Free Cloud Infrastructure for Everyone

What You Can Get for US$ 0 in This After Pandemic Era

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whoami

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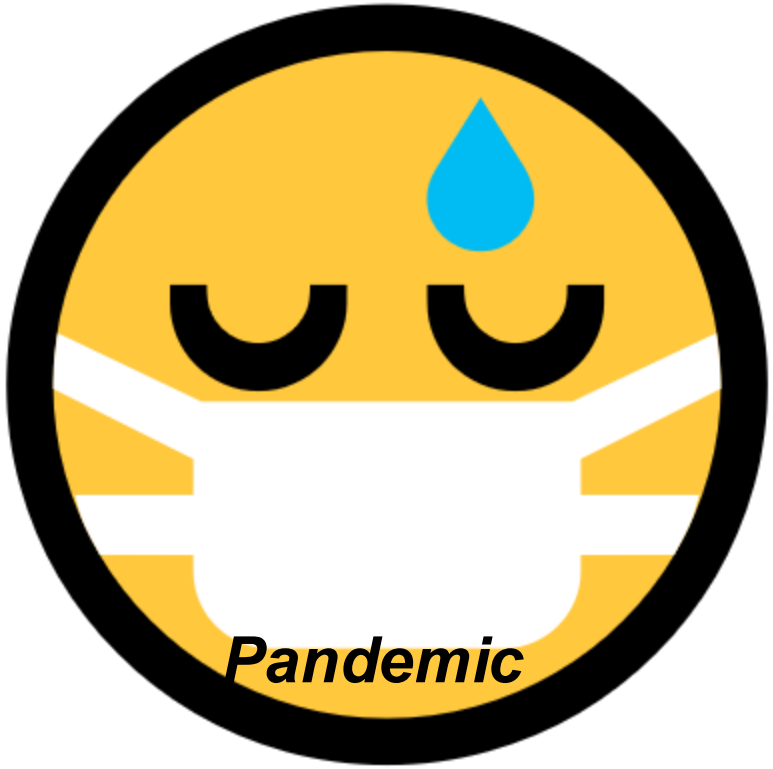
Why talks about free infrastructure?



Winter, oh I mean recession is coming

This talk will help you lowering the cost in this uncertain times

Free Resources for Business

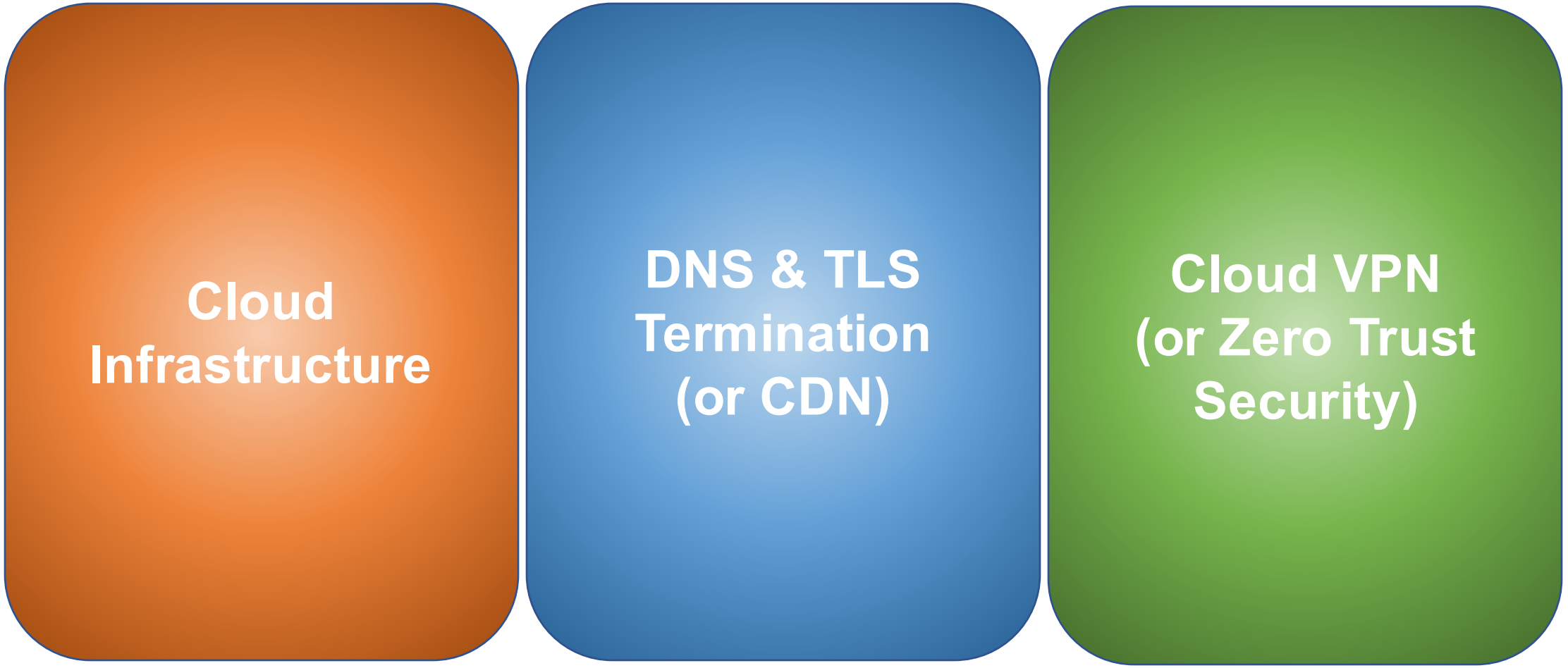
Disclaimer

- However you still need credit card to subscribe
- Domain name (.com, .co.id) annual subscription
- Some of this services may be not sufficient for your requirements
- Some of this services may not be available
  - Partially available, try again later, or try in another region
- Their T&C may have been changed
- I’m not business reps, nor receiving any commission for this talk

Other side of Free Infrastructure

- There are lots of free resources in internet
- Especially on SaaS (Software as a Service)
- You can check here at https://free-for.dev/
- But we're are at IDNOG, our specialties are on infrastructure (IaaS)

Building Blocks



Cloud Infrastructure

The staple food for the Cloud

Oracle Cloud Infrastructure (OCI) Always-Free

- By registering in OCI, you will get these (at one region):

- AMD (x86_64) and ARM64 Compute VMs
- 200 GB total block storage
- 10 GB object storage
- 10 TB outbound data transfer per month
- 2 Autonomous Databases, 20 GB each
- 10+ more Always Free services

OCI Regions

OCI APAC Regions (that you cared for)

- Japan East (Tokyo)
- Japan Central (Osaka)
- South Korea Central (Seoul)
- South Korea North (Chuncheong)
- Australia East (Sydney)
- Australia Southeast (Melbourne)
- India West (Mumbai)
- India South (Hyderabad)
- Singapore (Singapore)

VMs and Storage

AMD (x84_64) VM

- 1 vCPU, 1 GB RAM
- 50 GB storage

Ampere (arm64) VM

- 1 – 4 vCPU, 6-24 GB RAM
- 50 GB storage

Object storage

- 10 GB – Standard
- 10 GB – Infrequent Access
- 10 GB Archive Storage

Block storage

- 200GB combined storage per region
- 1 VM consume 50GB
- So you can only create 4 VM

Virtual Network & Security

Networking

- 10 TB outbound traffic
- 2 Virtual network (IPv4/v6)
- 1 instance Load Balancer (10Mbps)

Security

- Security Group
- Site-to-site IPSec VPN
- 5 private CA and 150 certificate
- Bastion Host

Other Interesting Features

- 2 Oracle Database as a Service (1 CPU, 20GB)
- Low-code App Development with Oracle APEX
- NoSQL Database (25 GB per table)
- Managed by Terraform

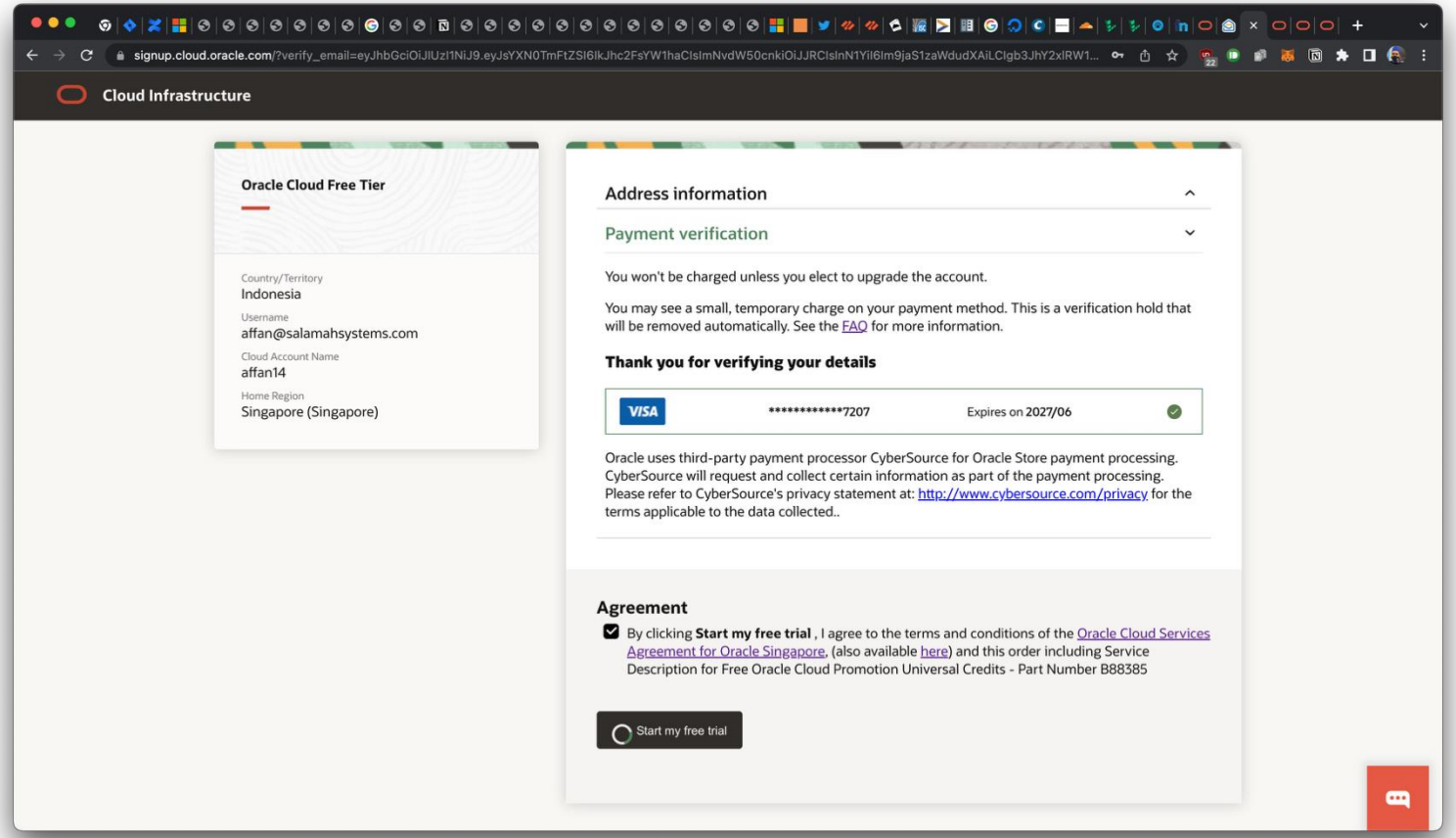
- All of them you can check at https://www.oracle.com/cloud/free/#always-free

