Yuan 的 HTTP Echo Server

專案介紹 與 開發心得

- Demo: https://echo.yuaner.tw/ ...
- 專案原始碼 https://github.com/chyuaner/cloudflare-echo-server
- 本投影片的原始碼 https://github.com/chyuaner/slide-cloudflare-echo-server

Yuan Chiu chyuaner@gmail.com

主要核心功能

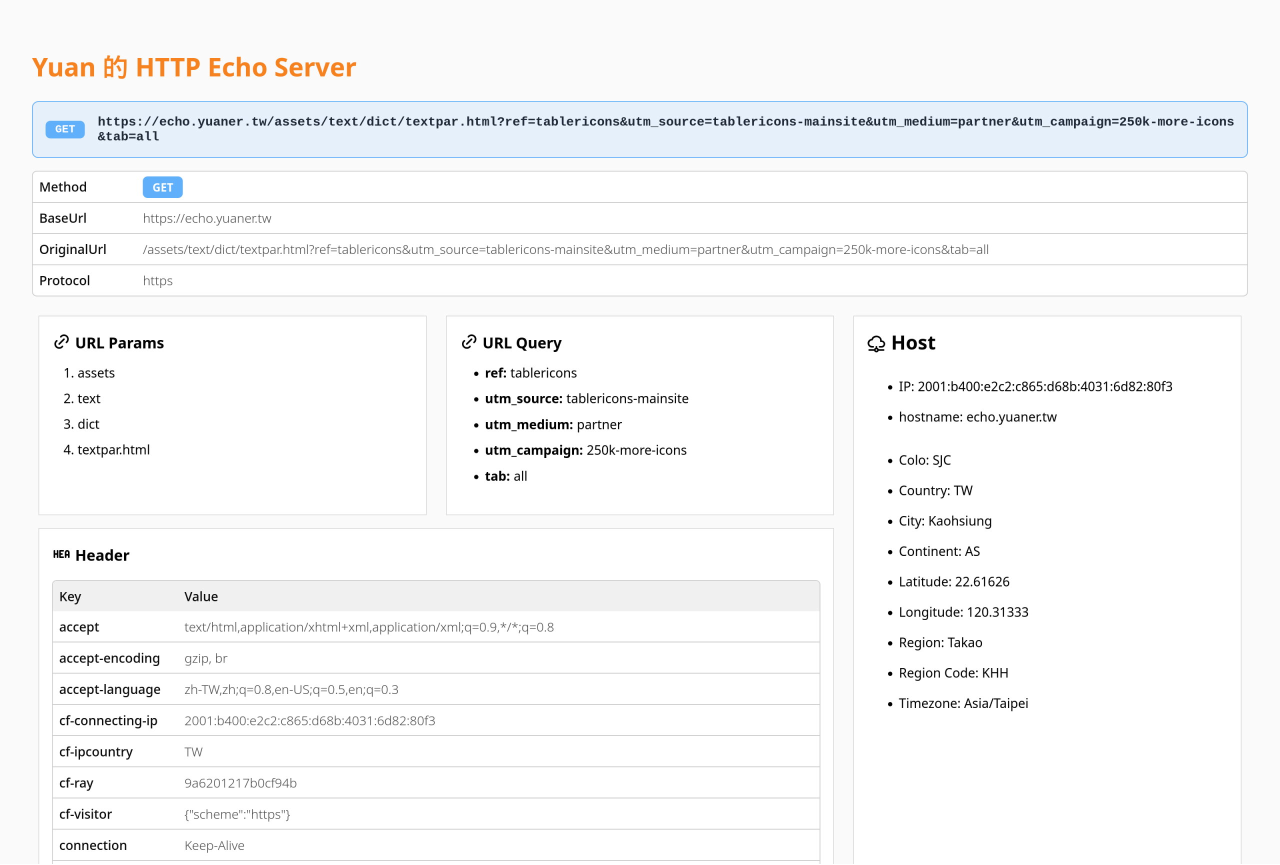
本專案是提供CDN Edge層級的http回音伺服器

你對我發出Request，我的伺服器就會把我從你這邊接到的資訊：

- 以什麼網址字串
- 帶了什麼Post Body
- 帶了什麼Request Header

會如實的以ResponseBody方式回應給你。

同時也可以當作MyIP查詢使用，會顯示在「Host」區塊。



Yuan 的 HTTP Echo Server

GET `https://echo.yuaner.tw/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=all`

Method	GET
BaseUrl	https://echo.yuaner.tw
OriginalUrl	/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=all
Protocol	https

URL Params

1. assets
2. text
3. dict
4. textpar.html

URL Query

- **ref:** tablericons
- **utm_source:** tablericons-mainsite
- **utm_medium:** partner
- **utm_campaign:** 250k-more-icons
- **tab:** all

Host

- IP: 2001:b400:e2c2:c865:d68b:4031:6d82:80f3
- hostname: echo.yuaner.tw
- Colo: SJC
- Country: TW
- City: Kaohsiung
- Continent: AS
- Latitude: 22.61626
- Longitude: 120.31333
- Region: Takao
- Region Code: KHH
- Timezone: Asia/Taipei

HEA Header

Key	Value
accept	text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
accept-encoding	gzip, br
accept-language	zh-TW,zh;q=0.8,en-US;q=0.5,en;q=0.3
cf-connecting-ip	2001:b400:e2c2:c865:d68b:4031:6d82:80f3
cf-ipcountry	TW
cf-ray	9a6201217b0cf94b
cf-visitor	{"scheme":"https"}
connection	Keep-Alive

