Cloudflare Tour
September @TriDev

Where Did Cloudflare Come From?

- Founded in 2009 by Matthew Prince, Lee Holloway, and Michelle Zatlyn

- Initially focused on identifying the source of spam and email abuse

- Launched publicly in 2010

- Rapid growth: from 1 data center in 2010 to 330+ in 2023

- Key milestones:

  - 2014: Mitigated largest DDoS attack at that time

  - 2017: Launched Cloudflare Workers

  - 2019: Went public on NYSE as $NET
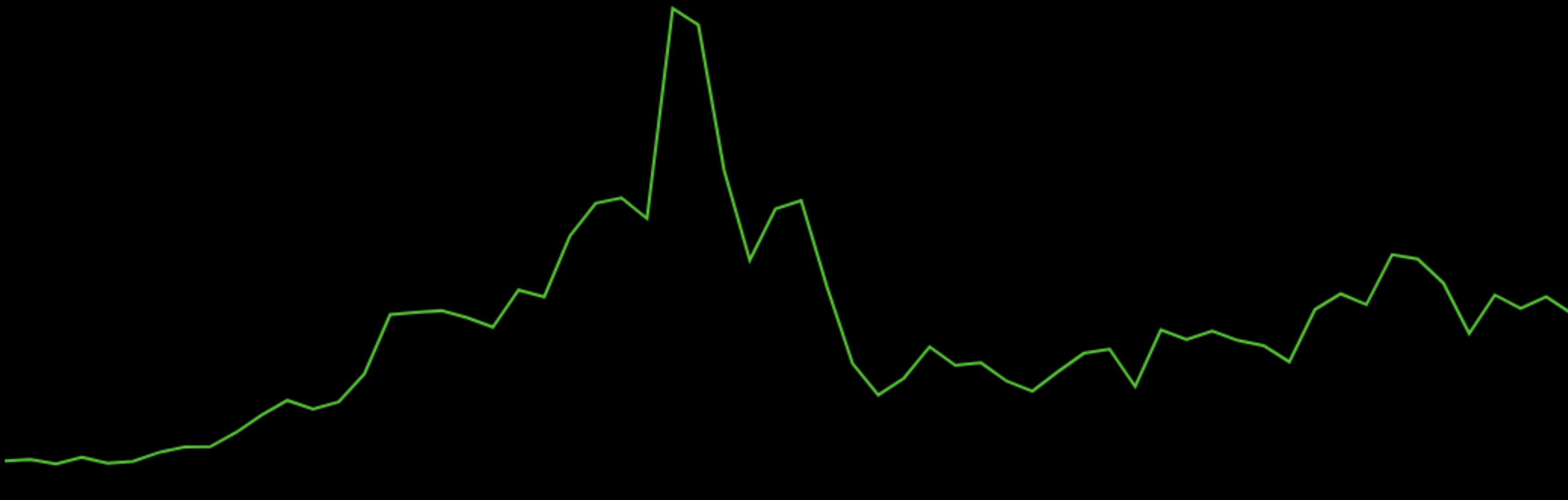
  - 2023: Mitigated more record-breaking DDoS attacks

Cloudflare

$75.42

+$57.42 (+318.97%) Max time

🔔   ⤢ Advanced

| 1D | 1W | 1M | 3M | YTD | 1Y | 5Y | **MAX** | ⚙ |

CEO	Employees	Headquarters	Founded
Matthew Browning Prince	3,682	San Francisco, California	2009

Key statistics

Market cap	Price-Earnings ratio	Dividend yield	Average volume
25.76B	-252.12	—	1.60M

High today	Low today	Open price	Volume
$77.50	$74.88	$76.63	660.51K

52 Week high	52 Week low
$116.00	$53.88

How Does Cloudflare Fit Into a Cloud Architecture?