Create your account

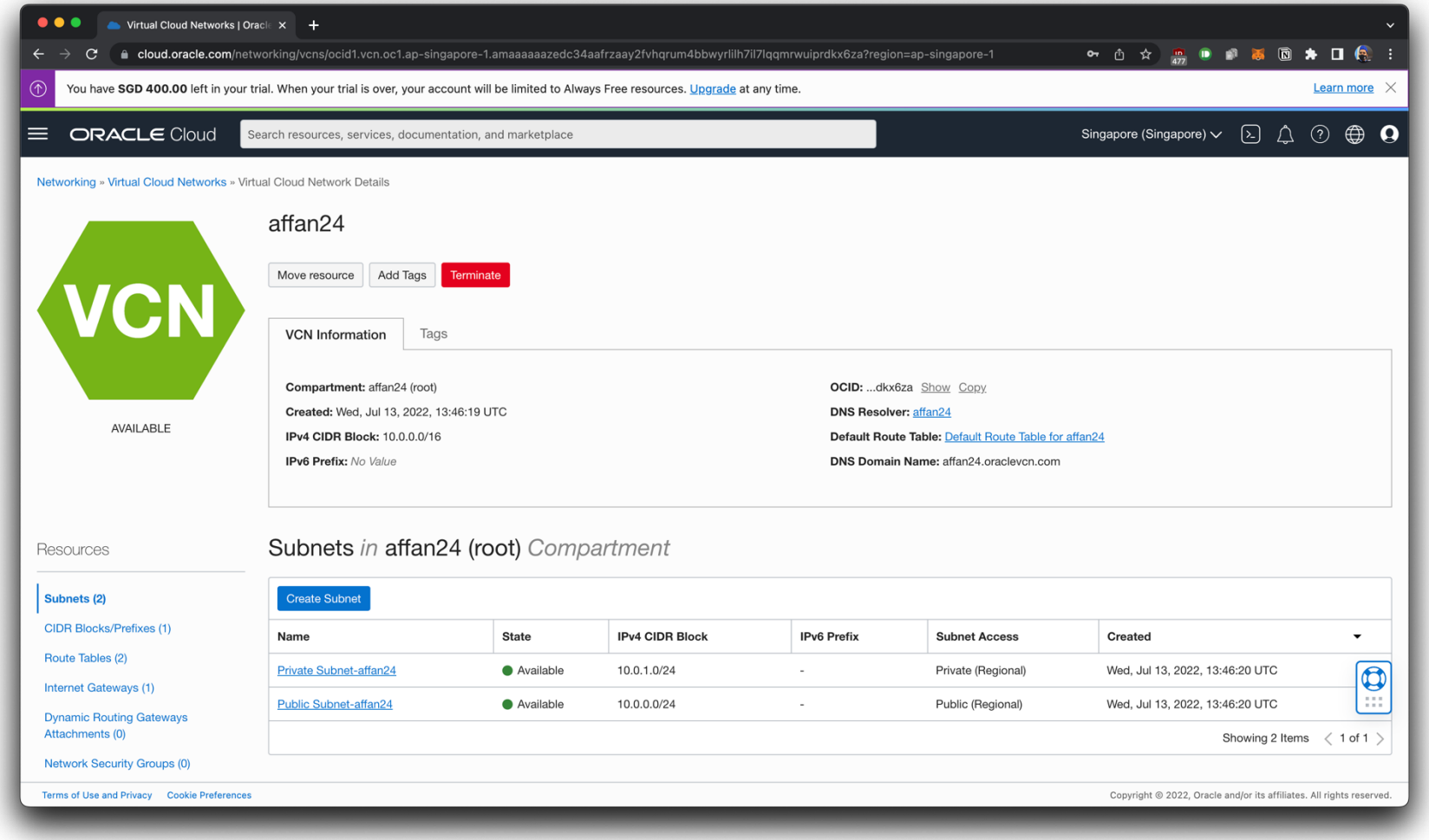
- Go to:

https://www.oracle.com/cloud/free/

- Create account
- Enter your Credit Card information
- Usually works the first time

