors + 1)
- gem install -j4
  - parallel job control
- Connection pool:
  - 5 parallel connections
- …
- See Day 1: Edouard Chin "Faster Bundler, Happier Developers"



Rails at Scale

About

Faster bundler

2026-03-09 • Edouard Chin, Eileen Alayce

At Shopify, we want our development environments to be fast. Installing dependencies is slow, especially in an application as large as Shopify. `bun` and `uv` have dramatically improved install times for TypeScript and Python dependencies. What if we could do the same for Bundler and the Ruby community?

Our team at Shopify has been working on a series of improvements to Bundler and RubyGems. Bundler **downloads gems up to 200% faster. Cloning git gems is now 3x faster** in our monolith.

We were also able to **decrease the overall `bundle install` time by 3.5x** in one of our applications by precompiling gems thanks to cibuildgem, a new precompilation toolchain we'd love you to try!

Here's an overview of the improvements we've made in the last few months:

Faster gem downloads

One impactful change was deceptively simple. Bundler's HTTP fetcher had a connection pool size of 1. This meant that during parallel gems installation, every thread was fighting over a single HTTP connection.

Figure 1 - *A profile that shows the threads waiting for the only connection to be available*

> *Pink spikes are threads waiting for the connection to be available.*

By increasing the pool of HTTP connections, Bundler can download more gems in parallel. The speed gain with this change is even more dramatic during peak hours when RubyGems.org is under heavy

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Feature plan 4.1: Pure YAML Serializer

- Problem: zlib, openssl, libyaml — hard to install, especially on Windows (vcpkg)
- RubyGems only needs to parse gemspec YAML — minimal implementation suffices
- Built with Claude, ~40 commits (PR #9352)
- No C extension needed — Pure Ruby is fast enough for gemspec

	YAMLSerializer	Psych (libyaml)
Dump	6,546 i/s (153µs)	3,335 i/s (300µs)
Load	2,458 i/s (407µs)	3,857 i/s (259µs)
Round-trip	1,561 i/s (640µs)	1,693 i/s (591µs)

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Feature plan 4.1: Bundler Plugin System

- bundler-sbom: SBOM generator built with Claude
- We have documentation issue
  - Current: underdocumented, limited API - AI can't generate that code
  - Future: extract features into plugins instead of growing Bundler core

```ruby
module Bundler::Sbom
  class Plugin < ::Bundler::Plugin::API
    command "sbom"

    def exec(command_name, args)
      ::Bundler::Sbom::CLI.start(args)
    end
  end
end
```

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Part 4: Releasing Gems

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Releasing Your Gem: Old Way vs Trusted Publishing

- Manual way: gem build → gem push (or rake release) → MFA prompt required

- Auto way: push a git tag → release-gem does everything
  - https://guides.rubygems.org/trusted-publishing
  - OIDC Trusted Publisher: no API key, no MFA — GitHub identity is enough
  - Access control: GitHub repository write permission

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Sigstore: Attestation for Every Gem

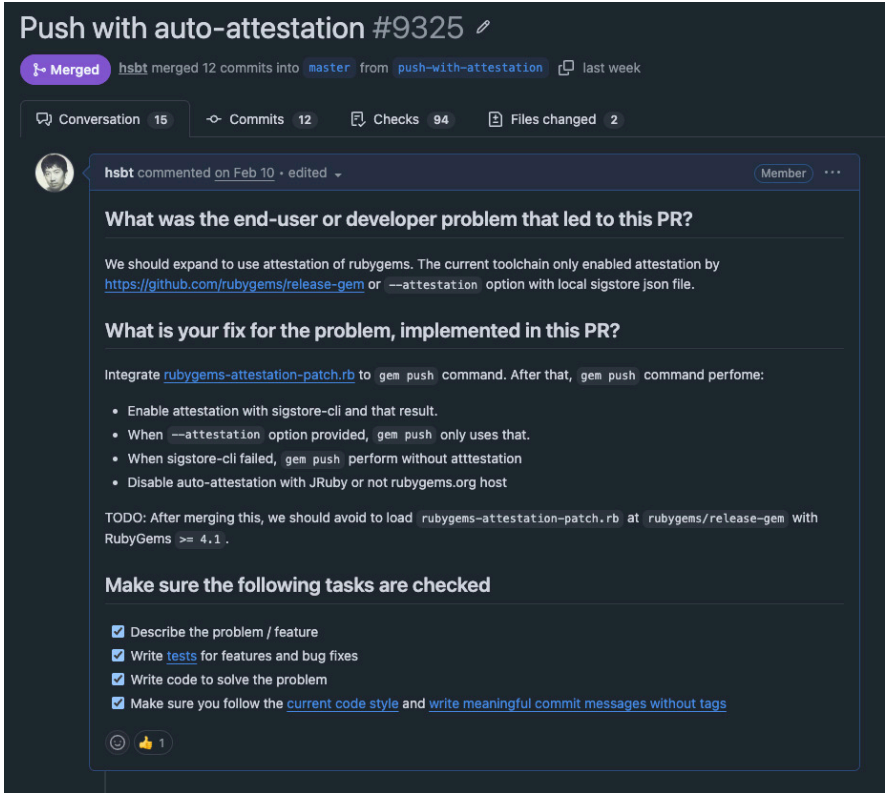
- release-gem workflow adds Sigstore attestation transparently via prepend
- A GitHub Action safely monkey-patches RubyGems core — because Ruby
- Cryptographic proof: this gem was built from this commit, by this workflow

```ruby
Gem::Commands::PushCommand.prepend(Module.new do
  def send_push_request(name, args)
    return super if options[:attestations]&.any? ||
                    @host != "https://rubygems.org"
    send_push_request_with_attestation(name, args)
  rescue StandardError => e
    alert_warning "Failed to push with attestation, retrying without.\n#{e.full_message}"
    super
  end
end)
```