➡ 專案特色

在CDN Edge層級直接提供完整服務

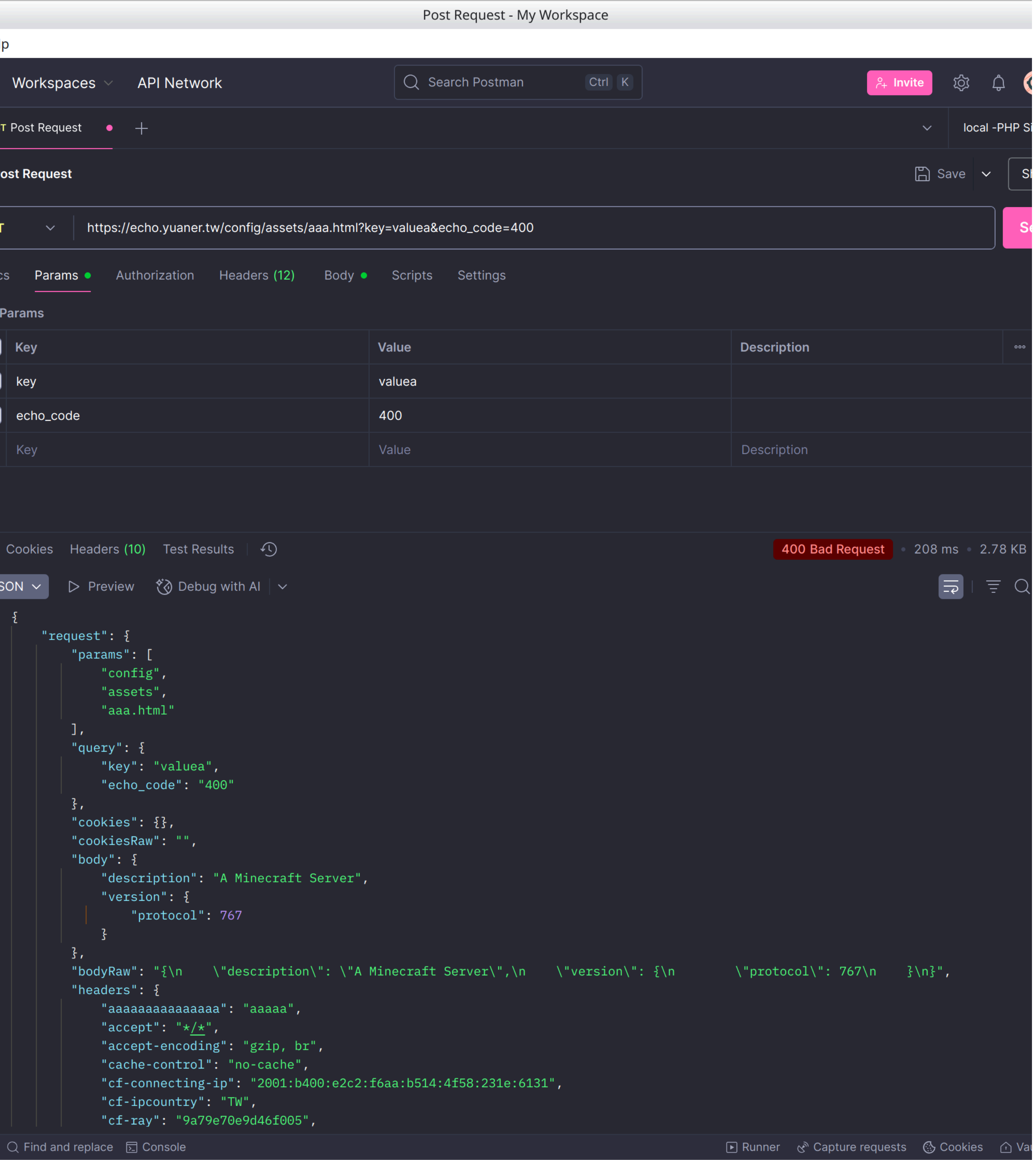
傳統後端架構（以我習慣的PHP為例）

```
公網 → CDN快取 → Reverse Proxy(管理vhost) → Nginx → php-fpm → 我的專案
```

🚀 本專案採用的是：CDN層級直接服務架構

```
公網 → CDN直接服務
```

理論上極致效能低延遲



https://echo.yuaner.tw/config/assets/aaa.html?key=valuea&echo_code=400

Params

Key	Value	Description
key	valuea	
echo_code	400	
Key	Value	Description

400 Bad Request • 208 ms • 2.78 KB

```
{
    "request": {
        "params": [
            "config",
            "assets",
            "aaa.html"
        ],
        "query": {
            "key": "valuea",
            "echo_code": "400"
        },
        "cookies": {},
        "cookiesRaw": "",
        "body": {
            "description": "A Minecraft Server",
            "version": {
                "protocol": 767
            }
        },
        "bodyRaw": "{\n    \"description\": \"A Minecraft Server\",\n    \"version\": {\n        \"protocol\": 767\n    }\n}",
        "headers": {
            "aaaaaaaaaaaaaaa": "aaaaa",
            "accept": "*/*",
            "accept-encoding": "gzip, br",
            "cache-control": "no-cache",
            "cf-connecting-ip": "2001:b400:e2c2:f6aa:b514:4f58:231e:6131",
            "cf-ipcountry": "TW",
            "cf-ray": "9a79e70e9d46f005",
```

