Layer1Labs Silicon

LAYER1LABS SILICON INC. · GUIDE

Evaluating ChronoFabric

Beta participation and licensing: what the beta is, who it fits, what has been measured on the beta platform, and how to take part.

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This guide is for hardware teams evaluating ChronoFabric. It walks through the beta as it is published: what is delivered, the platform it runs on, who the beta is for, what has been measured on that platform, what is still roadmap, and how participation and licensing work.

One honesty note before the details. The published material fixes the route — participation is arranged directly with the Layer1Labs team, and licensing is by written agreement — but it does not publish beta terms: no steps, no timeline, no fees. Where a term is not published, this guide says so and collects the point in Section 7 as a question to settle in the arrangement itself, rather than guessing at it.

See it live: ChronoFabric, as published — `https://layer1labs.ai/chronofabric/`

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1 What the beta is

ChronoFabric is the hardware tier of the Layer1Labs architecture. Programs are authored once, in Lingua Franca, and compiled by chronoc into a single constraint specification (.cspec). That specification is the deployment contract for both tiers: the ChronoHive engine runs it in software, and ChronoFabric runs the identical specification on hardware. Only the effector binding changes — the connection points where a program acts on the outside world bind to FPGA and hardware endpoints instead of software callables — and the admission, sequencing, and determinism guarantees carry over unchanged.

The beta delivers that hardware tier as *soft IP*: a licensable hardware IP block that the licensee integrates into their own FPGA designs. It is not a finished board or a boxed product. Delivery targets Kria FPGA platforms, and the product is complete and ready for beta customers.

Evaluation happens on the *beta platform*: Kria FPGA evaluation boards (KR260 and KV260) linked by 10-gigabit Ethernet. Evaluation boards are reconfigurable hardware, so a beta customer validates hardware enforcement in their own environment, on their own workloads, before any production commitment. Every measurement in this guide was made on that platform.

2 Who the beta fits

As published, the beta is open to organizations building or operating large-scale AI infrastructure — teams for whom synchronization waste across accelerators is a real cost, and who want deterministic enforcement evaluated on their own workloads. Hardware builders can take the same architecture into silicon through the beta.

In practice, that means hardware teams already working on Kria FPGA platforms, or planning to: the soft IP is delivered for those platforms, and the published measurements were made on their evaluation boards. A team whose designs sit elsewhere should treat the platform question as one of the points to settle in the first conversation (Section 7).

The outcome classes the architecture is designed to deliver are the ones operators already plan around: throughput recovery (less idle time across the fleet), power avoidance (smoother infrastructure-level energy demand), and CapEx efficiency (more useful work per watt, and per facility). Those are design aims, stated here as the product states them. They are not measurements, and no fleet-level figure for them is published; what has been measured is in the next section.

3 What has been measured

Every figure in this section was measured on the beta platform — Kria FPGA evaluation boards (KR260 and KV260) over 10-gigabit Ethernet links. This is the measured envelope a beta evaluation starts from. The full results, with their run bases, are published in the companion document *ChronoFabric Measured Results*; the summary here keeps each figure with the run it came from.

Two points in that envelope deserve a sentence each. Under load, the tick holds: with all four CPU cores held at 100% load, ChronoFabric's scheduled departures still landed on the programmed tick — median and 99th percentile exact — while CPU-scheduled departures on the same boards degraded to millisecond-scale jitter, because the hardware scheduler issues no per-packet work to the CPU at all. And the envelope is sustained, not just sampled: the 24-hour result comes from a full day on one KV260 board, 864 million timing cycles, on the product's real-time software stack.

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Result	Figure	Basis
Packets delivered	21,000+, 0 missed, 100%	Two boards, 10 Gb/s link
Endurance run	10,000 packets, continuous	Included in the runs above
Departure interval, P50 / P99	exactly 1,000,000 ns	2,000-packet runs
Departure jitter (StdDev)	as low as 61 ns	Same runs
Adaptive run	10,048 of 10,048; 53 adjustments	Single run, 0 misses
Cross-board spread	0 ns	Two boards, burst fire
24-hour worst-case latency	22 μs (99.99% $\leq$ 12 μs)	One KV260, 864M cycles

Table 1: The measured envelope as published, each figure with the run it came from. Source: layer1labs.ai/chronofabric/, "Measured on Hardware."

4 What is still roadmap

The published hardware strategy has three stages. Only the first exists today, and only the first has measurements.