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Attestation Now in RubyGems Core (4.1)

- https://github.com/ruby/rubygems/pull/9325
  - release-gem's monkey-patch → first-class feature in gem push
  - No release-gem required: configure-rubygems-credentials + gem push = Sigstore
    - https://github.com/rubygems/configure-rubygems-credentials
- Fallback: push without attestation if sigstore fails



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RubyGems Release Process

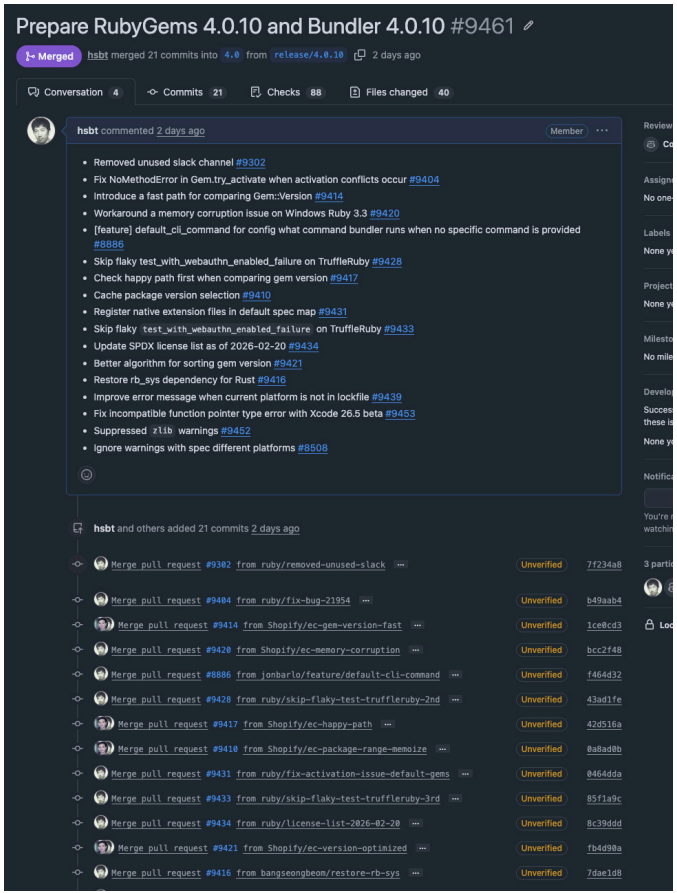
- https://github.com/ruby/rubygems — tool/release.rb
- Ruby: Redmine + GitHub + backport tool → human runs semi-auto merge
- RubyGems: labeled PRs → full-auto cherry-pick + changelog

```ruby
def cherry_pick_pull_requests
  prs = relevant_unreleased_pull_requests
  raise "No unreleased PRs were found..." unless prs.any?

  unless system("git", "cherry-pick", "-x", "-m", "1", *prs.map(&:merge_commit_sha))
    warn "Opening a new shell to fix cherry-pick errors manually..."
    unless system(ENV["SHELL"] || "zsh")
      system("git", "cherry-pick", "--abort", exception: true)
      raise "Failed to resolve conflicts"
    end
  end
end
```

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The Remaining Challenges



- Auto cherry-pick works — but conflicts still require human intervention
- RubyGems doesn't use rake release → can't use release-gem → no Sigstore via GitHub Actions
  - Solution: integrate attestation into gem push itself (→ 4.1)
  - Goal: RubyGems releases RubyGems with Sigstore, without release-gem

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Part 5: Closing

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What AI Cannot Do — From This Talk

AI writes code; humans decide what to ship and when

- Code is visible; context outside code is not
- Human judgment: Release timing, ecosystem impact, how fix conflicted code
- Judgment comes with responsibility — when it breaks, you fix it

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Ruby Releases Ruby

One language, one person, maximum

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