Backblaze

USE CASES: **Primary Storage** / **Distribution**

KEYWORDS: **Multi-cloud** / **Content Delivery** / **E-commerce** / **Fastly**

BIG CARTEL

E-commerce Platform Designs Multi-cloud Infrastructure

All images provided by Big Cartel.

1M
Websites Hosted

50%
Reduction in OpEx

<200ms
to Serve Files

"

Lee Jensen, Technical Director, Big Cartel

"The number one factor is that Backblaze just works, and it always works. By that metric—the sole metric that matters to us besides cost—Backblaze has been great."

Situation

Big Cartel's infrastructure needs evolved as they grew to host one million e-commerce sites. They initially used Amazon for storage and content delivery, but as an organization serving independent artists, they felt conflicted about patronizing a company known for its complicated relationship with independent businesses. They resolved to reduce their dependence on Amazon and increase data redundancy.

Solution

First, Big Cartel decoupled their CDN from Amazon by switching to Fastly. After learning about Backblaze's S3 Compatible API and partnership with Fastly, they added Backblaze B2 Cloud Storage for origin storage. Following successful performance tests, they mirrored data to Backblaze B2 in less than a day, and retained Amazon S3 for backup—creating a fully redundant, multi-cloud system.

Result

With reliable, performant origin storage from Backblaze B2, Big Cartel can focus on enhancing their platform instead of worrying about vendor dependence. They doubled data redundancy at a cost that allows them to expand their free tier and eliminate application fees, and gained a trusted partner in support of their mission to serve independent shop owners making a living doing what they love.

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Big Cartel is an e-commerce platform that makes it easy for artists, musicians, and independent business owners to build unique online stores. Since 2005, they've helped people from all over the world sell their work online. Founded "by artists, for artists," they're a small, tight-knit team focused on making their software as a service platform empowering and easy to use. As independent artists themselves, they value supporting causes that matter, sharing knowledge, developing skills, and giving the Big Cartel team room to pursue creative projects—many employees host their own storefronts on Big Cartel.

The Art of Multi-cloud Infrastructure
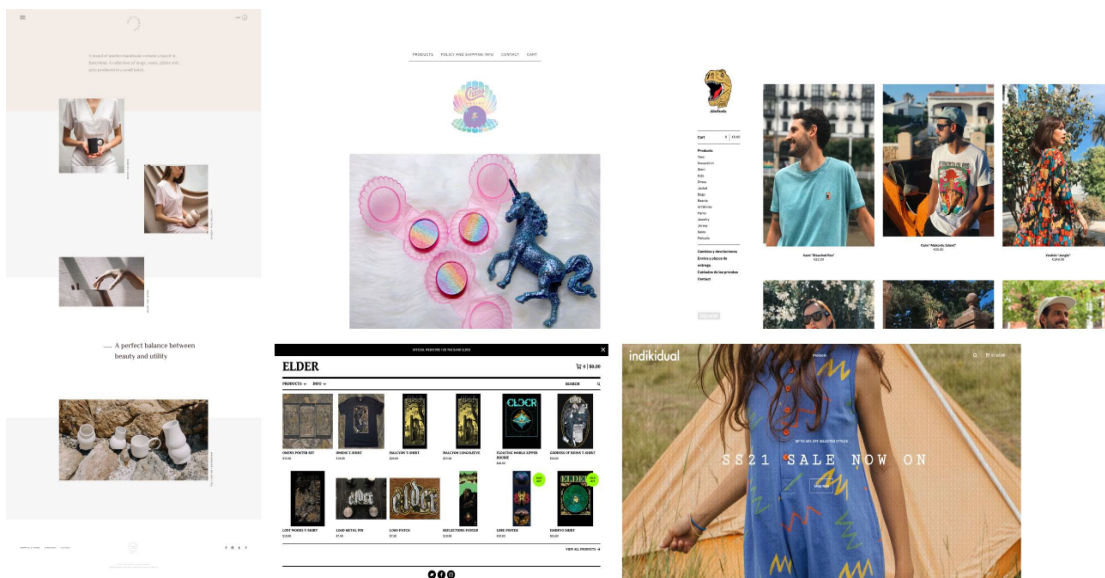
Friends always turned to Big Cartel Co-founders, Matt Wigham and Eric Turner, when they were in need of a website for a new band. Both musicians themselves, Wigham had the technical expertise and Turner had the design eye to create frontman-approved sites. But one challenge always frustrated them—back in 2005, setting up e-commerce to sell band merch online was complicated. They wanted to make it easier and more accessible, so they created a software as a service (SaaS) platform, then known as MerchBoss, to host simple online stores.