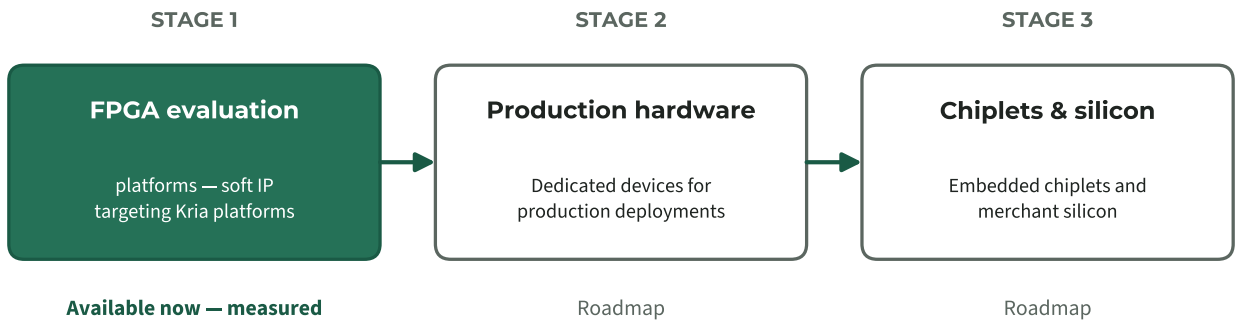


Figure 1: The staged hardware roadmap as published. Stage 1 is available now and is the only measured stage; stages 2 and 3 are roadmap. Source: the staged hardware strategy as published at layer1labs.ai/chronofabric/.

Stage one is the beta in this guide: FPGA evaluation platforms, delivered as soft IP targeting Kria platforms. Stage two is production hardware — dedicated devices that carry the fabric into production deployments. Stage three is embedded chiplets and merchant silicon, the long-term path to deterministic orchestration shipping inside the platform itself. Production-scale fabrics (100G and 400G) and ASIC implementations belong to that future part of the roadmap. Nothing in stage two or three has been measured, and nothing in this guide should be read as a result for them.

5 First contact

There is no portal to sign up on. Beta participation is arranged directly with the Layer1Labs team: there is no public download and no form to fill in. The published contacts are:

- **info@layer1labs.ai** — to join the beta, and for technical and beta questions.
- **licensing@layer1labs.ai** — for partnerships and licensing.

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A conversation is the whole of the published route. What the arrangement then covers is settled in that conversation and recorded in writing; Section 7 collects the questions worth bringing to it.

6 The arrangement and licensing, as published

ChronoFabric, like ChronoHive, is proprietary technology of Layer1Labs Silicon Inc., offered for commercial licensing by written agreement. The technology is licensed, never sold: the implementation stays closed, while customers and partners get its measured outcomes. Beta participation runs through the same route — arranged directly with the team, on terms the written agreement records.

That is the full extent of what is published. No fee, royalty structure, field of use, exclusivity, term, or support level is published for the beta or for a production license, and this guide does not invent any. The next section lists the points a written agreement will need to cover, so an evaluator can arrive at the first conversation with them in hand.

7 Questions to settle in writing

None of the points below is fixed by the published material. Each is a question to settle in the direct arrangement — asked early, answered in writing.

- **Platform and boards.** Which Kria platform and which boards will the evaluation run on, and who provides them?
- **Environment and workloads.** In whose environment does the evaluation run, on which of your workloads, and with what data?
- **What counts as success.** Which of the measured properties in Section 3 matter for your systems, and how will they be checked on your workloads?
- **Deliverables.** What does each side produce during the beta, and what changes hands at the end of it?
- **Support.** What help is available while your team integrates the IP block, and through which channel?
- **Term.** How long does the beta arrangement run, and what happens when it ends?
- **The path to production.** How does a beta arrangement relate to a production license, and to the production hardware on the roadmap?
- **Commercial terms.** Fees, royalties, field of use, and exclusivity — the published material fixes none of these.
- **Confidentiality and publication.** What may each side say publicly about the evaluation and its results?

8 Limits, stated plainly

- Every measurement in this guide comes from the beta platform — Kria evaluation boards over 10-gigabit Ethernet links. Production-scale fabrics (100G/400G) and ASIC implementations are roadmap and unmeasured.

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- The 24-hour sustained result is published for one board and one configuration. It is not a platform-wide figure, and this guide does not present it as one.
- The outcome classes named in Section 2 — throughput recovery, power avoidance, CapEx efficiency — are the benefits the architecture is designed to deliver. They are not measurements, and no fleet-level figure for them is published.
- The published material fixes no beta steps, timeline, fees, or licensing terms beyond participation by direct arrangement and licensing by written agreement. This guide states none, and an evaluator should treat any specific term as settled only when it is in the written agreement.
- This guide describes the beta and the licensing route as published. It does not describe the implementation, and it establishes nothing about stages two and three of the roadmap beyond their published intent.

Colophon

Sources: the product description, measurements, beta, and licensing route as published at `layer1labs.ai/chronofabric/` and the answers at `layer1labs.ai/faq/`, read on October 26, 2026; every figure in this guide is as published there, with its configuration basis stated alongside it. Companion documents in this catalog: *ChronoFabric Technical Brief*, *ChronoFabric Architecture Overview*, and *ChronoFabric Measured Results*. Built with the Layer1Labs document template family (LuaLaTeX); the figure is script-generated. Version 1.0 is the first published edition of this guide.

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