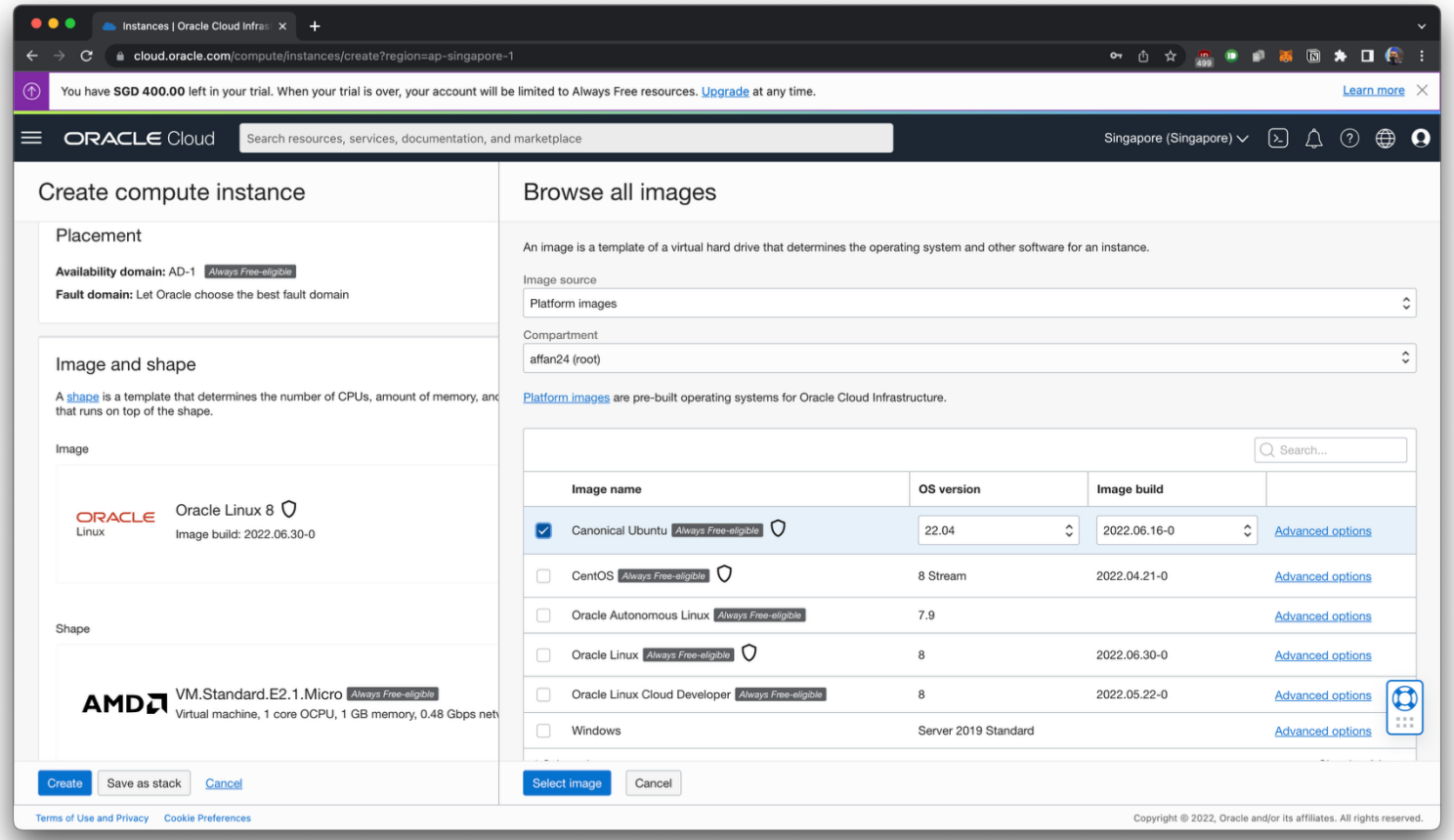


Create your virtual cloud network



Create VM – Choose your OS

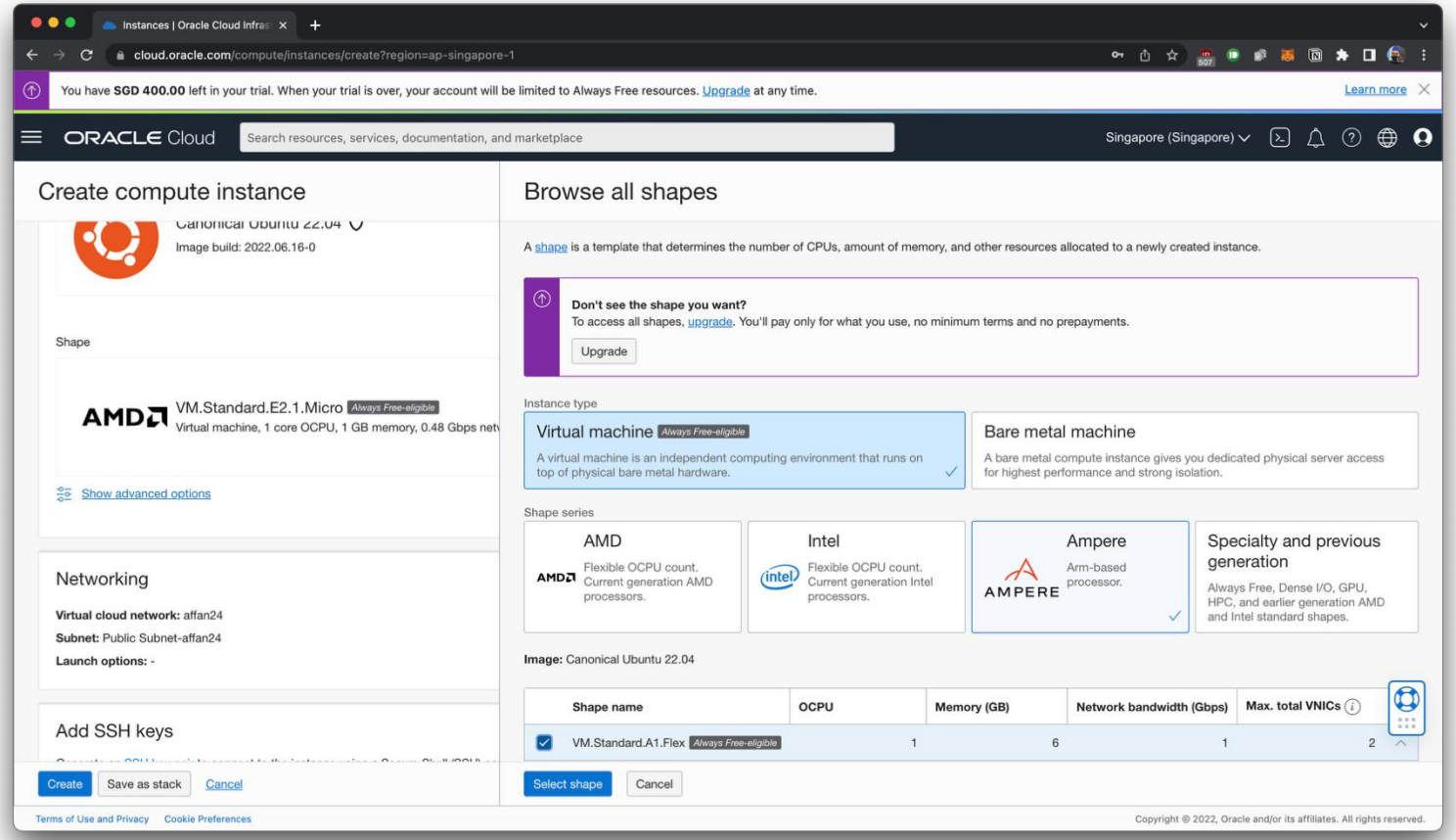
- Ubuntu 22.04
- CentOS Stream
- Oracle Linux



Create VM – Choose your shapes

- AMD (x86_64)
- Ampere (arm64)

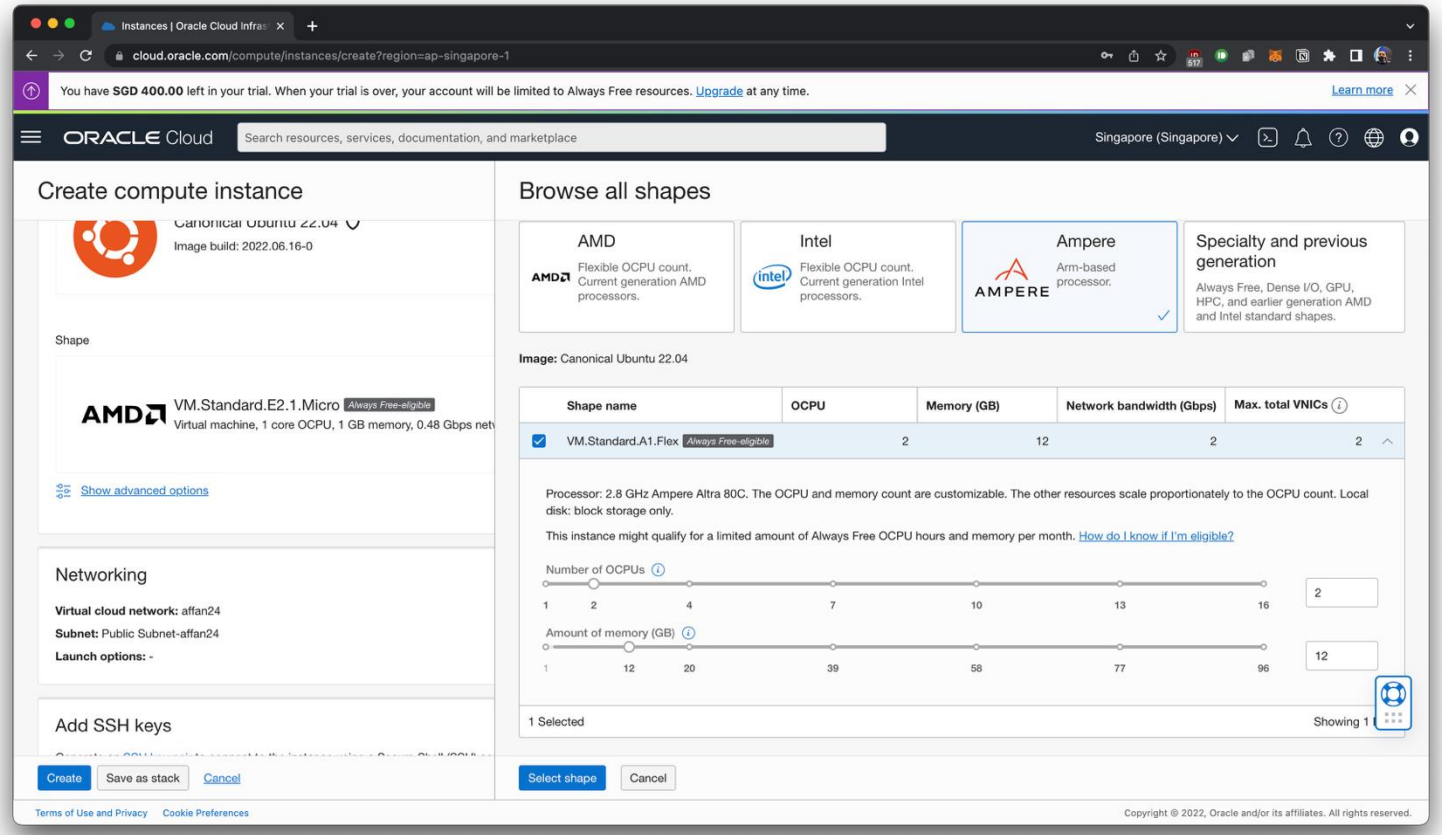
- Other choices but not always free



Create VM – Choose your shape size (Ampere)

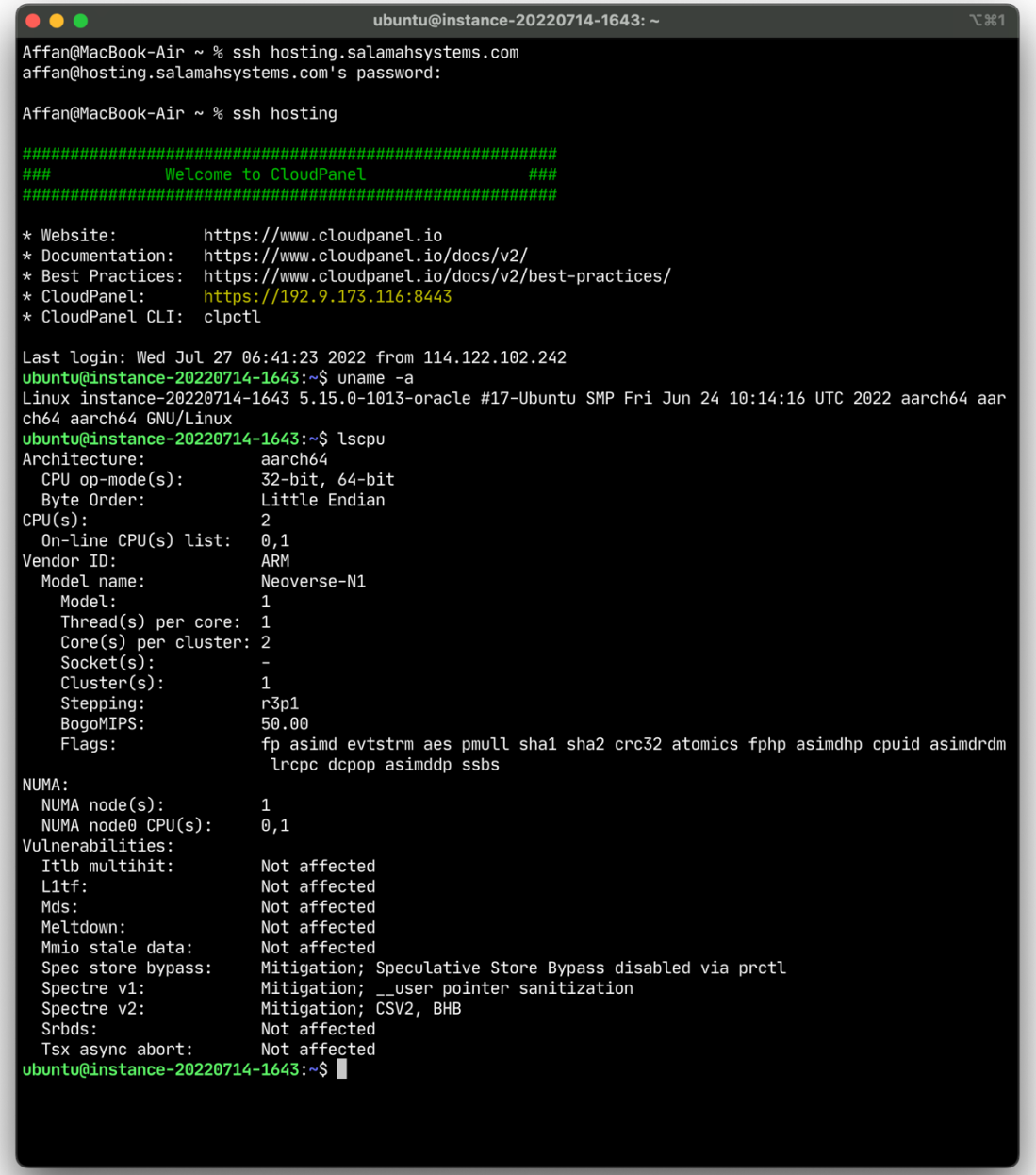
"Arm-based Ampere A1 cores and 24 GB of memory usable as 1 VM or up to 4 VMs with 3,000 OCPU hours and 18,000 GB hours per month"