They quickly discovered that many of their first customers weren't the indie bands and musicians they anticipated, but artists working across a wide variety of media who wanted to sell their work. Independent artists don't have teams of people to manage a more sophisticated e-commerce platform like Shopify, and they don't want to compete in a marketplace with tens of thousands of other artists like Etsy. They want simplicity in administration and control over their product.

After realizing there was potential to help out a broader audience than what they first envisioned, Wigham and Turner repositioned the platform as Big Cartel, opening it up to all kinds of independent artists, creators, crafters, and makers. Unlike Shopify and Etsy, their solution provides an easy, affordable way to launch an online shop where the artist owns their web property, traffic, and reputation.

Big Cartel now serves a community of independent shop owners who've sold more than $2.5 billion of creative work through more than one million Big Cartel-hosted sites. Their storage infrastructure needs naturally evolved as they scaled to serve even more people and to make selling creative work online even easier. Unconventional from the start, they've done things their own way—from self-hosting their platform to seeking out vendors aligned with their ethos. Maturing their storage infrastructure was no different.

"As a company that believes in funding and building independent business owners, we have a tenuous relationship with the idea of giving money to Amazon. We are always looking to spend our dollars in places that are less ethically compromising."

Lee Jensen, Technical Director, Big Cartel

Learn the Rules to Break the Rules: The Path to Self Hosting

When Technical Director, Lee Jensen, started at Big Cartel in 2010, the company was running the platform on the shared hosting service Rails Machine and storing content on Amazon S3. Jensen had come from a company that specialized in Ruby on Rails hosting, and saw an opportunity to sharpen Big Cartel's edge in the market.

"I see a lot of value in the contrarian position of hosting your own equipment," he explained. Jensen started building out servers and systems to take the platform fully self-hosted. The move has been a differentiator for Big Cartel, allowing them to save costs, underspend versus their competition, and pass those savings on to the independents using their platform.

They've been self-hosted since 2013, with two notable exceptions—cloud storage and content delivery. Because they store so many product images for customers' e-commerce sites, they value the elasticity of cloud storage and the ability to add space as needed without investing in infrastructure to support it. And because they need to deliver those images fast, a cloud content delivery network (CDN) reduces latency by caching images on geographically distributed nodes closer to end users.

Despite some misgivings, they continued to use Amazon S3 to store content and implemented Amazon's CloudFront CDN for content delivery. "As a company that believes in funding and building independent business owners, we have a tenuous relationship with the idea of giving money to Amazon," Jensen noted. "We are always looking to spend our dollars in places that are less ethically compromising."

The Vanishing Point (of Failure): Amazon S3

In an effort to build a more ethically sound infrastructure, Jensen switched from CloudFront to Fastly in 2015. As an API-first, edge cloud platform designed for programmability, the team felt Fastly gave Big Cartel more functionality and control than CloudFront. With the Fastly Varnish Configuration Language (VCL), a scripting language that allows users to make changes to Fastly's services, Big Cartel can detect patterns of abusive behavior, block content at the edge, and optimize images for different browsers on the fly. "Fastly has really been a force multiplier for us. They came into the space with published, open, transparent pricing and the configurability of VCL won us over," Jensen said.

The decision to continue using Amazon S3 for storage never sat well with Jensen, but the service met Big Cartel's needs from a technical perspective until Amazon S3 experienced some high profile outages in 2020. Big Cartel wasn't affected, but the disruptions gave them pause. "Having a single storage provider was a single point of failure that we grew less and less comfortable with over time," Jensen acknowledged. He felt it was in their best interest to find an alternative.

"We had no problems with the content served from Backblaze B2. The time to serve files in our 99th percentile, including fully rendering content, was under one second, and that's our worst case scenario."

Lee Jensen, Technical Director, Big Cartel

Assemblage, or How to Build a Multi-cloud System

Jensen had used Backblaze Computer Backup personally and appreciated the valuable, transparent content he'd found on Backblaze's blog in the past. After learning about the Backblaze S3 Compatible API as well as its partnership with Fastly, including free egress, he recognized an opportunity to stand up an alternative to Amazon S3 that fit Big Cartel's ideals and ethos, as well as their use case. He began taking steps to increase Big Cartel's data redundancy.

The Big Cartel application sends customer-uploaded content directly to cloud storage via a pre-signed URL that they give to the client-side Javascript. To make the method for signing URLs work across platforms, Jensen built a service written in Go, an open-source programming language, that multiplexed uploads to both Amazon S3 and Backblaze B2. So now, when a customer uploads content, it gets stored in both storage clouds, then Fastly's VCL preferentially delivers that content from Backblaze B2. Mirroring incoming data allowed Big Cartel to test out both origin stores and compare performance and reliability.