Vercel

🏠

Azure

HOSTINGER

The Cloud

Google Cloud

Cloudflare
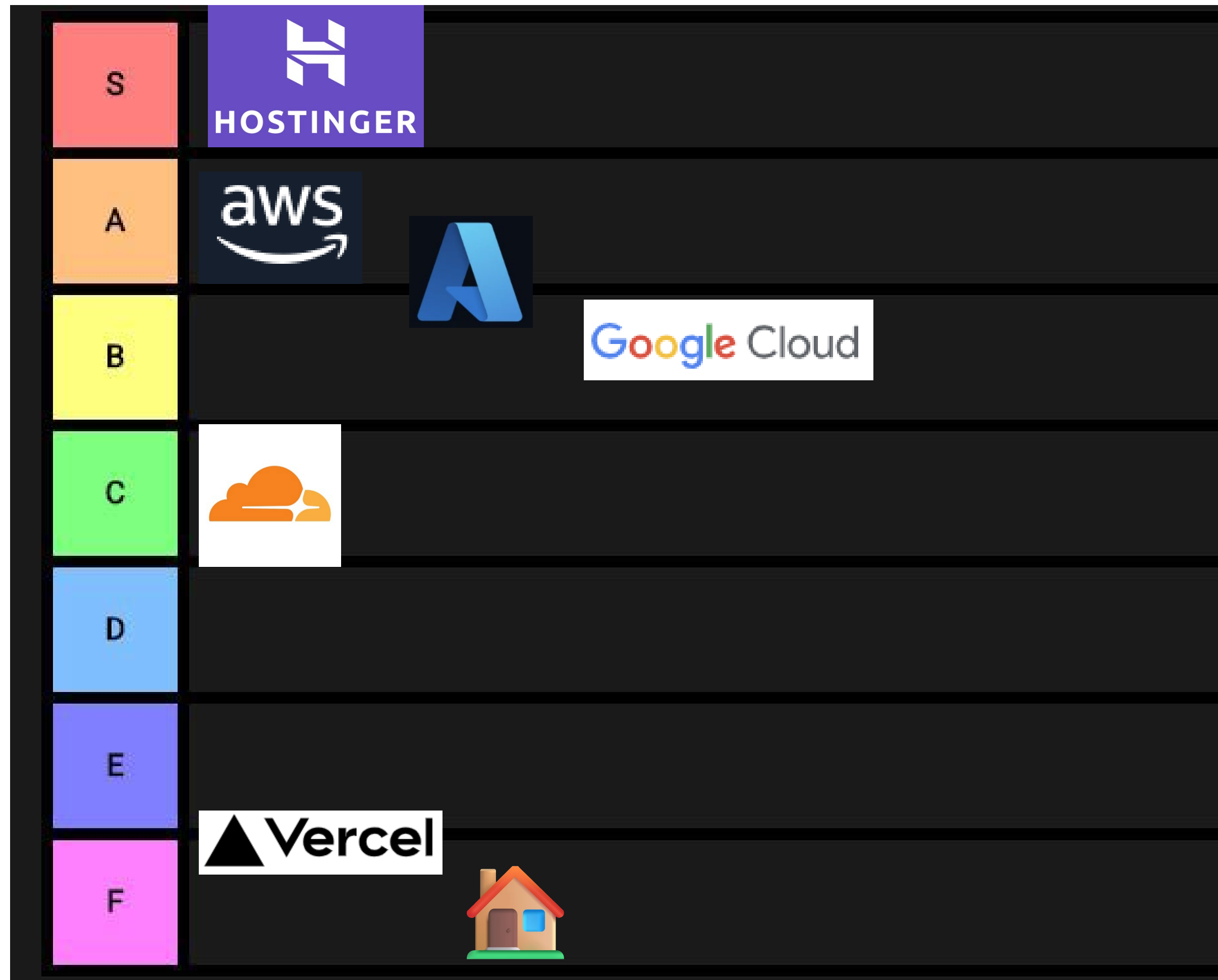
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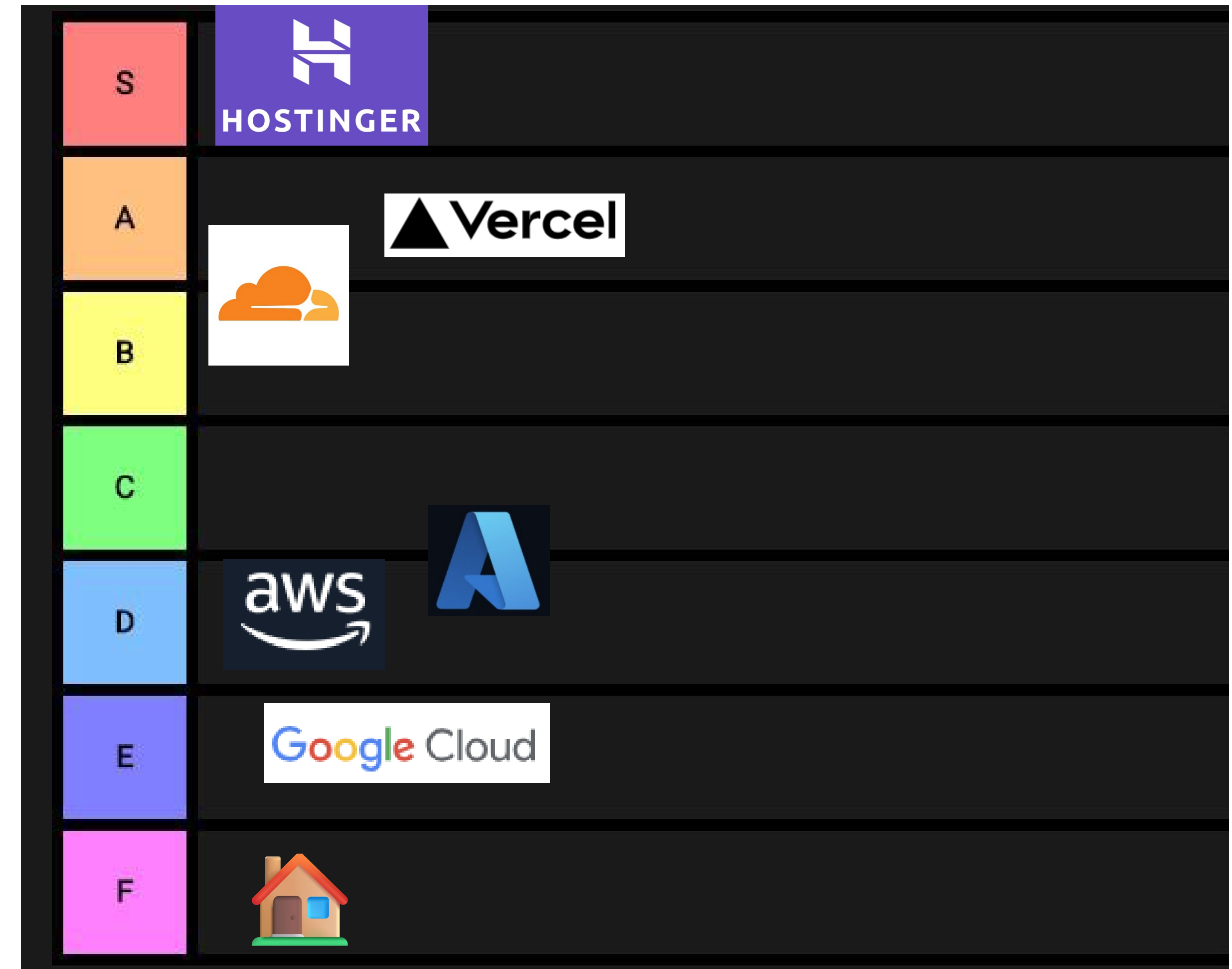
Within a traditional architecture:

Capabilities/Needs

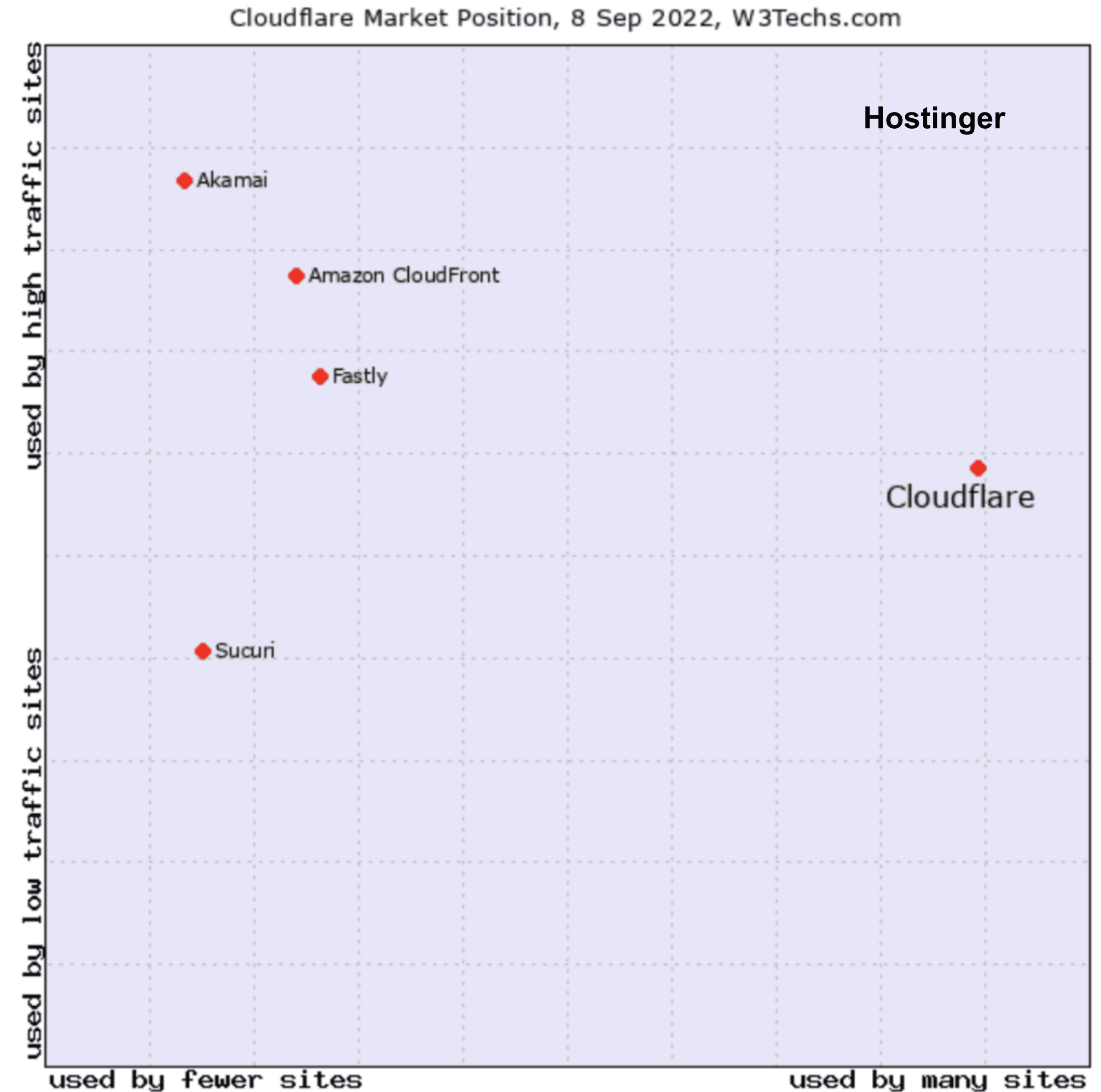## DevEx/Effort
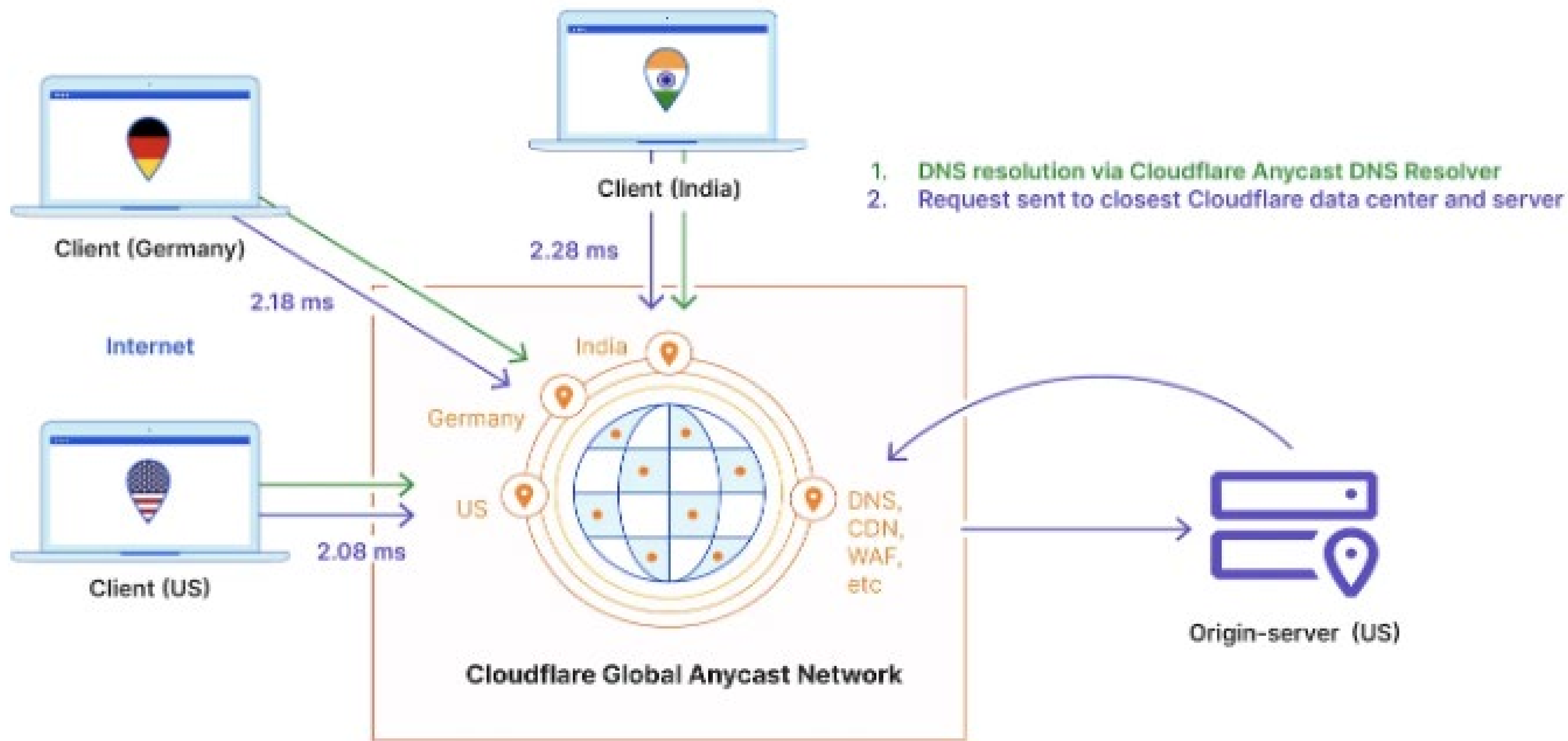
Small team or indie:

Capabilities/Needs

S	HOSTINGER
A	Cloudflare
B	▲Vercel
C	
D	aws 🏠 Azure
E	
F	Google Cloud

DevEx/Effort

S	HOSTINGER
A	Cloudflare ▲Vercel
B	
C	aws
D	🏠
E	Azure
F	Google Cloud

- Cloudflare doesn't fit within traditional cloud provider notions.