JSON格式作為預設Response Body輸出

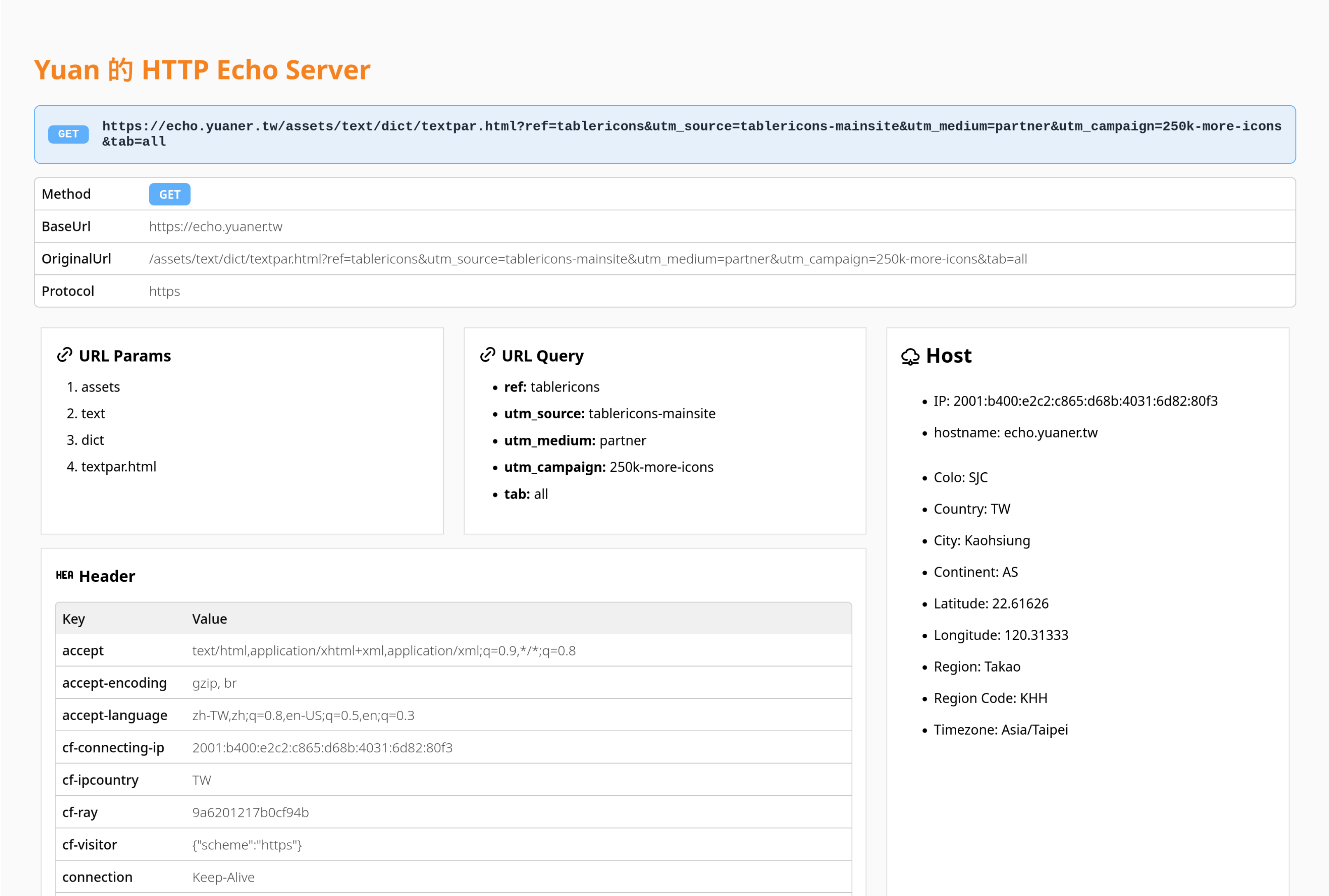
基本上以 ealen/echo-server 專案為基礎，重新撰寫復刻核心功能

分為三大塊：

- request
- http
- host

可用於Postman、Paw、Insomnia、Hoppscotch等HTTP API調試客戶端使用

➡ 有設計精美的網頁UI界面



Yuan 的 HTTP Echo Server

GET `https://echo.yuaner.tw/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=all`

Method	GET
BaseUrl	https://echo.yuaner.tw
OriginalUrl	/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=all
Protocol	https

URL Params

1. assets
2. text
3. dict
4. textpar.html

URL Query

- **ref:** tablericons
- **utm_source:** tablericons-mainsite
- **utm_medium:** partner
- **utm_campaign:** 250k-more-icons
- **tab:** all

Host

- IP: 2001:b400:e2c2:c865:d68b:4031:6d82:80f3
- hostname: echo.yuaner.tw

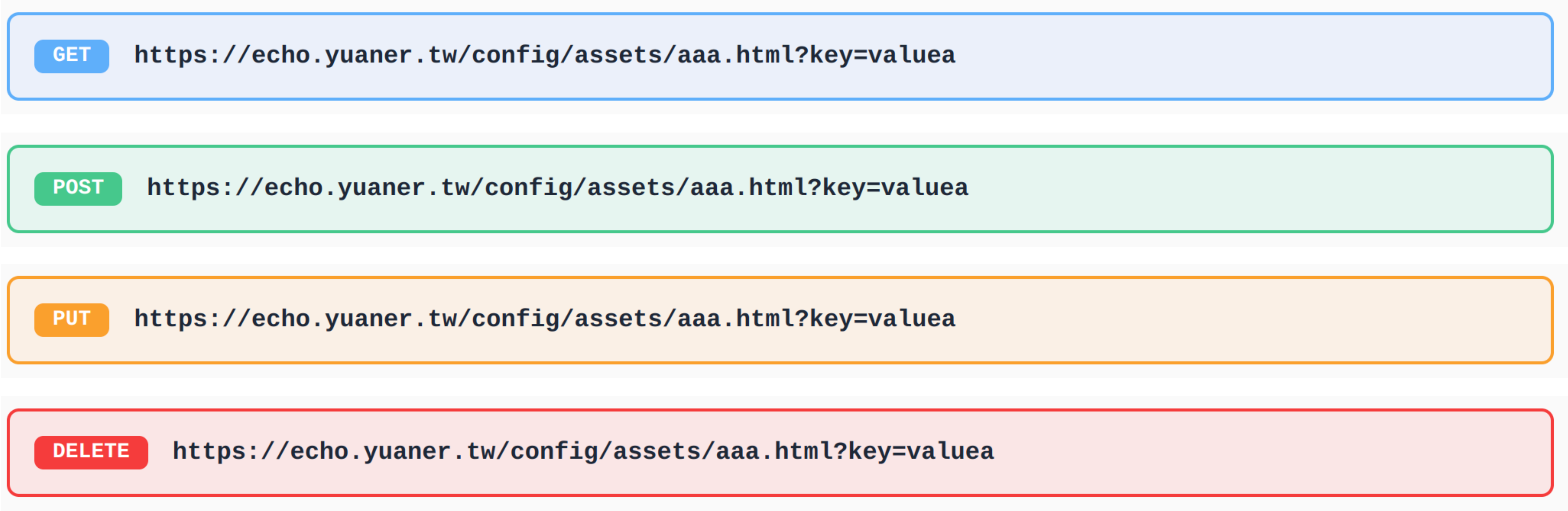
- Colo: SJC
- Country: TW
- City: Kaohsiung
- Continent: AS
- Latitude: 22.61626
- Longitude: 120.31333
- Region: Takao
- Region Code: KHH
- Timezone: Asia/Taipei

HEA Header

Key	Value
accept	text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
accept-encoding	gzip, br
accept-language	zh-TW,zh;q=0.8,en-US;q=0.5,en;q=0.3
cf-connecting-ip	2001:b400:e2c2:c865:d68b:4031:6d82:80f3
cf-ipcountry	TW
cf-ray	9a6201217b0cf94b
cf-visitor	{"scheme":"https"}
connection	Keep-Alive