- You can have ARM VM:
  - 4 x 1 vCPU / 6GB VM
  - 1 x 4 vCPU / 24GB VM
- But there are also 200GB limit on storage:
  - 1 VM consume 50GB
  - Limit to 4 VM on each region



VM is there!

- You can have VM for free
- 2 vCPU, 12GB RAM
- 50GB storage
- Usually cost you US$10-15 /mo



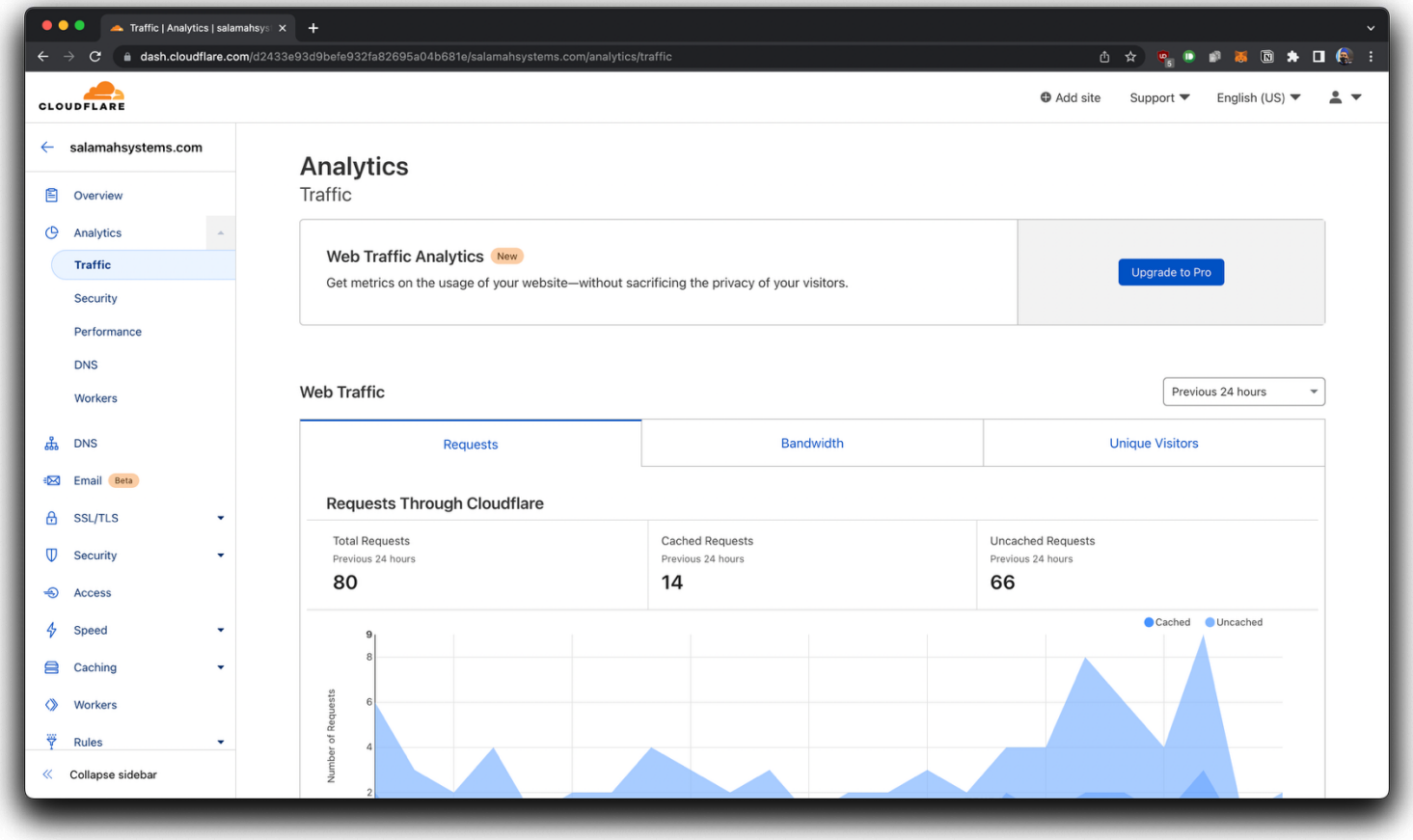
DNS, and TLS Termination

Basically a CDN

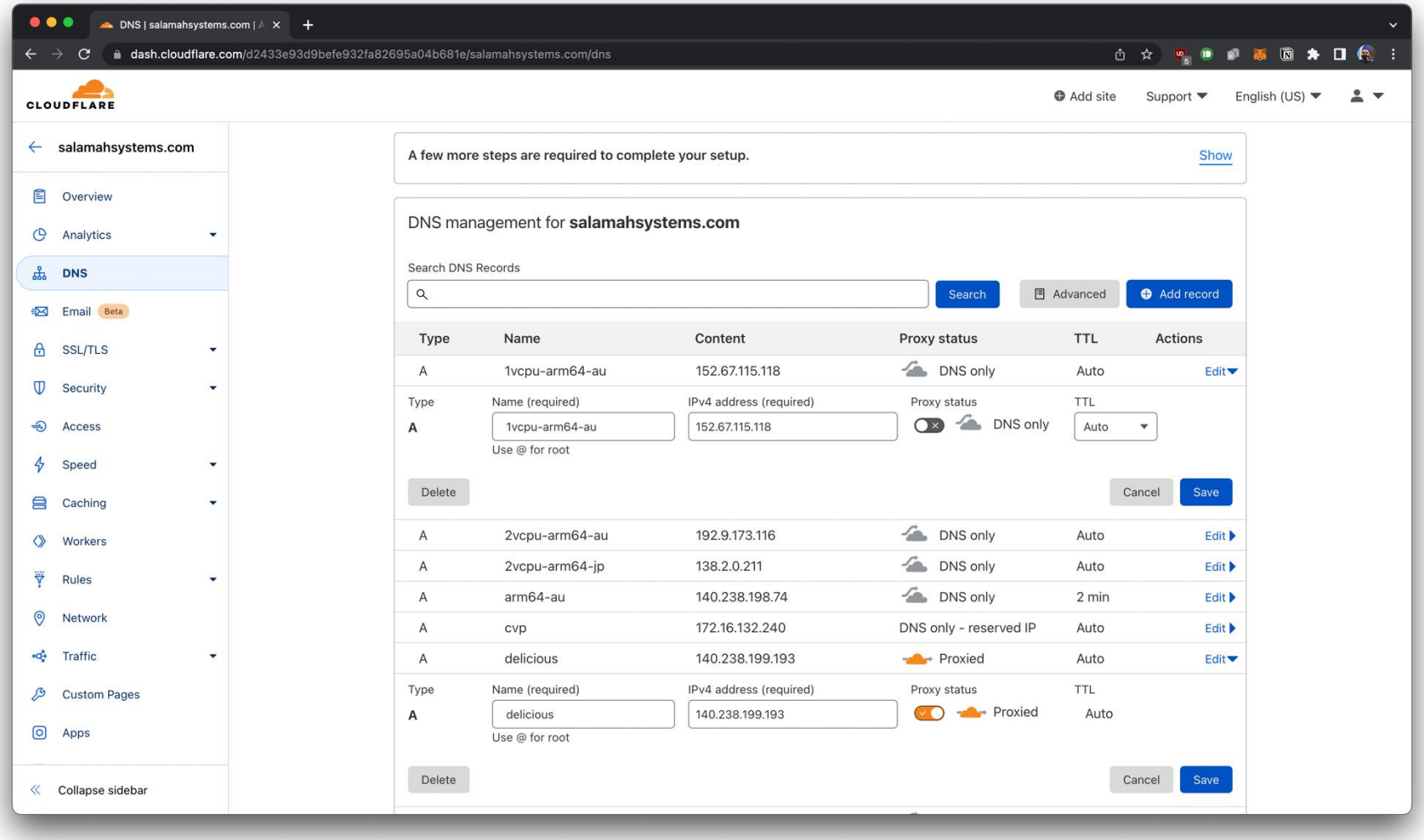
Cloudflare Free Tier

- CDN services
- DNS Authoritative for your domain
- TLS termination with free SSL certificate

