

Hard Drive Crisis

How startup Backblaze survived a \$349 hard-drive price crisis

To avoid breaking a promise not to raise its prices, the online backup company relied on employees and their families to scour the nation's retailers for 3TB drives.

by **Stephen Shankland**

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What do you do when you have a 1,000-unit-per-month hard-drive habit – then **Thailand floods wipe out your supply?**

In the case of **online backup specialist Backblaze**, whose business could have been crippled when the natural disaster last year raised the price of a \$129 3TB drive to \$349, you improvise.

The company turned employees, their friends, and their families into an ad hoc supply chain who scoured Best Buy, Costco, NewEgg, B&H Foto, and other retailers across the country for drives. And when they learned that external USB storage devices were actually cheaper than the drives alone, they set up an operation to "shuck" the cases the way Nebraskans shuck off cornhusks.

The result, according to Chief Executive Gleb Budman: Extremely labor-intensive procurement of 1,838 hard drives with more than 5.5 petabytes of capacity – and a business that averted its own price-hike disaster.



Vladik Rikhter, a friend of Backblaze CEO Gleb Budman, shows off a hoard of hard drives he purchased for the online backup startup.

Backblaze



A trunkful of hard drives: the result of a successful trip to Bay Area retailers.
Backblaze

Oh, and one more thing: some Backblaze employees, who pushed as hard as possible to buy drives despite retailers' limits of two per customer, are still banned from Costco.

The crisis arrived a year ago when the flooding **severely cut hard-drive supplies** and computing industry giants like Dell, Apple, and Hewlett-Packard worked to secure their own reserves. Backblaze has pledged to keep its \$5-per-month unlimited backup service even as **rivals move to pay-per-use plans**, but the new prices threatened that promise.

"Tim [Nufire], our vice president of engineering, first told us that the flood in Thailand had affected some factories and drives were getting expensive and hard to acquire. My first thought was actually disbelief: with Seagate, Hitachi, WD [Western Digital], and Fujitsu all producing hard drives through globally distributed manufacturing plants with multi-billion dollar businesses at stake, I assumed a single flood in a single area couldn't bring the entire system to a grinding halt," Budman told CNET. "I was wrong."

The company didn't see an an urgent need at first, thinking the **hard-drive price increase** would be a blip.

"However, we fairly quickly realized how concentrated the hard-drive supply chain was and the damage it sustained, and started brainstorming ways to acquire drives," Budman said.

The first plan: Buying external drives at Costco and Best Buy. One early trip around the San Francisco Bay Area yielded 52 drives, enough to accommodate about two or three days' worth of Backblaze's ever-growing data needs.

But then came the limits of two drives per customer per day -- and the Costco bans on Backblaze employees.



The writing on the wall: a limit of two drives per customer constrained Backblaze's informal network of drive procurement.

The economics weren't looking good, Backblaze said in a **blog post** today about the difficulty:

We started doing "drive math": 2 drives a day per store, times 3 stores per day, times 5 "farmers," times 7 days a week is 210 drives. That would be sufficient, but in reality it didn't work out that way. Stores were stocking out of drives on a regular basis and we really couldn't farm every day, but we kept at it.

The next phase of the operation was drawing on a broader network. Yev Pusin warned his father in Des Moines, Iowa, that he might have to move back in if he didn't help -- and he came through with shipments of 50 or 60 drives at a time.

<https://www.cnet.com/news/how-startup-backblaze-survived-a-349-hard-drive-price-crisis/>

One friend of Budman's, Vladik Rikhter of **NextPunch**, got lucky when an online store neglected to limit his purchase. He picked up 80 3TB drives, which FedEx took half an hour to carry to his house and which Budman picked up on Christmas eve. The drives were worth more than the CEO's car.

The company set up a **drive-farming site** to track the best prices. Eventually, though, hard drive supplies eased.

The story illustrates the kind of plight that can hit a smaller company that may not know all of its risks. But the company has come out of the crisis wiser, Budman said.

"Part of the goal of raising our first venture capital round...was to have a cash buffer to weather such potential storms," Budman said.

Backblaze always had a buffer of new components and "storage pods" -- its 45-drive storage systems at the heart of the operation -- to handle future growth.