清楚明瞭的HTTP Method

網址列顏色會根據 GET, POST, PUT, DELETE改變顏色



GET https://echo.yuaner.tw/config/assets/aaa.html?key=valuea

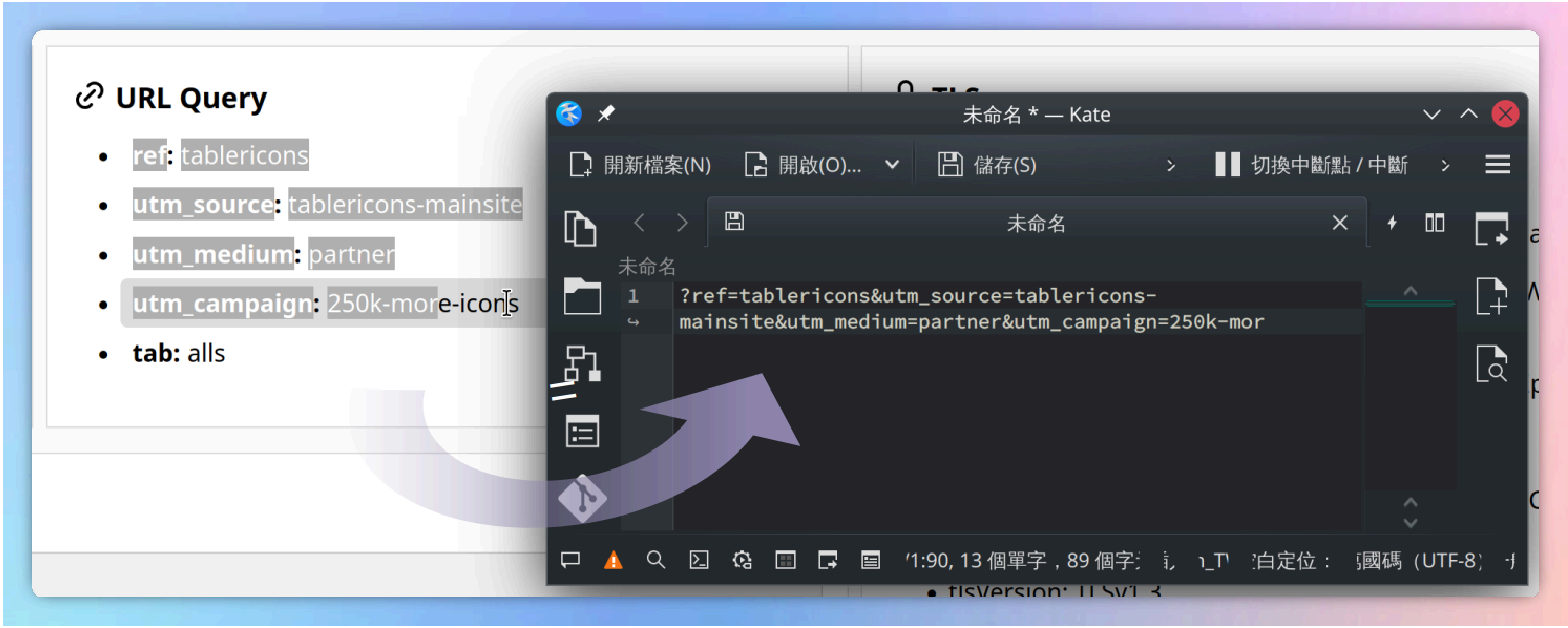
POST https://echo.yuaner.tw/config/assets/aaa.html?key=valuea

PUT https://echo.yuaner.tw/config/assets/aaa.html?key=valuea

DELETE https://echo.yuaner.tw/config/assets/aaa.html?key=valuea

顏色挑選有特別與Swagger、API Doc對齊，貼近後端工程師的習慣

網址文字友善複製



URL Query

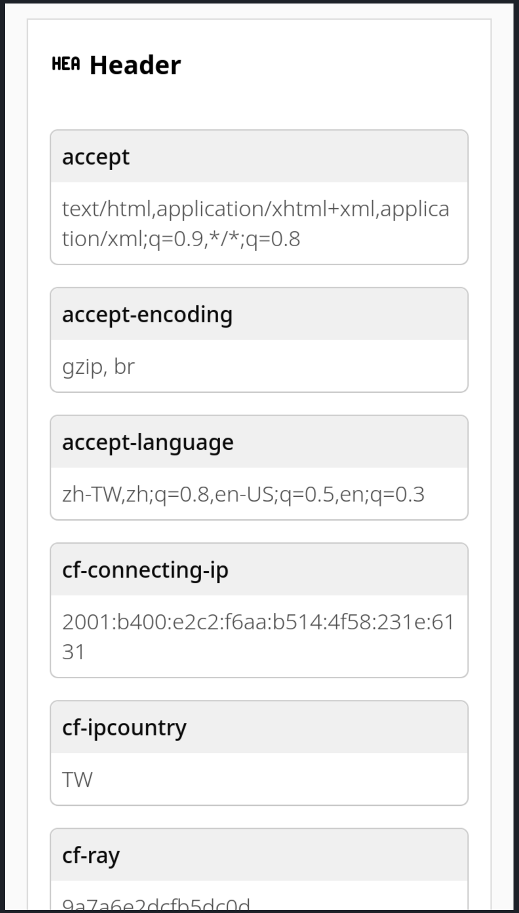
- ref: tablericons
- utm_source: tablericons-mainsite
- utm_medium: partner
- utm_campaign: 250k-more-icons
- tab: alls

```
?ref=tablericons&utm_source=tablericons-
mainsite&utm_medium=partner&utm_campaign=250k-mor
```

有特別為「**URL Params**」、「**URL Query**」**區塊特別設計友善文字複製**。界面乍看下是ul li項目清單，但圈選文字後，會直接複製成可直接貼上網址列的字串

