Do the smallest safe work: what Cloudflare's DNS planner teaches about scaling

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On 2 November Cloudflare described how it changed the way its DNS pipeline reacts to zone setting changes. The numbers are Cloudflare's own, but the design idea travels well.

TL;DR The short version

- Cloudflare's DNS Zone Builder now handles about 700 record changes per second, and some zones hold more than 20 million records.
- It added a planner that chooses the smallest build it can prove is safe, plus a scheduler that combines work for the same zone.
- The hard part was proving that doing less was safe, since doing too little leaves stale data and doing too much wastes capacity.

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The problem

Cloudflare says its Zone Builder now receives about 700 DNS record changes per second, up from about 250 in 2022, and some zones hold more than 20 million records. The event count was not the real problem: a change to a zone setting used to trigger a rebuild of the whole zone, even a very large one.

The fix

Cloudflare built a planner that chooses the smallest build it can prove is safe, plus a scheduler that combines work for the same zone. It reports that this cut full builds by 40% and peak memory by 85%, and that the extra headroom let it shorten waits in the pipeline, halving the time from a DNS change to the data being written to its key-value store.

The design lesson

- The hard part was not doing less work; it was proving that doing less was safe. Cloudflare says that proving when it was safe took most of the effort.
- Doing too much wastes capacity; doing too little can leave stale or wrong data in production. Both errors are real, so the planner needs a defined "safe" rule.
- Work that scales with the size of the largest customer, not with the size of the change, is a warning sign worth looking for in your own systems.

- Merging work for the same target is a simple lever that is easy to miss.

> Facts in this post were read from the sources listed below on 10 November 2026; this is a developing story or product and details may have changed since.

Sources and further reading

1. Cloudflare Blog. How we halved DNS build delay and cut memory use by 85%. 2 November 2026. blog.cloudflare.com/dns-targeted-zone-builds/

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