But it's financially tough to add more wiggle room, because hard drives only get less valuable as they sit around, and new hard drives typically are cheaper and have higher capacity. Because of that, just-in-time purchasing is really the best route, Budman said.

One thing that hasn't changed: buying drives from retailers. Until Backblaze needs 10,000 drives per quarter instead of today's 3,000, it can't set up direct purchase agreements from the hard-drive makers themselves.



“We buy lots and lots of hard drives . . . [They] are the single biggest cost in the entire company.”

Those are the words of [Backblaze](#) Founder and CEO Gleb Budman, whose company offers unlimited cloud backup for just \$5 a month, and fills 50TB worth of new storage a day in its [custom-built, open source pod architecture](#). So one might imagine the cloud storage startup was pretty upset when flooding in Thailand caused a global shortage on internal hard drives last year.



Gleb Budman

“Literally overnight,” Budman told me, “... all the places we would go to get drives said, ‘Sorry, we don’t have any drives.’”

People assumed it was just a blip, and while Backblaze watched cautiously in the beginning, it figured it had enough hard drives stockpiled to make it through. However, when months passed and the situation only got worse — some suppliers were offering 3TB drives that used to cost \$129 for around \$600 —

Backblaze knew it had to act. If the company didn’t want to change its pricing model or throttle users’ capacity, something had to give.

“That’s an absolute, just last, last, last resort,” Budman said.

It's good to be a startup

Sometimes, it's nice to have the flexibility of a startup. Rather than jack up prices or lower its revenue guidance, Backblaze just kept going about its business. Well, publicly, at least — behind the scenes, the company was working like crazy farming hard drives from the only places it could still get them at a reasonable price.

Its solution was to eschew the internal hard drives generally put inside servers and buy up the external hard drives sold for consumer backup at stores such as Best Buy, Fry's and Costco. They fit nicely into Backblaze's storage pods once removed from their protective enclosures, and the best part was that the 3TB drives Backblaze requires only cost around \$169 apiece even during the height of the shortage. The company that builds Backblaze's pods was even willing to "shuck" the drives for a couple bucks apiece, saving Backblaze a lot of manual labor in order to make its newfound source of capacity production-ready.

And then it happened: The shopping carts Backblaze was initially filling up gave way to two-hard-drives-per-person limits, which meant the company had to scramble. Keep in mind, adding 50TB a day means getting your hands on at least 14 new drives per day. In the end, Budman tells me, its ingenuity meant Backblaze was able to procure about 1,800 3TB hard drives — or about 5.5 petabytes worth of capacity — in the three months it was actively farming them.

Backblaze [details much the process in a Tuesday-morning blog post](#), including the hijinks that followed as the company got creative trying to figure out ways around the new hard drive limits. Maps were drawn, employees were cut off from purchasing hard drives at Costco — both in-person throughout Silicon Valley and online (despite some great efforts to avoid detection, such as paying for hard drives online using gift cards) — and friends and family across the country were conscripted into a hard-drive-buying army.

How The Hard Drive Crisis Led To One Company Buying Up 5.5PB Of Costco Storage

Kyle Wagner

Oct 10, 2012, 10:00am



Flooding in Thailand made getting a hard drive a lot more expensive late last year. It wasn't a huge deal to most of us, but for a small cloud storage company, it was almost death. Staying alive took creativity. And Costco.

About a year ago, the 3TB internal drives that Blackblaze — which sells unlimited cloud storage for \$US5 a month — had been using shot up from about \$US130 to \$US360. And while the human cost of the floods was enormous, the company also needed to do something to keep itself afloat.

It turned to cheaper external drives. Basically, the answer was to buy the drives, rip them open and stick their guts into the 135TB "pods" that the company uses — like shucking an oyster. Costco had the best deals, and employees went there to buy 50 or so 3TB external drives at a time. Then things really started to get complicated:

The "Two Drive Limit" signs started appearing in retail stores in mid-November. At first we didn't believe them, but we quickly learned otherwise. Sometimes, we talked our way into more, but we heard "2 is the limit" a lot. We started doing "drive math": 2 drives a day per store, times 3 stores per day, times 5 "farmers", times 7 days a week is 210 drives. That would be sufficient, but in reality it didn't work out that way. Stores were stocking out of drives on a regular basis and we really couldn't farm everyday, but we kept at it. One Wednesday afternoon, after working all day at Blackblaze, Yev circled the San Francisco Bay hitting local Costco and Best Buy stores – 10 stores, 46 drives, 212 miles on his Nissan.