RWD手機友善 與 Dark Mode配色

RWD手機友善



HEA Header

accept

text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8

accept-encoding

gzip, br

accept-language

zh-TW,zh;q=0.8,en-US;q=0.5,en;q=0.3

cf-connecting-ip

2001:b400:e2c2:f6aa:b514:4f58:231e:6131

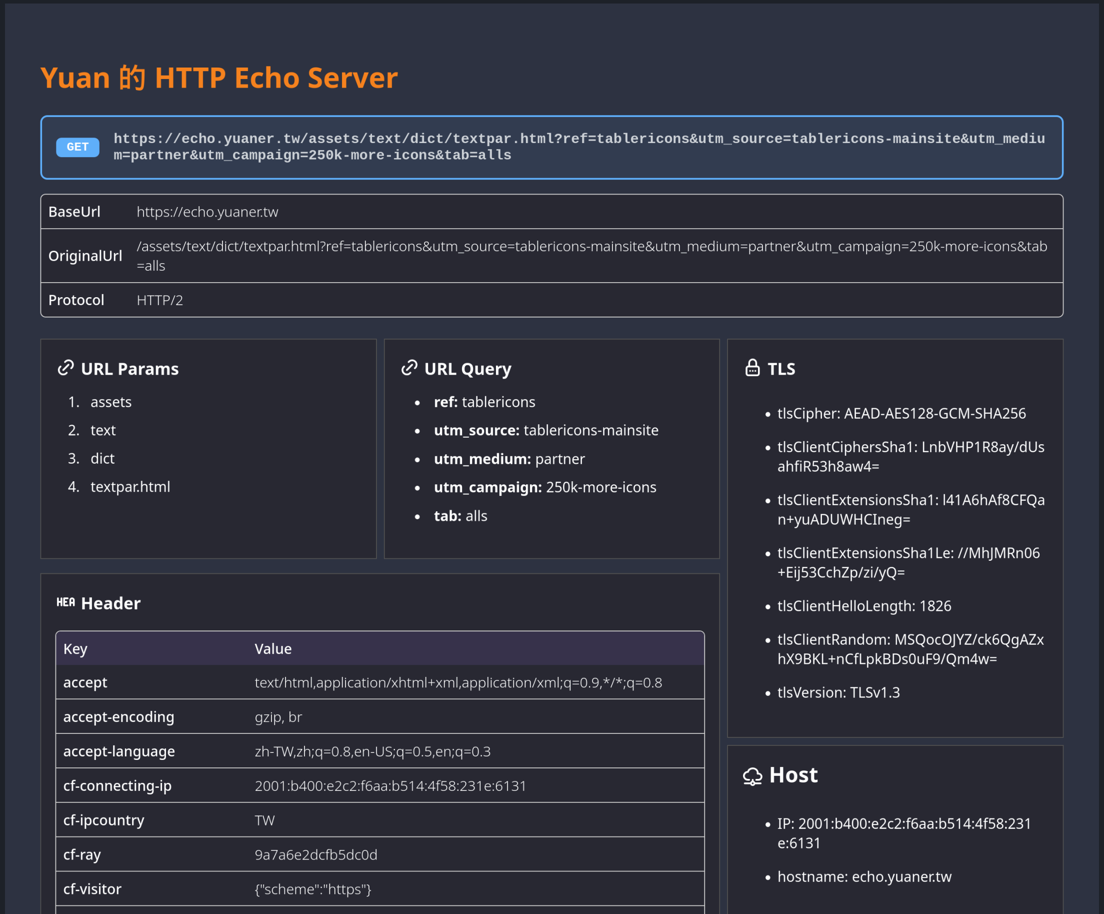
cf-ipcountry

TW

cf-ray

9a7a6e2dcfb5dc0d

Dark Mode配色



Yuan 的 HTTP Echo Server

GET https://echo.yuaner.tw/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=alls

BaseUrl	https://echo.yuaner.tw
OriginalUrl	/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=alls
Protocol	HTTP/2

URL Params

1. assets
2. text
3. dict
4. textpar.html

URL Query

- **ref:** tablericons
- **utm_source:** tablericons-mainsite
- **utm_medium:** partner
- **utm_campaign:** 250k-more-icons
- **tab:** alls

TLS

- tlsCipher: AEAD-AES128-GCM-SHA256
- tlsClientCiphersSha1: LnbVHP1R8ay/dUsahfiR53h8aw4=
- tlsClientExtensionsSha1: l41A6hAf8CFQan+yuADUWHCIneg=
- tlsClientExtensionsSha1Le: //MhJMRn06+Eij53CchZp/zi/yQ=
- tlsClientHelloLength: 1826
- tlsClientRandom: MSQocOJYZ/ck6QgAZxhX9BKL+nCfLpkBDs0uF9/Qm4w=
- tlsVersion: TLSv1.3

HEA Header

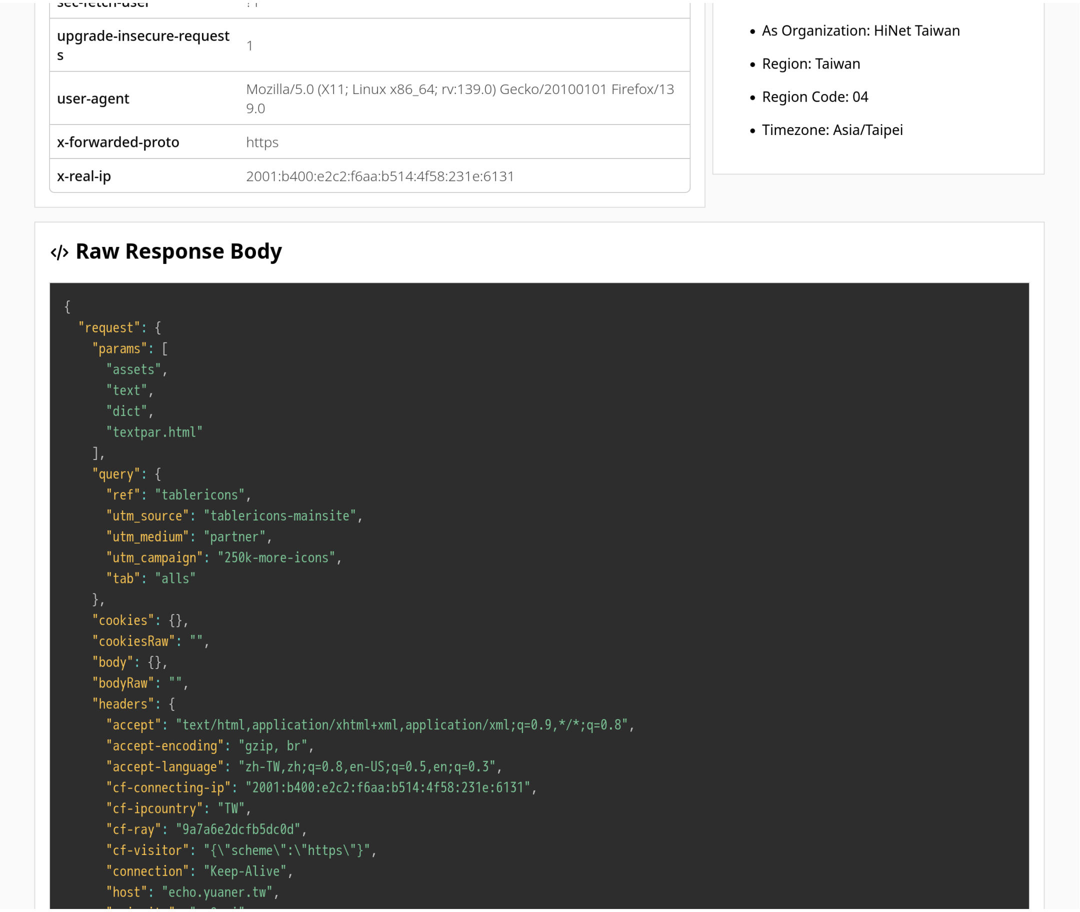
Key	Value
accept	text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
accept-encoding	gzip, br
accept-language	zh-TW,zh;q=0.8,en-US;q=0.5,en;q=0.3
cf-connecting-ip	2001:b400:e2c2:f6aa:b514:4f58:231e:6131
cf-ipcountry	TW
cf-ray	9a7a6e2dcfb5dc0d
cf-visitor	{"scheme":"https"}