- Many organizations use Cloudflare on top of traditional hyperscalers.

- When Cloudflare has an issue, your family members notice.

Cloudflare Market Position, 8 Sep 2022, W3Techs.com

used by high traffic sites

Hostinger

Akamai

Amazon CloudFront

Fastly

Cloudflare

Sucuri

used by low traffic sites

used by fewer sites

used by many sites

Client (Germany)

Client (India)

1. DNS resolution via Cloudflare Anycast DNS Resolver
2. Request sent to closest Cloudflare data center and server

2.28 ms

2.18 ms

Internet

Client (US)

2.08 ms

India

Germany

US

DNS, CDN, WAF, etc

Origin-server (US)

Cloudflare Global Anycast Network

How Does Cloudflare Work?

What is Cloudflare?

20M+
Internet Properties

14M+
Peak requests/second

200+ cities
Cloudflare's network span

CLOUDFLARE®

How does Cloudflare work?
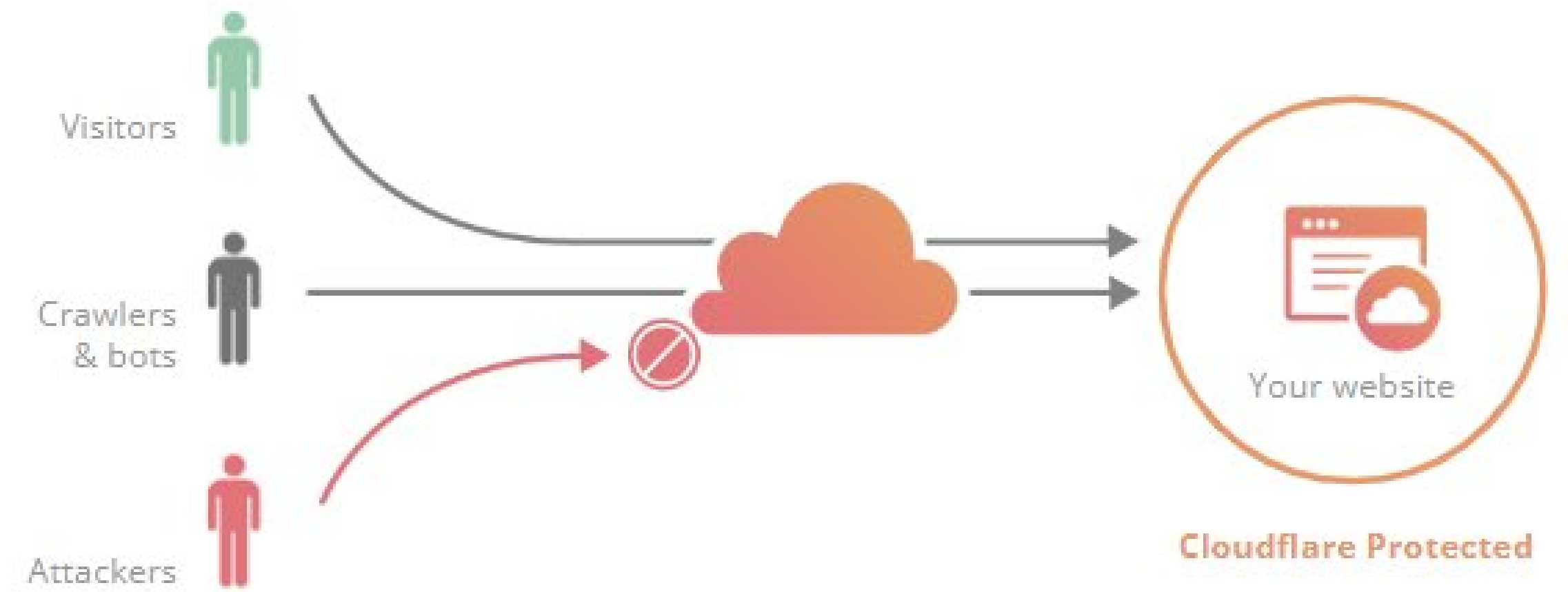
- When you use Cloudflare for your DNS, you can either proxy (orange cloud) or use just DNS (grey cloud).

- Grey clouded traffic behaves like any DNS provider.

- Orange clouded traffic is reverse proxied, letting Cloudflare do *stuff* to it.

What does Orange Cloud allow?