Naturally, with the Christmas holidays coming up, Costco couldn't have a couple of guys buying up all of the external drives in its stores. So Blackblaze started asking friends and family to help buy drives and coming up with other crazy ideas, such as driving a rental truck around the US and buying thousands of drives at places without a purchase limit.

Ultimately, the hard drive shortage subsided, and 1900 bargain basement hard drives later, the company is doing just fine. It's a story packed with ingenuity – unless you were trying to buy a 3TB external hard drive late last year. Then this is the story of the jerks who ruined your Christmas. [Blackblaze via GigaOm]

Backblaze shucked hard drives to ride out months of shortages

BY [MATTHEW HUMPHRIES](#)

10.09.2012 :: 7:00AM EDT [@MTHWGEEK](#)



This time last year a major crisis was happening in **Thailand**. Heavy rain during the monsoon season caused severe flooding, and by the time it was over in mid-January, over 800 deaths had been recorded and 13.6 million people were affected by the disaster.

Outside of Thailand we heard all about it on the news, but we also felt it in our wallets. That's because Thailand is the epicenter of hard drive production, and with **manufacturing facilities offline** for months, stock piles soon depleted and **prices skyrocketed**. A hard drive that once cost \$100 shot up to between \$300-\$500, meaning lots of companies warning they would also need to increase product prices that used a hard drive.

For online backup service **Backblaze**, it caused a massive headache due to their unlimited backups promise requiring a constant supply of new drives (roughly twenty new 3TB drives a day). How do you keep that supply going without spending more and putting service prices up? The answer is a combination of shucked drives, calling in favors from friends and family, and considering driving across the US in a rented truck on a quest for storage.

Backblaze deploys Storage Pods to datacenters that consist of **45 drives offering 135 terabytes of data storage**. The drives used are all internal drives as you'd expect. However, when the Thailand floods hit, the price of the required drives went up quickly, but for some reason external drive pricing stayed relatively static. Backblaze therefore focused on buying external drives and removing them from their casing manually. Removing a drive in this way is referred to as being "shucked," and Backblaze got very good at it as well as ensuring the cases were all recycled.

Backblaze staff hit every store they could find buying up external drives. They got banned from purchasing through some online stores, and then had to overcome a 2-drive purchase limit as stock really dried up in retail stores. With the same people going to the same stores they also got noticed and banned from buying at all in certain places.



As desperation to keep the supply of hard drives coming set in, Backblaze called upon friends and family to do the buying for them (farming the drives), which led to a couple of new drives trickling in from those that were successful on a regular basis. A combination of reacting to the coming shortages early, staff willing to drive hundreds of miles to get a boot full of hard drives, and the kindness of friends slowly but surely worked. Backblaze managed to make it through the dry spell without raising prices.

Unless you purchased a new hard drive or system over the last 12 months you probably didn't notice much difference in the storage market. But for a company like Backblaze, hard drives are the lifeblood of their service, and managing to maintain a \$5 service price should be commended.

Cloud Backup Service Backblaze Gets Creative With Big Storage

 Richi Jennings, NetApp

Cloud backup service Backblaze is telling its story of how it survived the Thailand floods without raising its prices. While the cost of raw storage was more than quadrupling, the small company had to act... and act fast.

- *By Richi Jennings, this is OTOH: curated, fluff-free news and commentary, for people too busy to sift the gold from the sludge [NetApp-sponsored content]*

Its solution: buy up stocks of consumer external drives, which curiously hadn't risen in price so dramatically. Then rip them apart to get at the hard drive inside. Ugly and labor-intensive, but it worked.



source: *Harvard Clean Energy Project (cleanenergy.harvard.edu)*

On the one hand, it's a truly *inspirational* example of how to exploit an opportunity.

On The Other Hand, it's a zero-sum game: These were hard drives that real consumers were prevented from buying.