Host

- IP: 2001:b400:e2c2:f6aa:b514:4f58:231e:6131
- hostname: echo.yuaner.tw

網頁界面仍有提供Raw Response Body

模擬本後端的JSON模式原始輸出，方便切換客戶端比對使用



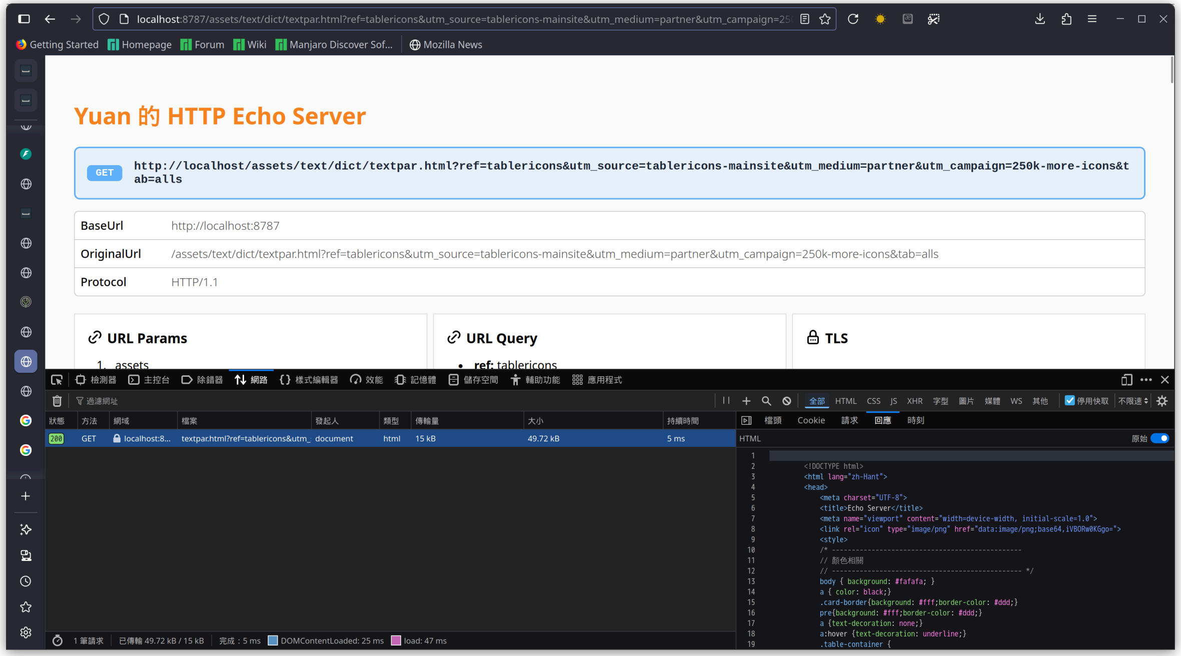
sec-fetch-user	?1
upgrade-insecure-requests	1
user-agent	Mozilla/5.0 (X11; Linux x86_64; rv:139.0) Gecko/20100101 Firefox/139.0
x-forwarded-proto	https
x-real-ip	2001:b400:e2c2:f6aa:b514:4f58:231e:6131

- As Organization: HiNet Taiwan
- Region: Taiwan
- Region Code: 04
- Timezone: Asia/Taipei

</> Raw Response Body

```
{
  "request": {
    "params": [
      "assets",
      "text",
      "dict",
      "textpar.html"
    ],
    "query": {
      "ref": "tablericons",
      "utm_source": "tablericons-mainsite",
      "utm_medium": "partner",
      "utm_campaign": "250k-more-icons",
      "tab": "alls"
    },
    "cookies": {},
    "cookiesRaw": "",
    "body": {},
    "bodyRaw": "",
    "headers": {
      "accept": "text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8",
      "accept-encoding": "gzip, br",
      "accept-language": "zh-TW,zh;q=0.8,en-US;q=0.5,en;q=0.3",
      "cf-connecting-ip": "2001:b400:e2c2:f6aa:b514:4f58:231e:6131",
      "cf-ipcountry": "TW",
      "cf-ray": "9a7a6e2dcfb5dc0d",
      "cf-visitor": "{\"scheme\":\"https\"}",
      "connection": "Keep-Alive",
      "host": "echo.yuaner.tw",
```

效能考量設計



Yuan 的 HTTP Echo Server

GET `http://localhost/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=alls`

BaseUrl	http://localhost:8787
OriginalUrl	/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=alls
Protocol	HTTP/1.1

URL Params

1. assets

URL Query

- **ref:** tablericons

TLS

狀態	方法	網域	檔案	發起人	類型	傳輸量	大小	持續時間
200	GET	localhost:8...	textpar.html?ref=tablericons&utm_	document	html	15 kB	49.72 kB	5 ms

1 筆請求 | 已傳輸 49.72 kB / 15 kB | 完成：5 ms | DOMContentLoaded: 25 ms | load: 47 ms

```

        <!DOCTYPE html>
        <html lang="zh-Hant">
        <head>
            <meta charset="UTF-8">
            <title>Echo Server</title>
            <meta name="viewport" content="width=device-width, initial-scale=1.0">
            <link rel="icon" type="image/png" href="data:image/png;base64,iVBORw0KGgo=">
            <style>
            /* ------------------------------------------------
            // 顏色相關
            // ------------------------------------------------ */
            body { background: #fafafa; }
            a { color: black;}
            .card-border{background: #fff;border-color: #ddd;}
            pre{background: #fff;border-color: #ddd;}
            a {text-decoration: none;}
            a:hover {text-decoration: underline;}
            .table-container {
```