- All user traffic goes straight to Cloudflare's edge locations

- Cloudflare/you can do anything with this

- The traffic goes to your origin in another cloud or on-prem

Overview of Products and Services
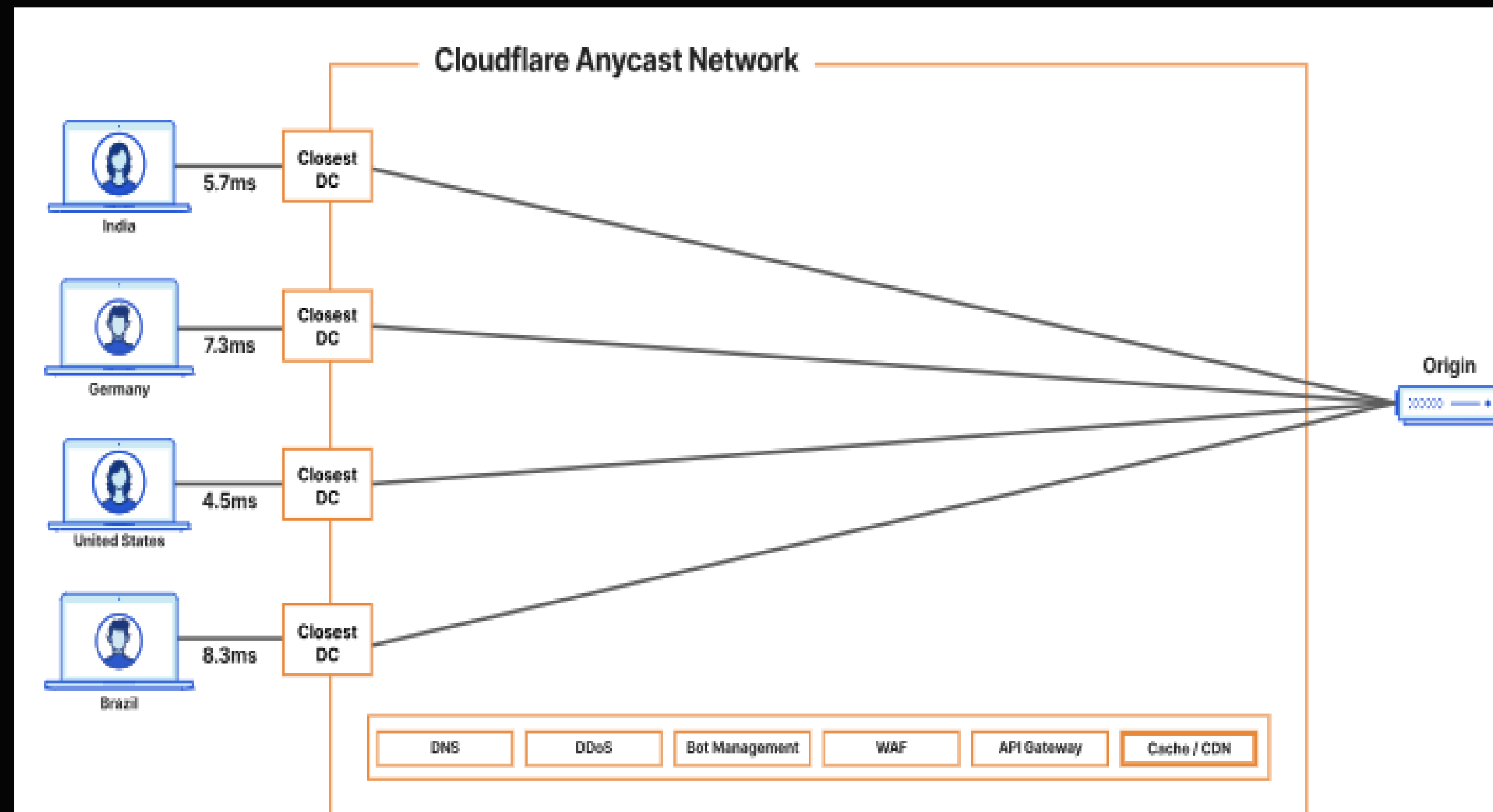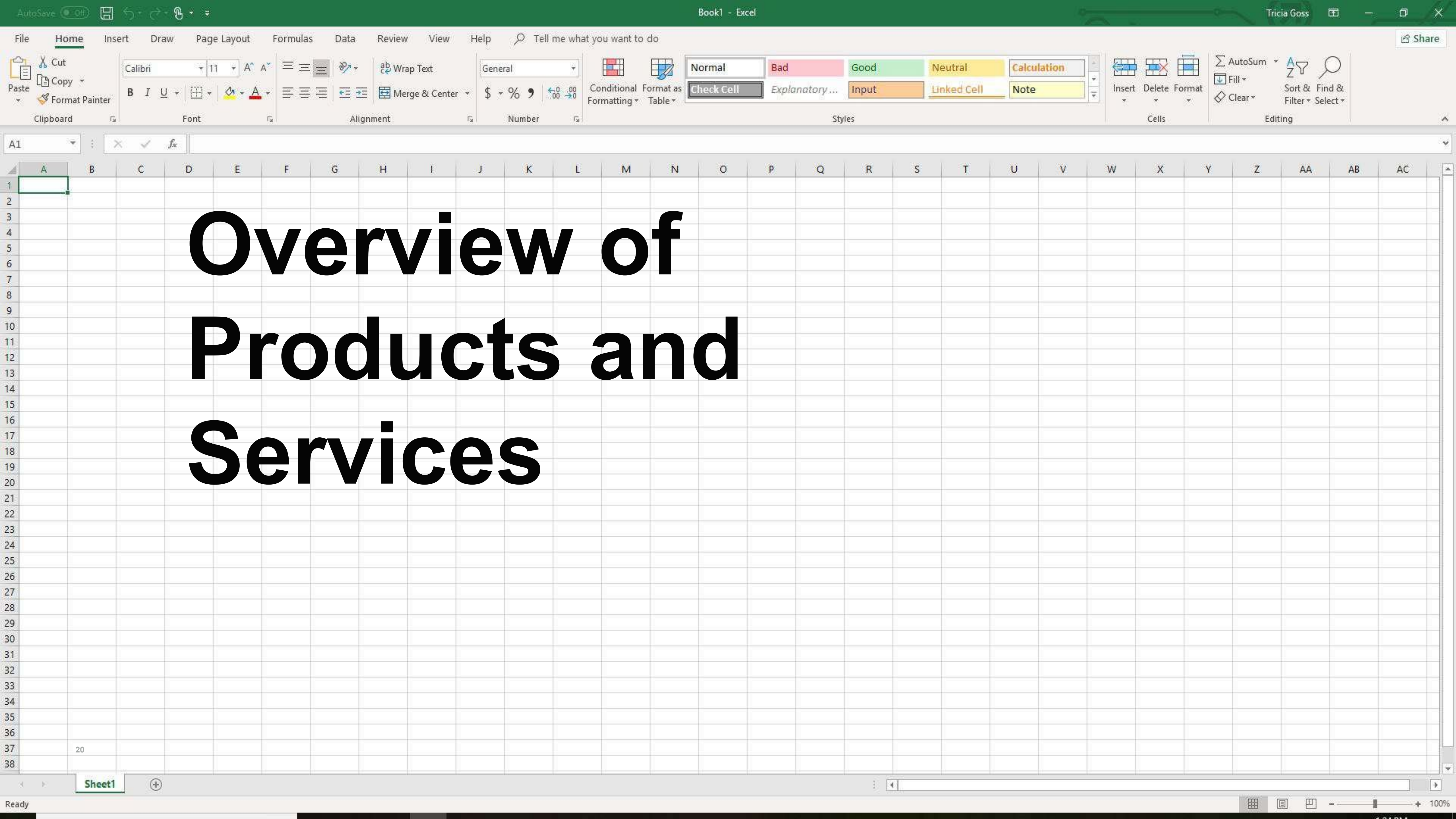
Types of Services