Register your domain

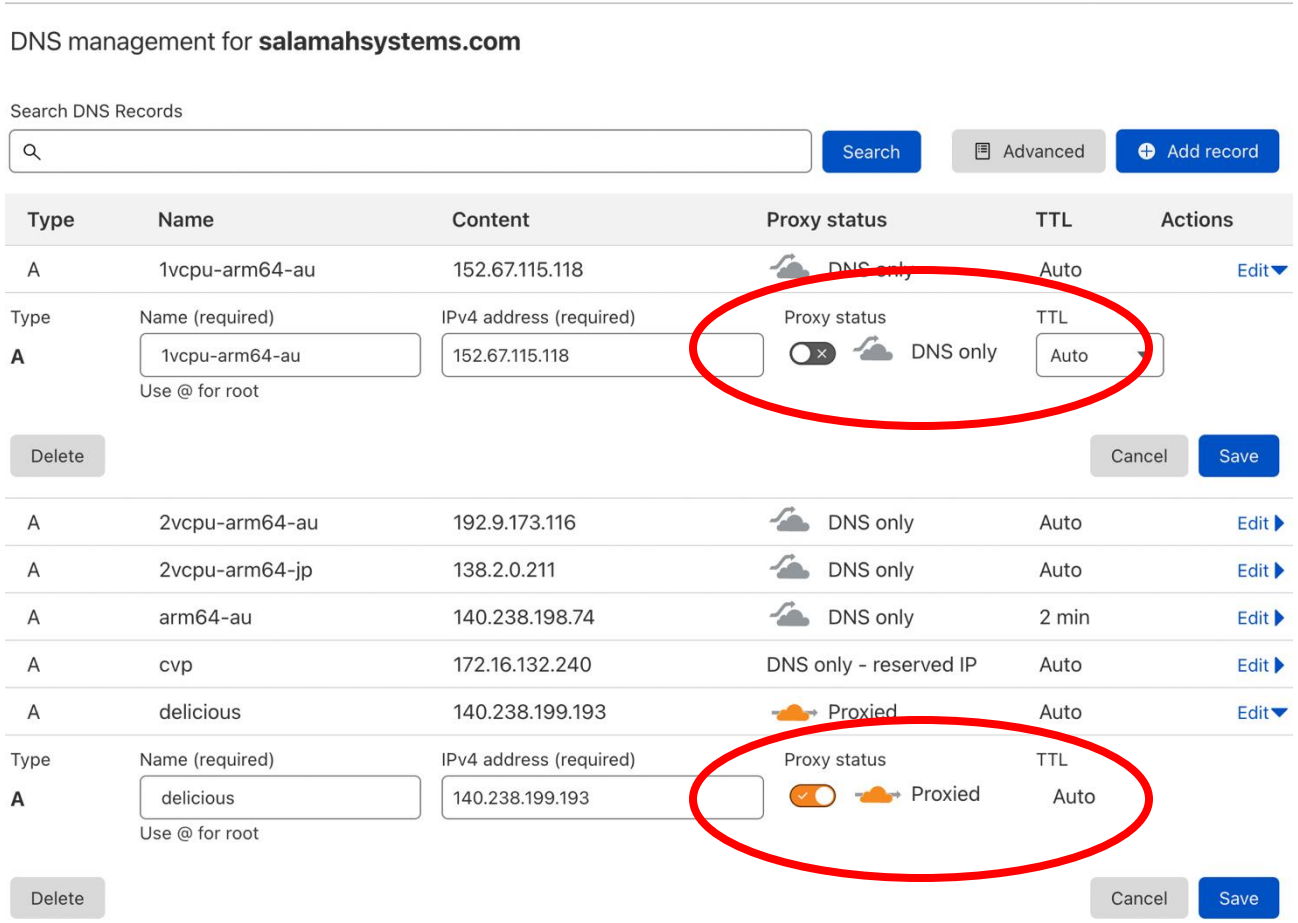


Configure your domain



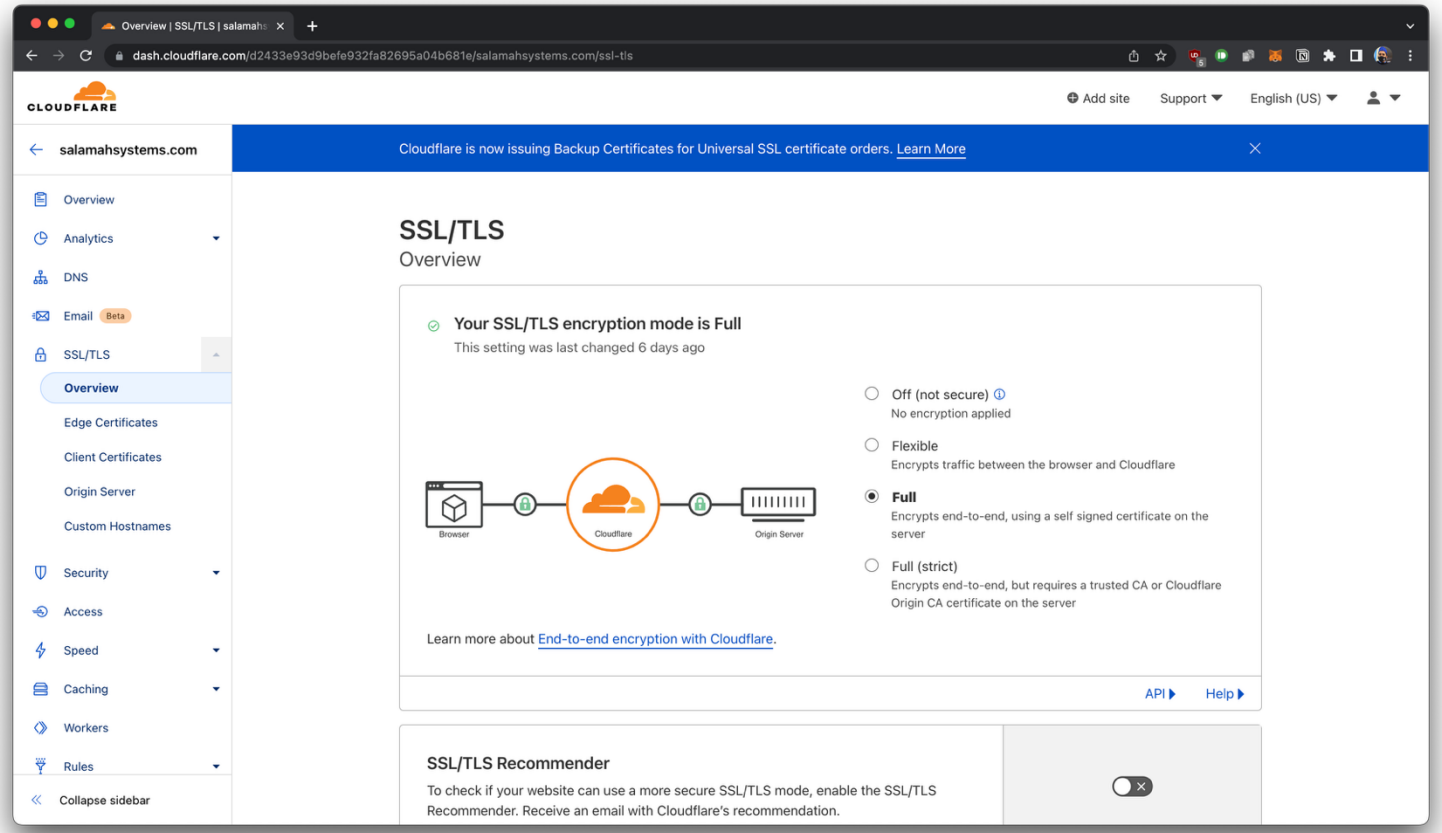
Configure your domain

- Create DNS record
- For your website, simply switch the “Proxy Status” to Proxied to activate TLS
- For other record, keep it switch to “DNS only”