Concept Sketches: Testing Speed and Reliability

"We had no problems with the content served from Backblaze B2," Jensen said of the tests. "The time to serve files in our 99th percentile, including fully rendering content, was under one second, and that's our worst case scenario." The time to serve files in their 75th percentile was under just 200 to 300 milliseconds. Based on the performance, Jensen decided to mirror all of their existing data to Backblaze B2, completing the data transfer in less than a day using Backblaze's Cloud to Cloud Migration service.

Big Cartel continues to run the multiplexing tool and retains all customer-uploaded content on both Amazon S3 and Backblaze B2 with the Fastly VCL

configured to serve from either location, if necessary. The multi-cloud system provided the data redundancy they sought. "Even though we're paying for storage in both Amazon S3 and Backblaze B2, it has more than paid for itself in terms of the peace of mind of having two storage providers with two different data centers," Jensen noted.

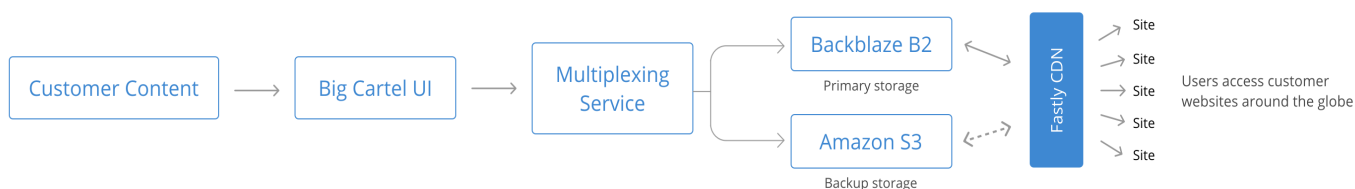## Big Cartel's Big Picture: A Portrait of Performance

With Backblaze B2's performance and reliability, Big Cartel doesn't have to worry about content storage. They can focus on enhancing their platform. "Storage has to be bulletproof, and the combination of Fastly and Backblaze B2 has been rock solid," Jensen said. "The number one factor is that Backblaze just works, and it always works. By that metric—the sole metric that matters to us besides cost—Backblaze has been great."

Moreover, as a result of the partnership between Backblaze and Fastly, including free egress between the services, Big Cartel's data storage and delivery costs have gone down, even as they *doubled* their storage footprint. They're now saving 50% in operating costs by adding Backblaze B2 for origin storage versus using Amazon S3 alone. The savings means Big Cartel can continue to invest in their community, including dropping application fees and enhancing their free plan—the latter long a part of Big Cartel's business model.

"Allowing shop owners to prove out an idea on our free plan is a powerful thing," Jensen explained. "We see a lot of people who start on a free plan and really make something of their business." Now, they can provide more services for free to customers, deepening their commitment to emerging artists.

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Customer Content → Big Cartel UI → Multiplexing Service → Backblaze B2 (Primary storage) / Amazon S3 (Backup storage) → Fastly CDN → Site / Site / Site / Site / Site — Users access customer websites around the globe

Indie-pendent: Big Cartel Plans for Sustainable Growth

The success of the project reinvigorated Jensen's pursuit of additional cost savings in Big Cartel's infrastructure, including potentially dropping Amazon S3 altogether or searching for an alternate secondary provider to maintain data redundancy. Jensen also plans to enhance Big Cartel's paid platform offerings to increase customer retention while continuing to grow sustainably and ethically. "We don't always make choices based on what's purely the best technical choice or even the lowest cost option," Jensen concluded. "The kinds of companies we support matter to us. Backblaze ticks all of those boxes."

With Backblaze B2 as a partner, the future for Big Cartel looks as pioneering and community-minded as their evolution thus far—continuing to offer easy, affordable solutions to creators trying to make a living doing what they love.