- Security: Zero Trust, Networking, Enterprise Security

- Infra: Application Security, Performance, App Security

- Developers: Full Stack Serverless Applications

Security Highlights

- Zero Trust provides a suite of tools including access control for 3p and internal tooling, gateways, DNS based endpoint protection

- Network tunnels allowing you to not have to expose self-hosted applications. You can run apps at home without exposing your network.

- Email security tools like DMARC management, anti-phishing, cloud rendered page previews

Infrastructure Highlights

- DDoS mitigation, Rules and rewrites, Traffic filtering

- Automatic Web Application Firewall blocking attacks

- Automatic perf optimizations and CDN

- Write code to modify and intercept requests

Traffic sequence

The simplified journey of a request as it proxies through Cloudflare. Use Trace to review how your specific configuration impacts traffic.

DDoS	ⓘ
URL Rewrites	ⓘ
Page Rules	ⓘ
Origin Rules	ⓘ
Cache Rules	ⓘ
Configuration Rules	ⓘ
Redirect Rules	ⓘ
IP Access Rules	ⓘ
Bots	ⓘ
WAF	ⓘ
Header Modification	ⓘ
Cloud Connector	ⓘ
Workers	ⓘ

↓

🖥️ Origin

Developer Platform Highlights

- Workers: Serverless edge functions

- Pages: Hybrid between static site hosting and serverless application hosting

- No egress fees object storage

- KV (key-value), D1 (SQLite), Durable Objects (stateful workers)

- AI – run AI models on the edge

- Image, Stream, Calls – batteries included media services.

Workers and Pages

Workers - Overview

- Globally deployed serverless execution environment

- Like serverless functions with no cold starts and global deployments

- Javascript, Typescript, Python, Rust

- $0.30 per million requests + other usage based billing for bindings

Workers - Runtime

- JavaScript standards, web interop, WinterCG

- Subset of Node.js APIs (most but not all)

- Supports WebAssembly for Rust, Go, C, Fotran, COBOL, etc.

Workers - Rust

- Simple example of a pseudo-random seed generator REST API in Rust with a Worker

- This is all you need.