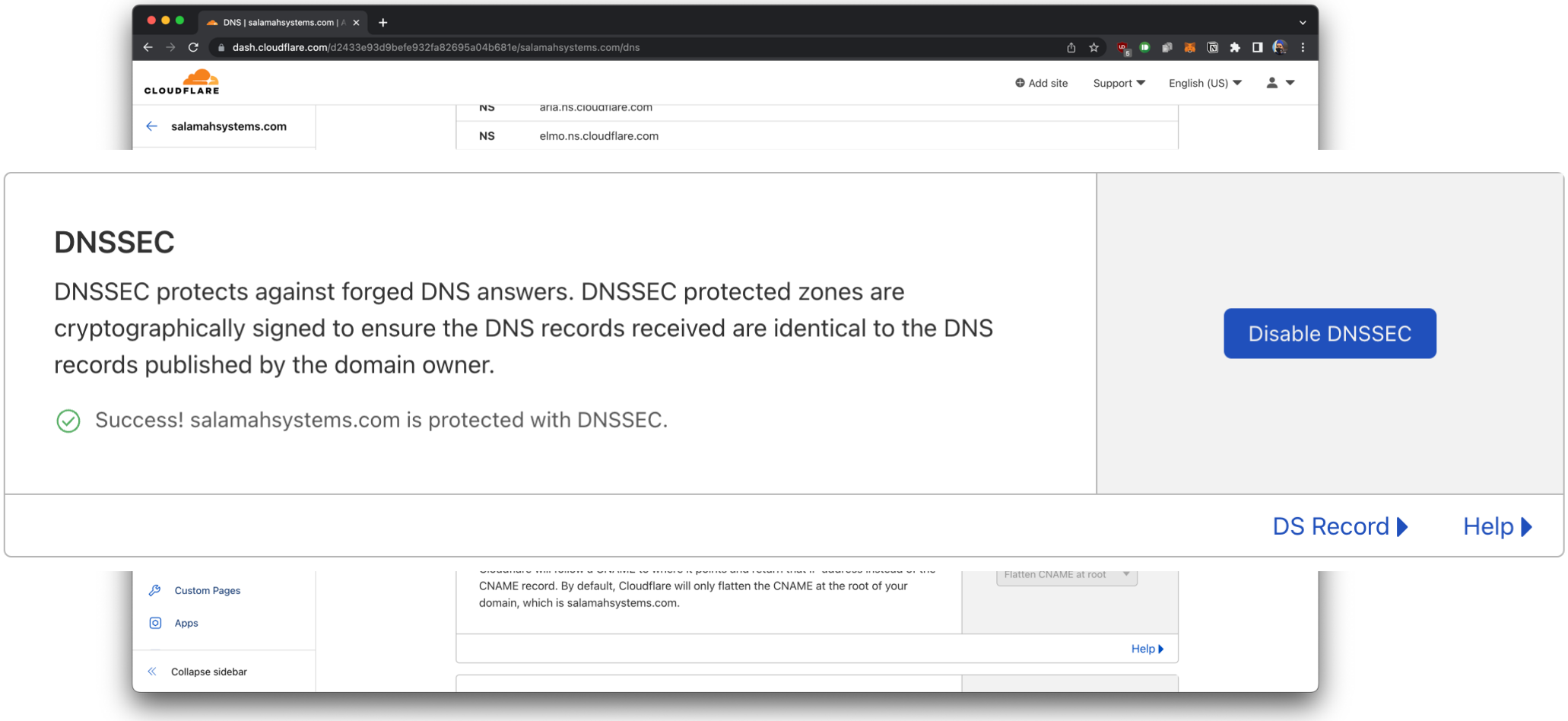


SSL/TLS Configuration

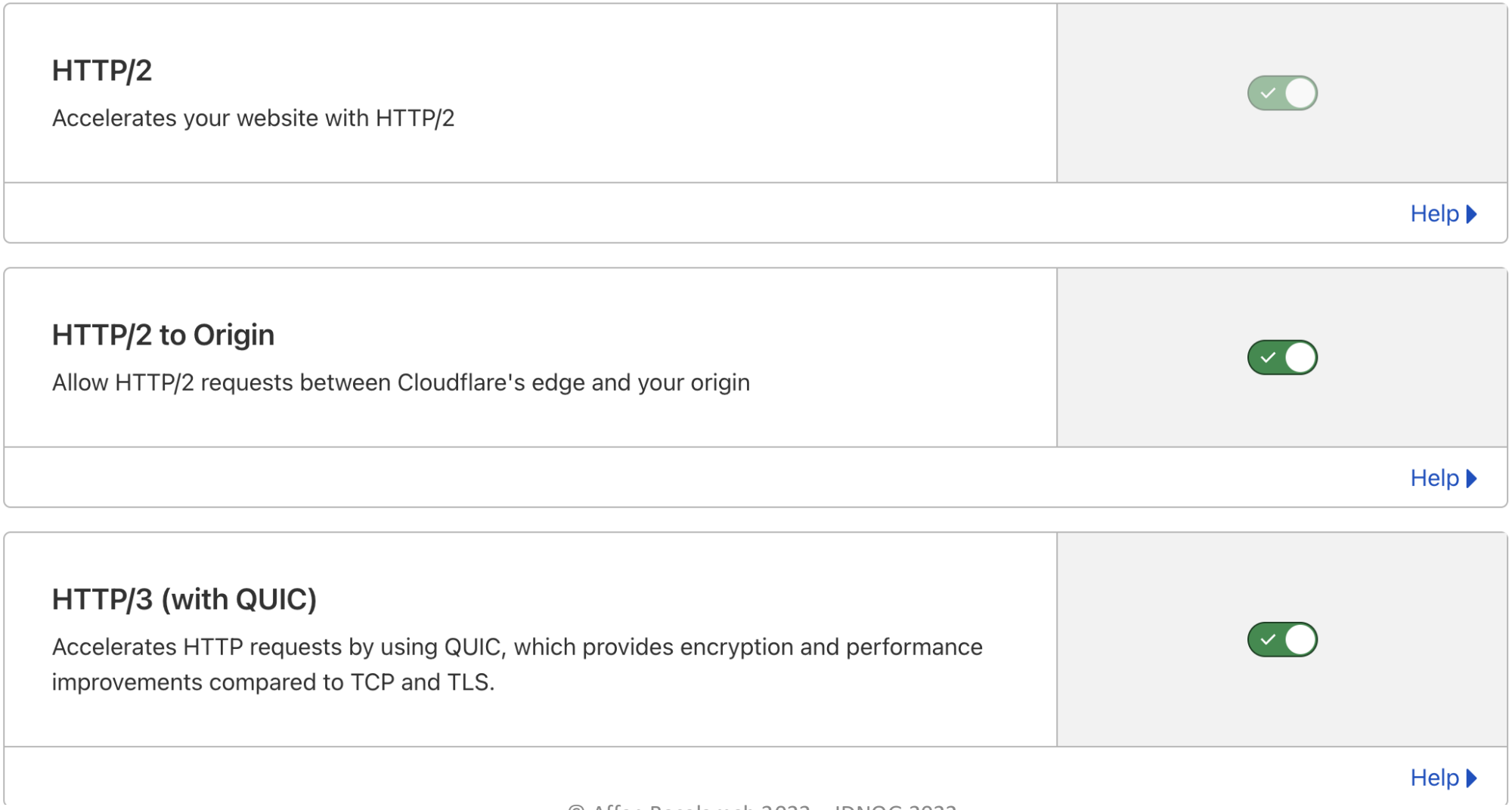
- Tiga macam TLS:
- Flexible: TLS with insecure HTTP origin
- Full: TLS with self-signed HTTPS origin
- Strict: Full with Cloudflare certificate



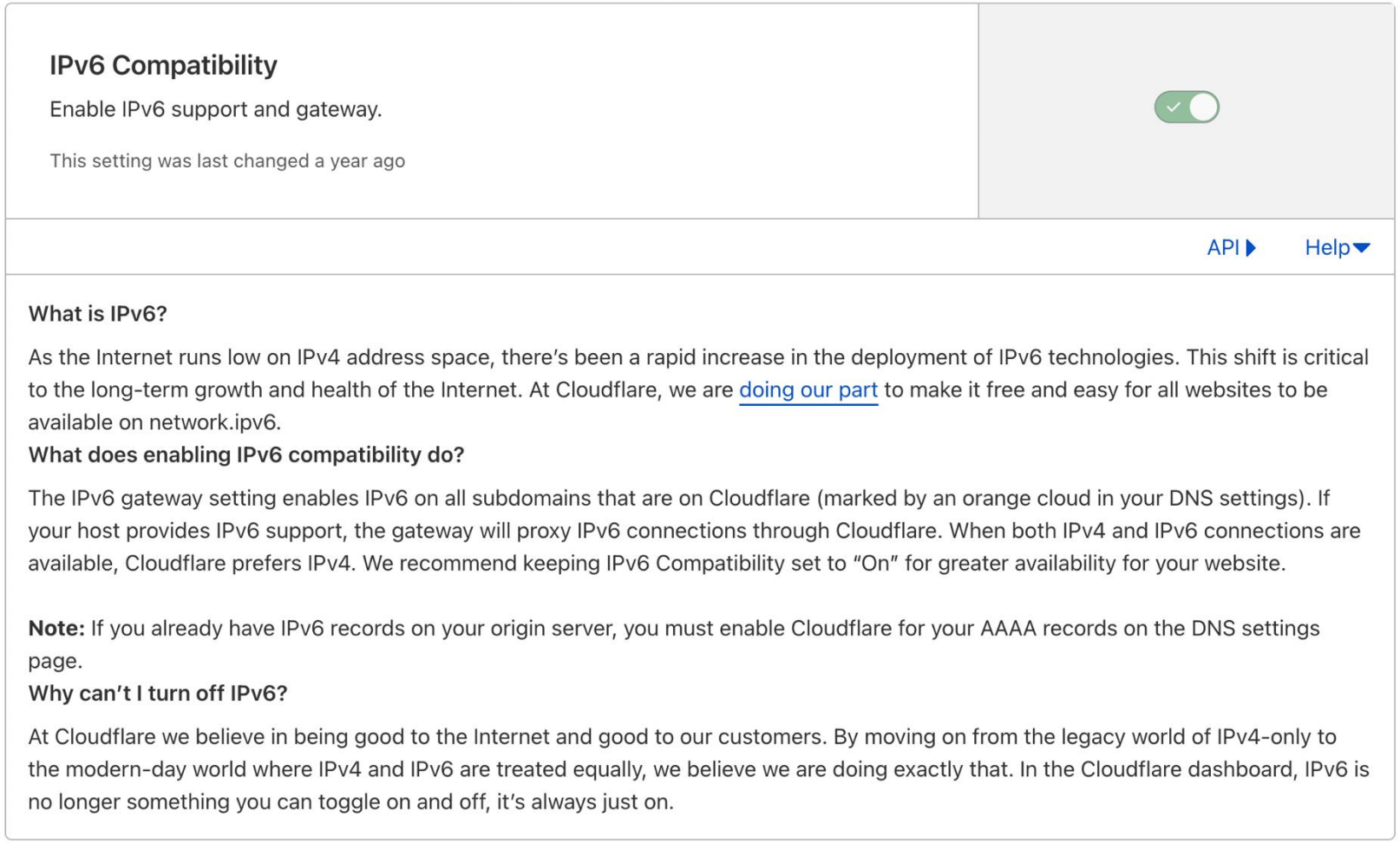
Easy win – one click DNSSEC



Easy win – one click HTTP2 and QUIC



Easy win – IPv6 enabled



Cloud VPN

Or people like to call “Zero Trust Security”

Tailscale Free Tier

- Zero configuration VPN
- Use your SSO (Google, Microsoft, GitHub, etc.)
- Connecting any resources from anywhere

