

Startup wants to do for cybersecurity what ADT does for home security

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Over the last three years, Einaras Gravrock has turned his concerns as a parent into a fast-growing cybersecurity startup.

Gravrock had grown anxious about his children's privacy when he heard about baby monitors being hacked. By the time they started playing with iPads, he wanted protection.

What he ended up with is Cujo, a bowl-size firewall device that hard-wires into a home router, providing for digital security what a guard dog brings to physical defense.

Gravrock believed enough in the idea that he divested from and stepped down as [chief executive](#) of Iconery, an online shop for jewelry that he co-founded. Iconery continues to operate.

For Cujo, he's leaned on the expertise of Yuri Frayman, a friend who runs cybersecurity software maker Zenedge. Frayman had seen the need for Cujo firsthand. A couple of years before, his business clients began demanding that his home have as much cybersecurity as his corporate office.

Gravrock raised \$330,000 off a Kickstarter crowdfunding page, opened headquarters outside Los Angeles and agreed to a manufacturing deal with a factory in Illinois.

Now, Cujo is nearing 100,000 users and 100 employees. The device is

stocked at Best Buy and on Amazon.com for \$250.

Cujo picked up \$11 million from 27 investors in a recent financing round, including earlier loans converted into stock. Investors include TA Ventures in Ukraine, USC adjunct business professor Ivan Nikkhoo and, of course, Frayman.

DOES CUJO WORK?

Gravrock knows what he's selling won't stop every computer virus or hacker. But he sees \$250 as a necessary expense to deter the inconveniences that come with being hacked. The average user sees about five to seven suspicious connections blocked each week, he said.

"For someone installing ADT or a Ring, it's the next frontier," he said, referring to home security options. "Cujo is not that silver bullet, but being vigilant and educated about the problem, you have to apply best practices."

Others in the industry back up that view.

"It's a good step in the right direction for home consumers," said Adriel Desautels, chief executive of Netragard, which tests security at companies in gaming, health and finance. "It's going to eliminate the low-hanging fruit."

But Desautels cautioned that Cujo alone might only take a consumer to 3 from 1 on a 100-point scale of security. That score could improve if Cujo succeeds on plans to add increased functionality.

Business customers who purchased Cujo for employees have brought in auditors to test Cujo's effectiveness, but Gravrock said there are no plans to publish results. Desautels said he would like to see audits of Cujo's

effectiveness in protecting the confidentiality, integrity and availability of information passing online through a home.

HOW CUJO WORKS

Cujo works by analyzing router traffic data. It can see what computer your own device is connecting to on the internet, how much information is being transferred and the speed at which it's being sent.

In relative terms, Cujo sees cars on a road, but not the interiors of them. Unlike some rivals, the company doesn't use deep packet inspection software to analyze the innards, a tactic often used in corporate firewalls and censorship software.

In a few days of testing Cujo, the firewall mostly denied connections to tracking services apparently related to online ad technology. They probably belonged on an industry list of flagged websites. The device is meant to learn a user's behavior over time, so that, for instance, a connection between a webcam and a computer in Russia is thwarted, except in homes where devices often visit Russian websites.

Cujo's system is "looking for telltale signs," Gravrock said. "It collects a couple of hundred data points and builds out a decision on the fly."

Traffic data are sent to Cujo's servers, where they are scrambled and stored with password protection. It hires consultants to test the security of its own system. Cujo stores data as long as a week, depending on whether the information proves useful in improving the software that detects suspicious connections.

A Cujo mobile app issues alerts about blocked traffic and serves as a hub for parental controls. In testing, Cujo didn't noticeably slow website load times, but it needed to be disabled several times when websites

didn't load for an unidentified reason. The setup process also produced unspecified errors, though logging out and logging back in did the trick.

Most of the complaints that stem from Cujo come from complex home network setups or specific devices that lead to communications issues with the firewall. That might make it a bad fit for some users.

Cujo offers customer service through video chat on its app 16 hours a day, though the hours aren't prominently displayed - an issue the company said it would address.

The company further tries to ameliorate any concerns by modeling itself on video doorbell maker Ring, which includes its chief executive's emails on packaging. With Cujo, new users get an email with Gravrock's cellphone number and email address.

CUJO'S COMPETITION

Cujo has rivals on three fronts: Router makers, antivirus software developers and other hardware startups.

Experts say there's little reason Linksys, Netgear or other router brands can't match Cujo's features - and many are moving in that direction after years of burying settings and data to which Cujo's app provides simple access.

Gravrock said Cujo decided not to compete with such router makers because it would have to wade into the fierce technical competition to make Wi-Fi speeds faster, which could distract from its security focus.

Antivirus protection providers are having to adapt because installing software on devices is no longer practical as a variety of new appliances go online, including toasters and light bulbs. Norton's \$250 Core router

doubles as a home network firewall with a \$10-a-month subscription.

New companies such as Bitdefender, Keezel, RATrap and Dojo offer devices comparable to the Cujo at lower prices.

About 70 percent of Cujo customers pay \$250 for the device upfront. The remainder opt to pay about \$100 upfront, but then \$9 a month indefinitely for service.

The company has received marketing help by partnering with organizations, such as one promoting children's safety, to distribute devices to members. Cujo declined to identify customers or partners by name.

Gravock has been leading companies since finishing at USC in 2009. Before the jewelry website, he co-founded Modnique, a once-fast-growing online retailer of clothing. Another division of the company struggled financially, leading to a bankruptcy fire sale in 2015.

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