- Super fast.

```rust
1    use rand::distributions::{Alphanumeric, DistString};
2    use serde::{Deserialize, Serialize};
3    use worker::*;
4
5    #[derive(Deserialize, Serialize)]
6    struct ResponseData {
7        length: u8,
8        random_string: String,
9    }
10
11   #[event(fetch)]
12   pub async fn main(req: Request, _env: Env, _ctx: worker::Context) -> Result<Response> {
13       if !matches!(req.method(), Method::Get) {
14           return Response::error("Method Not Allowed", 405);
15       }
16
17       let random_string = Alphanumeric.sample_string(&mut rand::thread_rng(), 32);
18       let data = ResponseData {
19           length: random_string.len() as u8,
20           random_string,
21       };
22       Response::from_json(&data)
23   }
```

Workers - Routes

- Modify incoming proxied requests by first sending the request through a Worker

- You can do anything here from enhancing the page (maybe adding location-specific content), authenticating users, adding analytics tools (with Zaraz or manually), etc.

- Easily add in a worker to or on top of your existing application

Pages

- Globally deployed full-stack applications

- Deep GitHub integration with preview deployments/etc.

- Support for dozens of frameworks or static assets including Next js, Svelte Kit, Remix, Vue, etc.

- Worker-like Bindings

- Moving towards unifying Pages with Workers

- Unlimited requests, bandwidth, sites, requests, etc. for free

tooling & provisioning — 9

full stack application

security — 2
- SSL/ TLS
- DDOS
- WAF
- Bot mamagement

performance — 3
- CDN

static content & media — 4
- R2
- Images
- Stream

compute — 5
- Pages
- Workers
- Workers AI

data & storage — 6
- D1
- Durable Objects
- KV
- Vectorize

external service

client — 1

www.example.com

api.example.com

static.example.com

Cloudflare observability — 7
- Logpush
- Analytics
- Workers Analytics Engine

logs & analytics — 8

Bindings

AI

- Run machine learning models, powered by serverless GPUs, on Cloudflare's global network.

- Speech to text, image classification, translation, image-to-text, LLMs, embeddings, vector databases, etc.

Data Persistence

- Analytics Engine: Scaleable database when you're okay with compression and not being able to retrieve individual records.

- D1: SQLite based database with Time Travel rollbacks

- KV: Globally available, low-latency, key-value

- Durable Objects: Stateful Workers that can stay alive and support web sockets and other real-time use cases.

Other

- Queues: Guaranteed delivery

- Browser Rendering: Puppeteer on the edge

- R2: Like S3 but no egress costs.

_____

Cloudflare vs.

Workers vs AWS Lambda

Lambdas:

- More language flexibility using containers

- Cold starts

- Region based deployments

- Good for AWS-based applications

Workers:
- Runs JavaScript and WASM in V8 isolates
- No cold starts
- Globally deployed to edge locations
- Good for serverless use cases and for modifying or enhancing requests to traditional applications

Vercel vs Cloudflare

- Both: Have good DX, are easy to use, support modern/trendy frameworks

- Cloudflare: Broader enterprise features, predictable scalable pricing, more extensive capabilities, cheaper

- Vercel: Tight Next.js integration, more point and click

{Hyperscale Cloud X} vs Cloudflare

- Both: Can support enterprise network loads

- Cloudflare: Done-for-you security and administration, easier DX, can sit on top of hyperscaler X, no egress fees

- X Thing: Offers virtual machines, let's you run anything you want, more control over your architecture, you have to configure and pay for everything

Problems with Cloudflare and Potential Risks

Sales Team Drama

< Aggressive Sales Tactics

Dramatic layoffs >

CSR Controversies with Potential Regulatory Impacts / Bans

INTERNET

Cloudflare Can Cancel Service to Terrible Websites Like Kiwi Farms. But Should It?

Cloudflare's decision brings up fundamental questions about how internet infrastructure companies should operate.

ELIZABETH NOLAN BROWN | 9.8.2022 12:50 PM

(Igor Golovniov/ZUMAPRESS/Newscom)

TECH • INTERNET

Cloudflare Is One of the Companies That Quietly Powers the Internet. Researchers Say It's a Haven for Misinformation

4 MINUTE READ

DERSTANDARD ˅

Web › Telecom   International   Germany   Austria   Business   Knowledge and Society   sport   Lifestyle   culture

🔑 Register

💬 690 Postings

TELECOMMUNICATIONS

Excessive network blocking causes problems on the Austrian Internet

Copyright organization has several IPs from Cloudflare put on the block list. Providers only withdraw after media coverage and see a political challenge

Andreas Proschofsky
29 August 2022, 09:25

💬 690 posts   ⇉ Read later

Network blocks have always been a controversial measure. After all, they are intended to ensure that individual websites can no longer be accessed from the domestic Internet. A practice that is anything but uncontroversial, however - it represents a massive intervention in the network infrastructure that could also have undesirable side effects, as critics have been warning for years. Now this is exactly what has happened.

Problems on the Austrian Internet –

Thank you.

- Join the Discord: https://tricities.dev
- Follow me: 𝕏 @mackenlyjones
- Stick around for 🍕