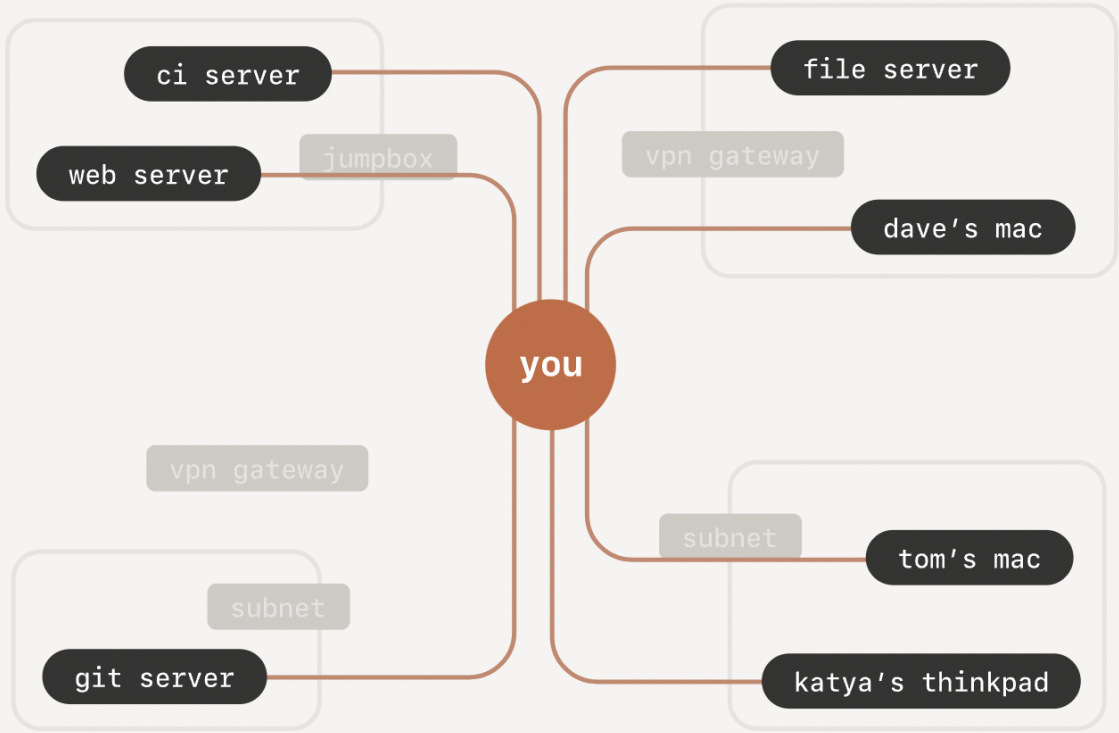
What is the Tailscale?

Without Tailscale

A frustratingly complex and brittle collection of firewalls, rules, and holes while wondering if your network is secure enough.

With Tailscale

Rolls out in minutes. Devices connect directly, working from any physical location or networking environment. All without poking holes in your firewall.



Tailscale can do this:

Connecting resources anywhere to anyone:

- Windows desktop
- Windows Server
- macOS
- Linux
- iOS/iPadOS
- Android

Resources in:

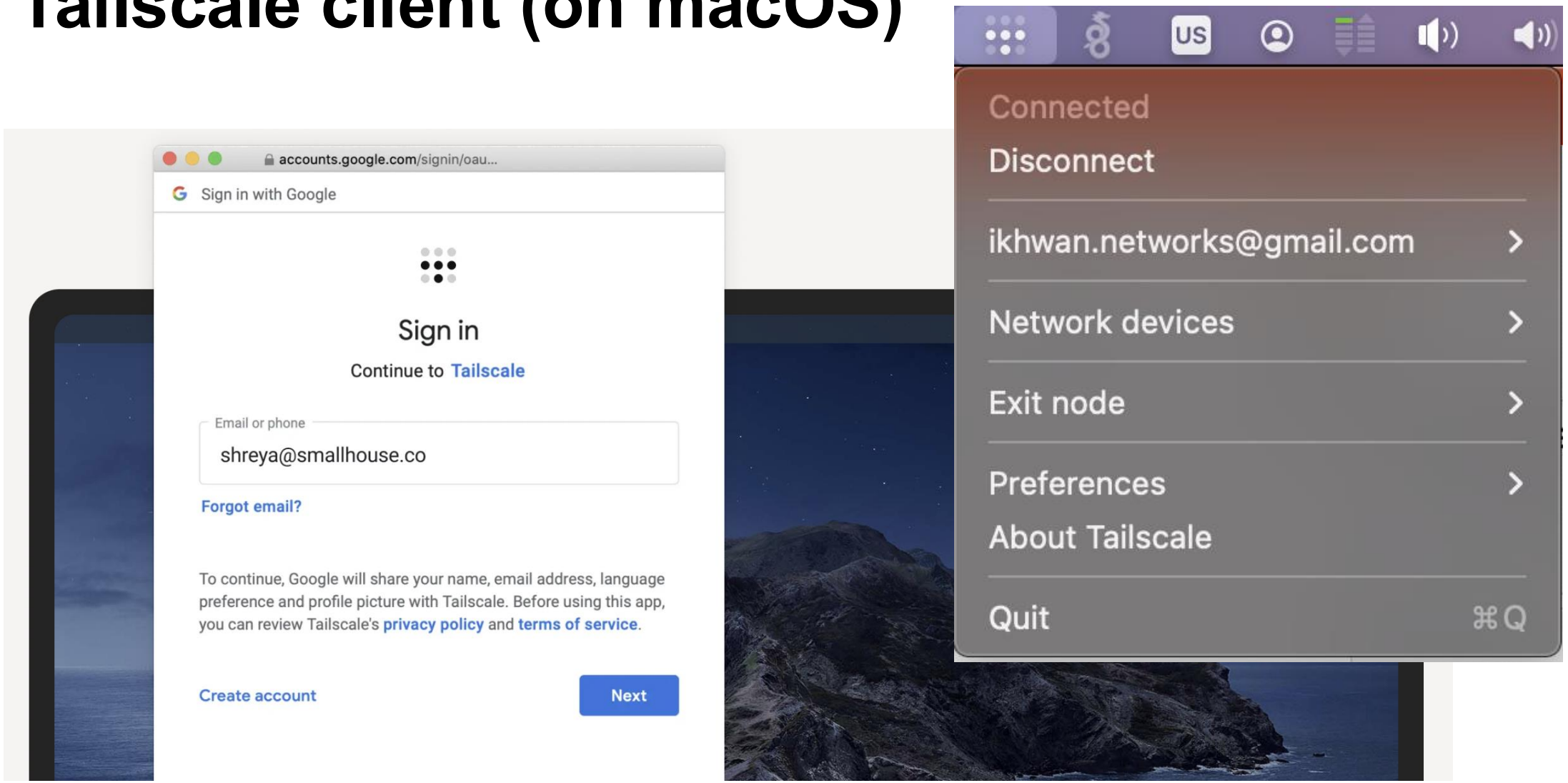
- The cloud (VM):
  - AWS, Azure, GCP, OCI
  - Any VMs on the VPS
- On premises DC:
  - vSphere, Proxmox, KVM
- On your home:
  - Raspberry Pi, NAS, PC under your desk
- Serverless:
  - GitHub Action, Google Cloud Run, etc..,

Alternatives

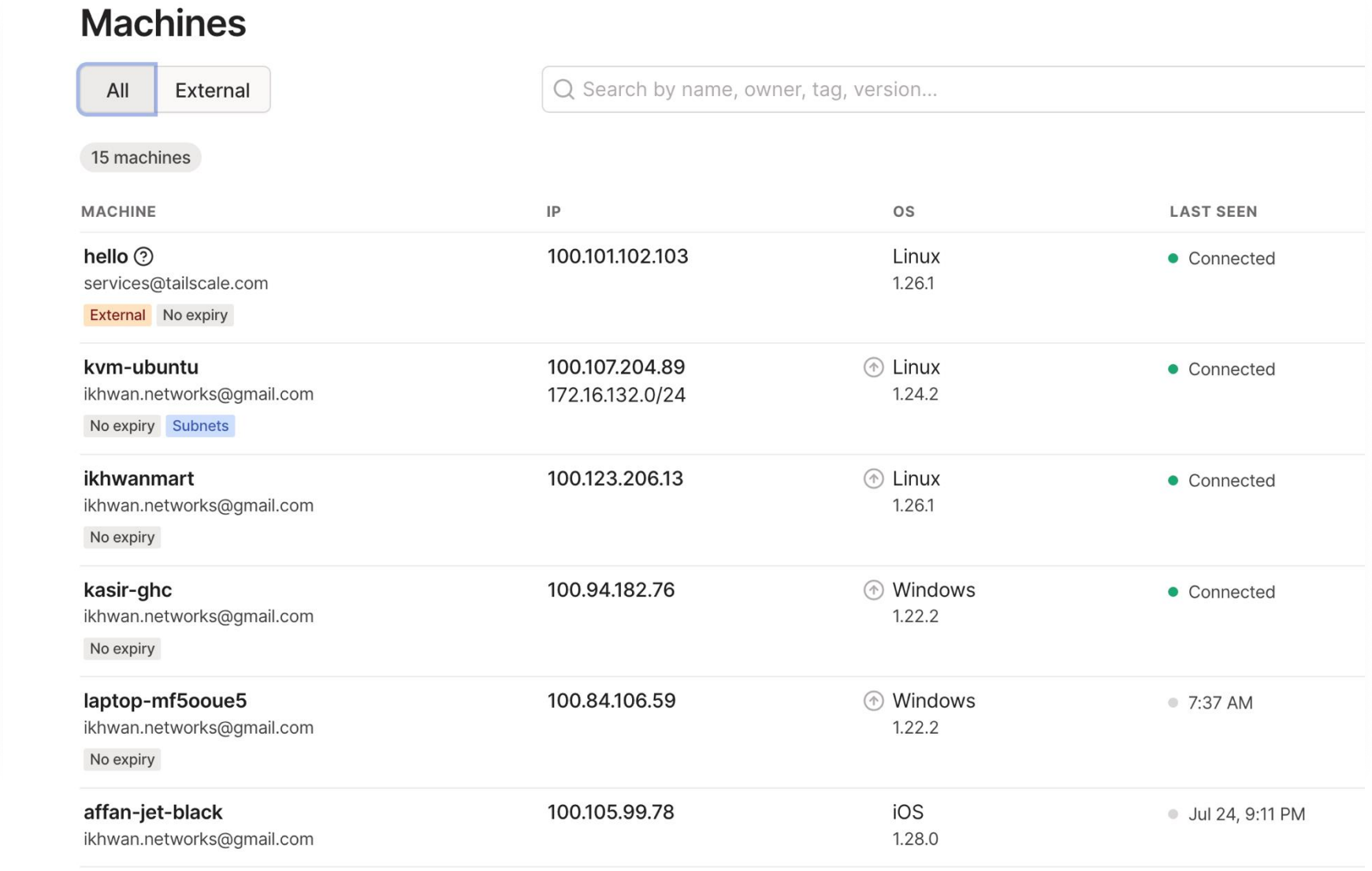
- Cloudflare Zero Trust
- Nebula (from Slack)
- ZeroTier
- OpenVPN
- DIY WireGuard VPN

- But why Tailscale: It’s the easiest solution!

