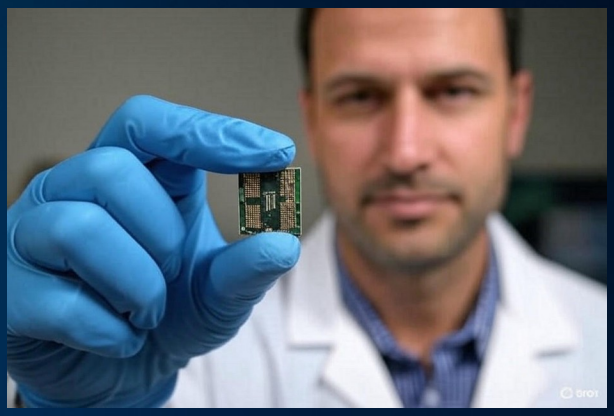


CIPHERBOLT™

Provable control-plane security on ordinary chips

Commodity Silicon Report

By JumPedal

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November 2026

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The 90-second summary

The one-time pad is the only cipher proven unbreakable by any computer, quantum included. Its problem has always been getting the same secret bits to both ends safely.

JumPedal solves it with two married chips and a network that manages them. Every chip leaves the factory with a sealed table of secret bits. CipherCoil makes the random bits. InfinityCoil carries every key in one file and counts every table bit spent. CipherBolt runs the chips and the tables.

The result is two grades on one product: a post-quantum lock for every order, over any network, and a true one-time pad, unbreakable while the sealed table lasts, for the orders that must never be read.

We protect the control plane first: the small messages that decide where every packet goes. CipherBolt runs on the networks customers already have, with no new fiber.

The one-time pad

The one-time pad was invented in 1917, and Claude Shannon proved it in 1949. It is unbreakable when three things hold: the key is truly random, as long as the message, and used once. JumPedal builds all three into the chips. A counter enforces “used once.”

The limit, stated by us first

- One table bit protects one message bit, once. When CipherBolt relays bits to a pair, it spends two table bits for each one delivered.
- No network message can refill a table at the unconditional grade, because sending secret bits safely uses up as many old ones as it delivers. Tables are reloaded by hand, by sealed module, courier or depot visit.
- A key decoded from a file can never hold more fresh randomness than the file has bits. Every result we publish is stated against that ceiling.
- A 1-megabit table holds about 500 relayed 2,048-bit keys; a 1-gigabit table holds about 500,000.

This limit comes from the mathematics, not from the product. Grade 1 has no such limit.

Why quantum key distribution has not spread

QKD	Effect
About $100K–$250K per endpoint (company estimate)	Too costly for most links
Typically needs its own fiber	Most networks don’t have it
Limited distance per link	Long routes need trusted relays
Special optical hardware	Not a drop-in for installed equipment

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CipherBolt gives the same unconditional grade from sealed tables, over any network, and Grade 1 everywhere else.

The control plane

Every network has two parts. The data plane carries the traffic. The control plane carries the orders: where to send packets and who may connect. It is a tiny share of traffic and nearly all of the risk. In 2008, a single bad routing order from Pakistan Telecom took YouTube offline worldwide.

The control plane is protected by public-key handshakes, which a quantum computer would break. The US mandates to replace them are NSM-10 (May 2022), CNSA 2.0 (September 2022) and NIST FIPS 203, 204 and 205 (August 2024).

Three parts, one product

Part	Role
CipherCoil™	Makes the random bits on the chip from physical noise (ring-oscillator jitter, metastable latches, thermal noise). Designed to NIST SP 800-90B; validation is Stage 1 work.
InfinityCoil™	The carrier and the counter. Every key and order travels in one self-contained file and comes back bit for bit from the file alone. It records which table bits were spent and refuses reuse.
CipherBolt™ Network	Manages the chips and their sealed tables. Introduces pairs, relays Grade 2 bits, watches counters and schedules reloads. Never in the packet path.

The cost aim is about $1 per chip plus card. First silicon is planned on a mature process.

Two grades of security

- **Grade 1, standard computational.** NIST FIPS 203, 204 and 205 with AES-256. It runs over any network, at any volume. After the first key roll, CipherBolt no longer knows the pair key.
- **Grade 2, unconditional.** A one-time pad drawn from the sealed table, with information-theoretic authentication. Unbreakable while the table lasts. The chip reports which grade protected each order.

What has been shown, and what has not

Date	Result
25 Sep 2026	InfinityCoil carrier, internal testing complete (software)

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Date	Result
2 Oct 2026	Test package sent to an outside engineer; report not yet in
8 Nov 2026	16 of 16 keys of 2,048 bits back bit for bit, in files of 2,008 to 2,048 bits. The saving of about 2% costs a measured share of each key’s fresh randomness.
Scheduled	CipherCoil entropy validation (SP 800-90B); side-channel evaluation on FPGA; independent report on the whole chain
Later	FIPS 140-3 and Common Criteria, after the design is frozen

These are the company’s own bench results, not yet independent ones. The test protocol, results and evidence are in the data room.

The plan, gated by evidence

Stage	What	Estimate
Now	InfinityCoil in testing; CipherCoil test bench ready	Under way
Stage 1	FPGA proof and the independent test (funded by the current round)	12 months
Stage 2	First silicon, on a mature process	About 12 months
Stage 3	Paying pilots with carriers and infrastructure operators	About 12 months
Stage 4	Our design inside equipment makers’ chips	12 months per partner, overlapping Stage 3

Stages 3 and 4 overlap: work with equipment makers starts during the paying pilots. Estimates are plans, not commitments. Each stage ends when its evidence exists, not on a set date.

Where it fits first

- **Stage 3 pilots:** carrier 5G/6G signaling, SD-WAN overlays, BGP and MPLS backbones, cloud and bank interconnects.
- **Stage 4, inside partners’ chips:** phones, laptops and IoT, satellites, zero-trust network access.

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How the company earns

JumPedal sells chips and modules to equipment makers, licenses the design as IP into partners’ silicon, and sells software and services by subscription.

For investors

The current offering of common stock is open to existing shareholders and qualified referrals under Rule 506(b) of Regulation D. It funds Stage 1. The terms, capital structure and risk factors are in the Investor Package. Request it at jumpedal.com/investor-opportunities.

Conclusion

The one-time pad is still the only cipher that survives unlimited computing power. JumPedal puts it on ordinary chips, counts every bit, and says plainly where the limit is. That is a claim a laboratory can sign.

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