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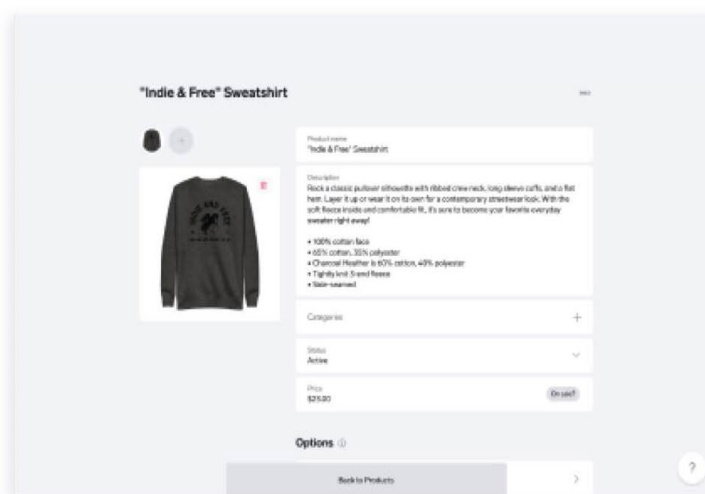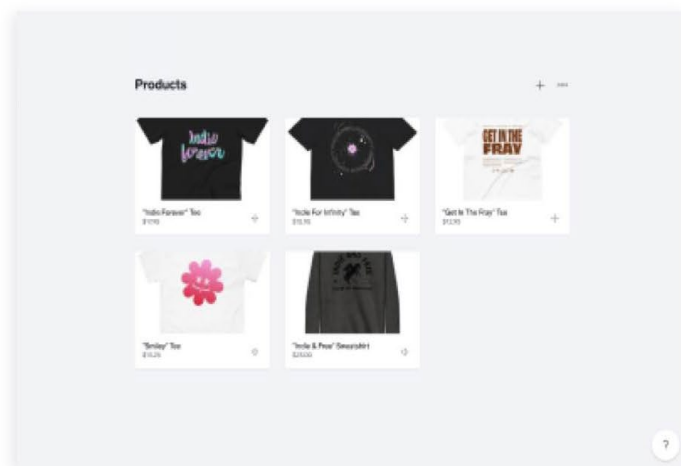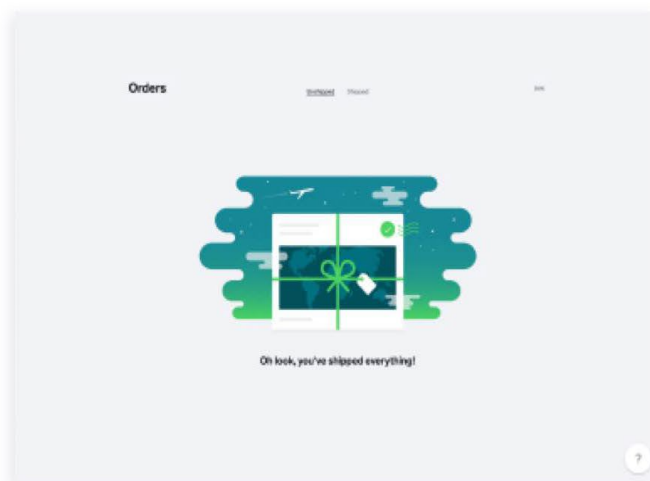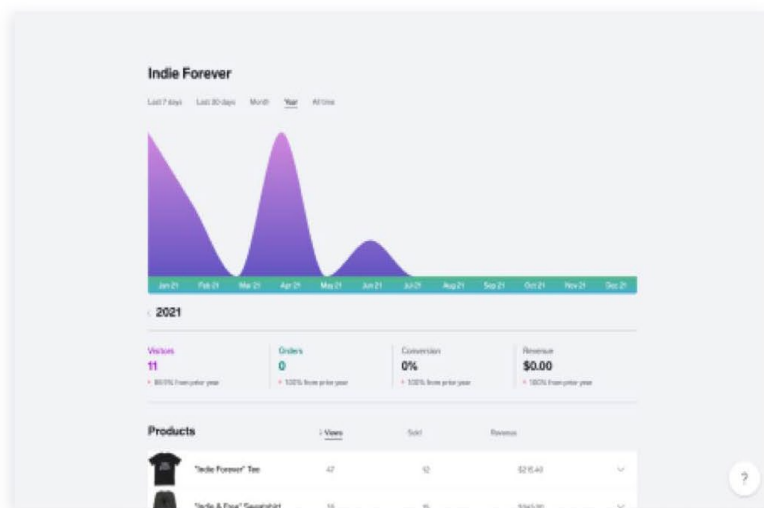
fastly

Fastly's edge cloud platform enables users to create great digital experiences quickly, securely, and reliably by processing, serving, and securing customers' applications as close to end users as possible. Fastly's edge cloud platform takes advantage of the modern internet, and is designed both for programmability and to support agile software development.

About Backblaze

Backblaze B2 Cloud Storage is purpose-built for ease, instant access to files and data, and infinite scalability. It seamlessly supports workflows via hundreds of third-party software integrations, or through direct APIs and CLIs. At only $5/TB of object storage per month (a fraction of the cost of the largest solutions), Backblaze B2 is priced so users don't have to choose between what matters and what doesn't when it comes to backup, archive, data organization, workflow streamlining, and more.

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