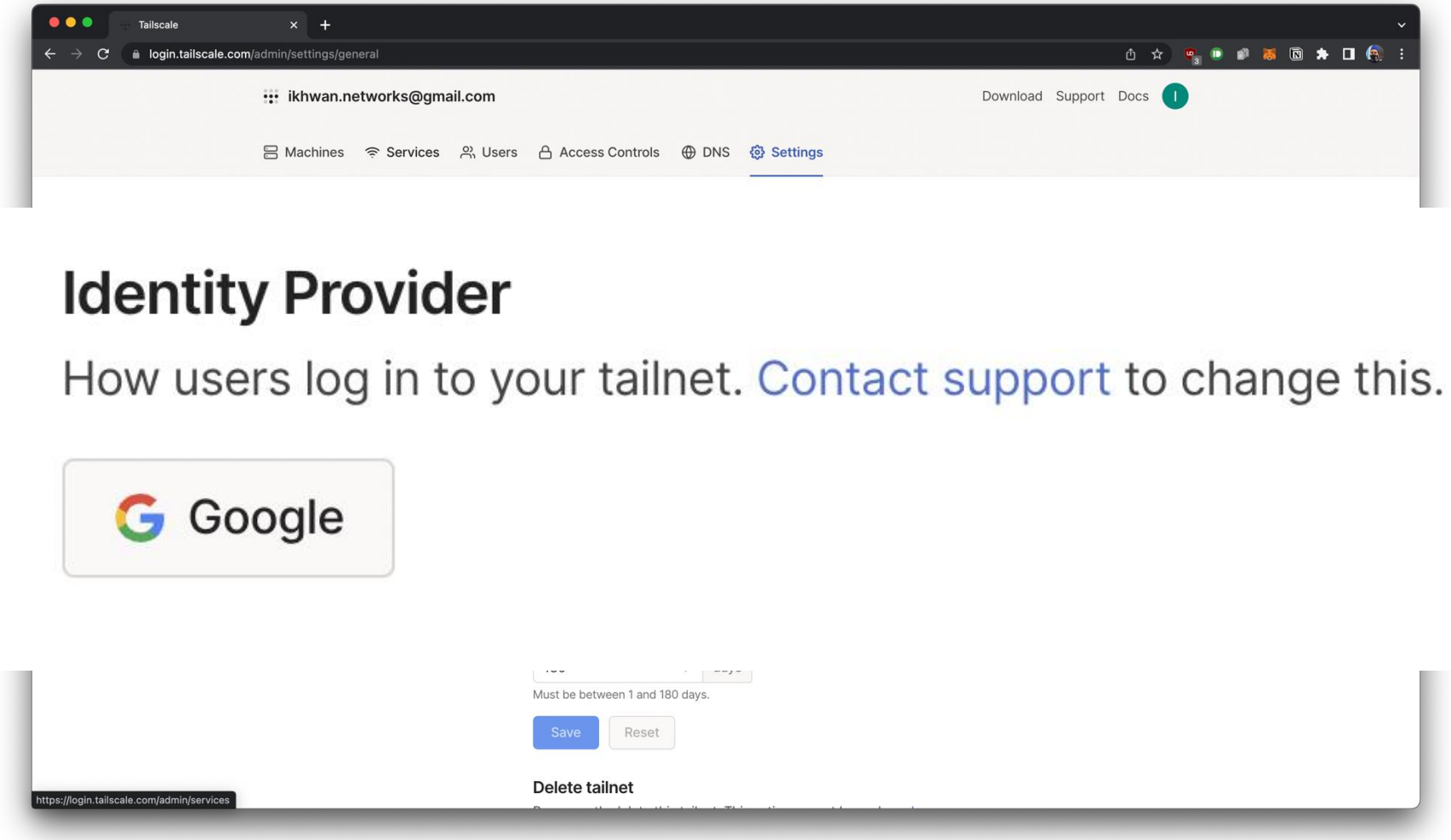
Tailscale client (on macOS)



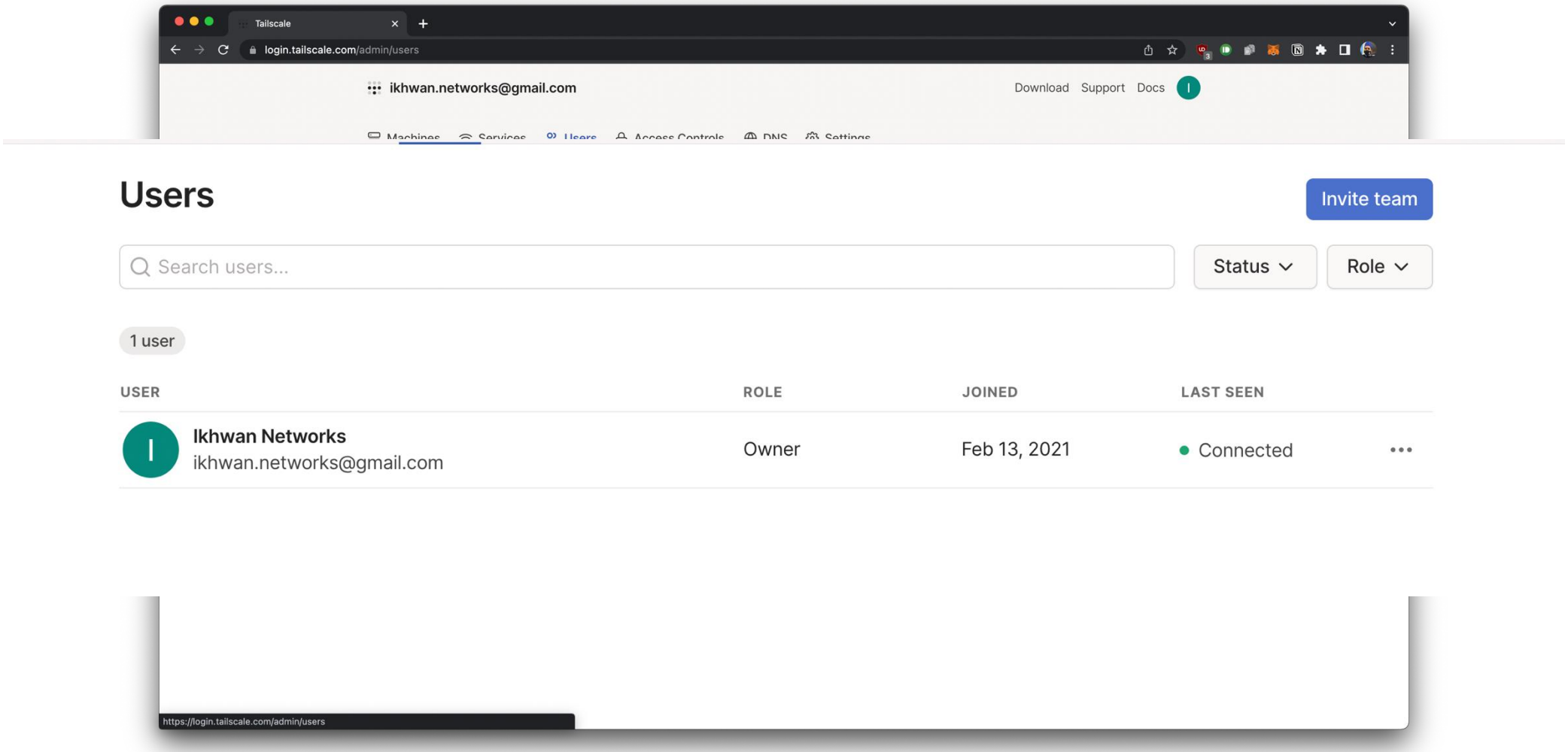
List of Machines Connected



Identity Provider – I choose Google ID



Users – for Free Tier I just need one user



So what you can do with them?

Solution, not a bunch of products

Use case – Hybrid Company (1)

- Company of 5 distributed IT workers
- Someone called for a new IT project
- It's their first project, so they need to create "company"

- Setup a company:
  - Get new domain name: company.com (pay annually)
  - Get corporate email: developer@company.com using Zoho Mail
    - Free! (for 5 account)
  - Get a collaboration system: Atlassian Confluence & JIRA Software
    - Free! (for 10 account)

Use case – Hybrid Company (2)

- Create resources on the cloud
  - AMD x86_64 VM for small workload
    - Imagine Raspberry Pi 3 on the cloud
    - Maybe VPN server? Small web server?
  - ARM VM for medium workload
    - 6-12GB on VM will give you medium webhosting server
    - Also can run small k8s cluster
- Setup DNS and TLS termination
  - Present workload to the public internet

Use case – Hybrid Company (3)

- Client sometimes usually provide resources
  - Cloud VMs
  - VMs or baremetal from on premises DC
- Sometimes there are resources inside your home or office
  - Raspberry Pi lying around
  - Server with GPU under the desk
  - Prebuilt NAS
- Everything can be connected just like in single LAN

End Result

What we can have

- Company can have infrastructure at US$ 0
  - VMs, storage, network, security
  - CDN, DNS, and TLS
  - VPN to access any resources from any devices
- Upgrade to paid infrastructure to scale up
  - But at least you can have basic infrastructure when you cannot scale

- I hope this talk useful for you

Wassalam!