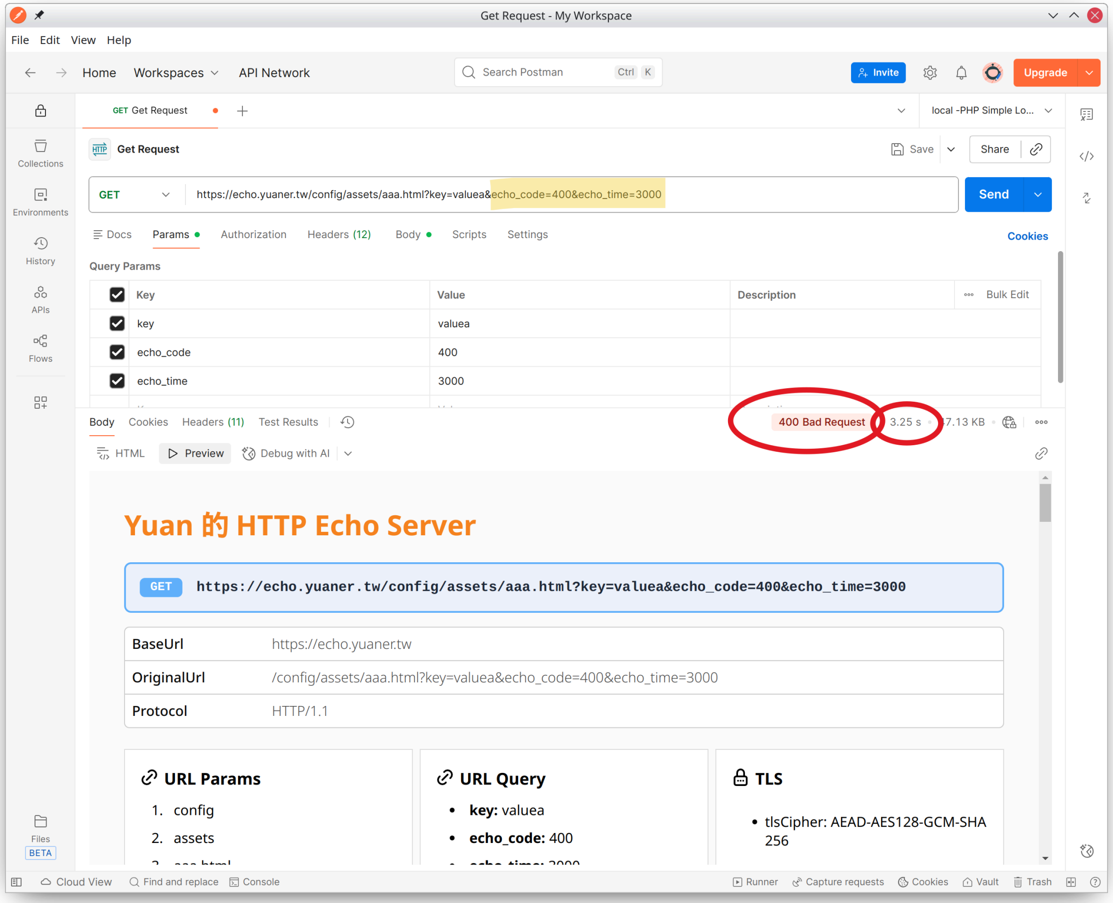
網頁版不會產生額外Request載入其他資源！（如:圖片、CSS、JS等等）

- 所有外部資源如Icons與Syntax Highlight JS都已直接內嵌在單一這個Request。
- 所有圖片都是SVG格式

➡ 附加功能

提供 URL Query 參數 來控制以下功能

- `echo_code=200` ： 控制要回傳的 HTTP Status Code
- `echo_time=3000` ： 控制伺服器要延遲多久才會送 Response ，模擬較差網路品質狀況使用



Get Request

GET https://echo.yuaner.tw/config/assets/aaa.html?key=valuea&echo_code=400&echo_time=3000

Query Params

☑	Key	Value	Description
☑	key	valuea	
☑	echo_code	400	
☑	echo_time	3000	

Body

400 Bad Request · 3.25 s · 7.13 KB

Yuan 的 HTTP Echo Server

GET `https://echo.yuaner.tw/config/assets/aaa.html?key=valuea&echo_code=400&echo_time=3000`

BaseUrl	https://echo.yuaner.tw
OriginalUrl	/config/assets/aaa.html?key=valuea&echo_code=400&echo_time=3000
Protocol	HTTP/1.1