Stephen Shankland reports:

“*What do you do when you have a 1,000-unit-per-month hard-drive habit -- then Thailand floods wipe out your supply? ...when the natural disaster last year raised the price of a \$129 3TB drive to \$349, you improvise.*

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Extremely labor-intensive procurement of 1,838 hard drives with more than 5.5 petabytes of capacity -- and a business that averted its own price-hike disaster. ... The first plan: Buying external drives at Costco and Best Buy BBY -0.44%. One early trip...yielded 52 drives, enough to accommodate about two or three days' worth of Backblaze's...data needs.

...

The story illustrates the kind of plight that can hit a smaller company that may not know all of its risks.

Derrick Harris adds:

“*...the company had to get creative to keep up its 50TB-a-day hard drive habit. ... “We buy lots and lots of hard drives. ... [They] are the single biggest cost in the entire company.” Those are the words of Backblaze Founder and CEO Gleb Budman. ... “Literally overnight...all the places we would go to get drives said, ‘Sorry, we don’t have any drives.’”*

...

[Soon] some suppliers were offering...drives that used to cost \$129 for around \$600. ...something had to give. ...behind the scenes, the company was working like crazy farming hard drives from the only places it could still get them at a reasonable price. ... [It would] buy up the external hard drives sold for consumer backup at stores...remov[ing them] from their protective enclosures.

...

In the end, Budman tells me, its ingenuity meant Backblaze was able to procure...about 5.5 petabytes worth of capacity in the three months it was actively farming them.

But why were they buying cheap, consumer drives? Your humble editor recently described the Backblaze storage "Pod" like this:

“ A 4U rackable server, containing as many cheap, desktop-grade SATA drives as could be squeezed in. ... At today's prices, [\$8,000] could provide 90TB; a typical 19 inch rack containing nine Pods could store more than ¾ of a petabyte. It's not an incredible performer, nor will it offer the ultimate in reliability...thanks to its consumer-class hardware. But it...provides huge amounts of storage on a bootstrapped startup budget.

...

The entire hardware design is open source. ... [But] the company retains some secret sauce – its techniques for de-duplication, encryption, and managing a data centre full of Pods.

Backblaze's Andrew Klein picks up the story:

“ ...by mid-October 2011, violent floods in Thailand had crippled the factories that helped produce nearly half of the world's hard drives. ... To survive this crisis without raising prices...Backblaze deployed every last employee, as well as friends and family, to acquire drives in what became known internally as “drive farming”.

...

In late November, Brian was banned from buying drives on Costco's online store, and Billy was banned from purchasing them at any Costco in the Bay Area. Other Backblaze employees were also asked to leave. ... [So] the call went out to friends and family – buy hard drives and send them to Backblaze, NOW.

...

The tragic flooding in Thailand began in August 2011 and by early-October...800 people died and many more were homeless and hungry. ...even though we at Backblaze weathered the drive challenge it pales in comparison to the challenges faced by the people of Thailand. ... Our hearts go out to them. If you wish to help, please consider a donation through [Give2Asia](#) or the relief organization of your choice.

So what were they doing with external drives? Kyle Wagner explains:

“ It turned to cheaper external drives. Basically, the answer was to buy the drives, rip them open, and stick their guts into the 135TB "pods" that the company uses—like shucking an oyster. ...employees started driving out and buying 50 or so 3TB externals at a time.

...

1900 bargain basement hard drives later the company is doing just fine. It's a story packed with ingenuity—unless you were trying to buy a 3TB external hard drive last holiday season. Then this is the story of the jerks who ruined your Christmas.

Meanwhile, John Rose alleges profiteering:

“ Think about the customers for bare drives and external drives. One is directly purchased by consumers; one is purchased primarily by OEMs. ... If the external drives weren't priced reasonably, consumers wouldn't have bought them. If the internal drives weren't priced reasonably, OEMs...had to buy them anyway. ... Drive manufacturers knew OEMs still had to buy the drives [and that] OEMs would eat part of the price premium themselves (to stay price-competitive with other OEMs).

...

That's why internal drive prices tripled even though drive manufacturing capacity only dropped by 50%.