URL Params

1. config
2. assets

URL Query

- **key:** valuea
- **echo_code:** 400

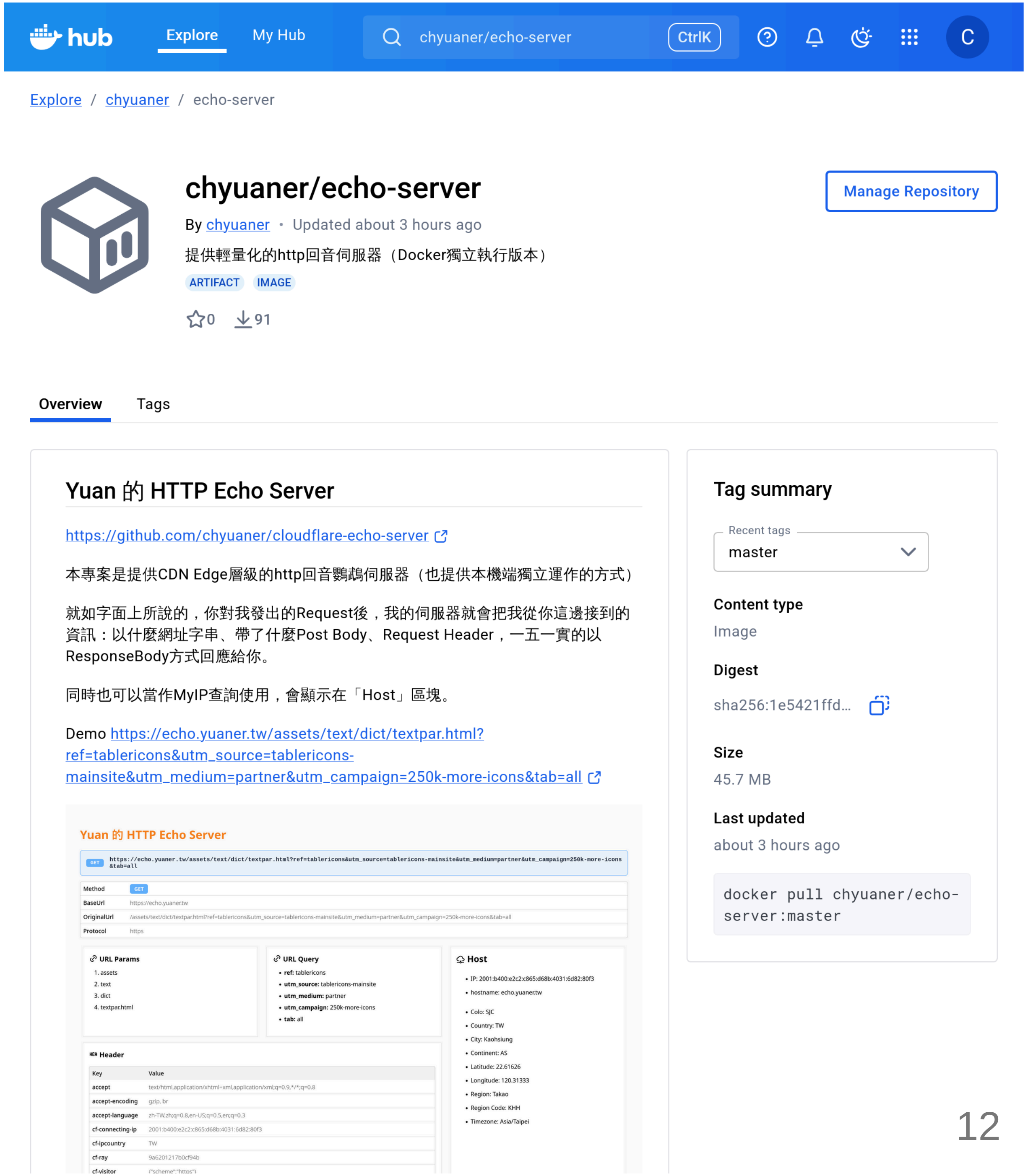
TLS

- tlsCipher: AEAD-AES128-GCM-SHA256

➡ 提供本地架設方式

本專案雖然是為Cloudflare量身打造的，但也有提供傳統的架設方式

- Docker
  ```
  docker run -p 3000:3000 chyuaner/echo-server
  ```
- Node直接啟動
  ```
  npm i && npm run start
  ```



Explore / chyuaner / echo-server

chyuaner/echo-server

By chyuaner • Updated about 3 hours ago

提供輕量化的http回音伺服器（Docker獨立執行版本）

ARTIFACT IMAGE

☆0 ↓91

Yuan 的 HTTP Echo Server

https://github.com/chyuaner/cloudflare-echo-server

本專案是提供CDN Edge層級的http回音鸚鵡伺服器（也提供本機端獨立運作的方式）

就如字面上所說的，你對我發出的Request後，我的伺服器就會把我從你這邊接到的資訊：以什麼網址字串、帶了什麼Post Body、Request Header，一五一實的以ResponseBody方式回應給你。

同時也可以當作MyIP查詢使用，會顯示在「Host」區塊。

Demo https://echo.yuaner.tw/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=all

Yuan 的 HTTP Echo Server

GET https://echo.yuaner.tw/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=all

Method	GET
BaseUrl	https://echo.yuaner.tw
OriginalUrl	/assets/text/dict/textpar.html?ref=tablericons&utm_source=tablericons-mainsite&utm_medium=partner&utm_campaign=250k-more-icons&tab=all
Protocol	https

URL Params

1. assets
2. text
3. dict
4. textpar.html

URL Query

- **ref:** tablericons
- **utm_source:** tablericons-mainsite
- **utm_medium:** partner
- **utm_campaign:** 250k-more-icons
- **tab:** all

Host

- IP: 2001:b400:e2c2:c865:d68b:4031:6d82:80f3
- hostname: echo.yuaner.tw
- Colo: SJC
- Country: TW
- City: Kaohsiung
- Continent: AS
- Latitude: 22.61626
- Longitude: 120.31333
- Region: Takao
- Region Code: KHH
- Timezone: Asia/Taipei

Header

Key	Value
accept	text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
accept-encoding	gzip, br
accept-language	zh-TW,zh;q=0.8,en-US;q=0.5,en;q=0.3
cf-connecting-ip	2001:b400:e2c2:c865:d68b:4031:6d82:80f3
cf-ipcountry	TW
cf-ray	9a6201217b0cf94b
cf-visitor	{"scheme":"https"}

Tag summary

Recent tags: master

Content type
Image

Digest
sha256:1e5421ffd...

Size
45.7 MB

Last updated
about 3 hours ago

```
docker pull chyuaner/echo-server:master
```

➡ 開發心得

本次採用語言

其實我本身比較擅長PHP，但...

- 本次目的就是想減少自有主機依賴，變成要遷就雲端提供商的限制
- Cloudflare Workers基本上就是以NodeJS語言為主
- 本次目的是盡可能減少線路「繞圈」與「轉換」，來換取效能

開發緣由

先前都是使用 ealen/echo-server

雖然已包好Docker，架設簡單、輸出結構簡潔漂亮，但是...

- 只有提供JSON格式回傳
- 需要有自己的主機架設
  - 然後我近期的主機資源很吃緊~~~
- 其他原因，下述...

近期對CDN優化有興趣

我以前使用Cloudflare Worker用途

- 網址搬遷時用白名單Mapping表概念，讓特定舊網址跳轉到新網址
- 短網址直接跳轉
- 偵測客戶端特定國家自動跳轉專用網址

後來發現Workers其實可以做到以下事情

- 拿到客戶端傳來的Request
  - **URL Params / Query**
  - **Request Post Body**
  - **Request Post Body**
- 可以控制Response內容
  - 跳轉導向到特定的網址
  - 改寫 Response Body內容
  - **可以直接輸出指定的字串，也包含整串HTML大字串**

🚀 **評估下來，本次需求僅用以上功能就足夠了！！！**

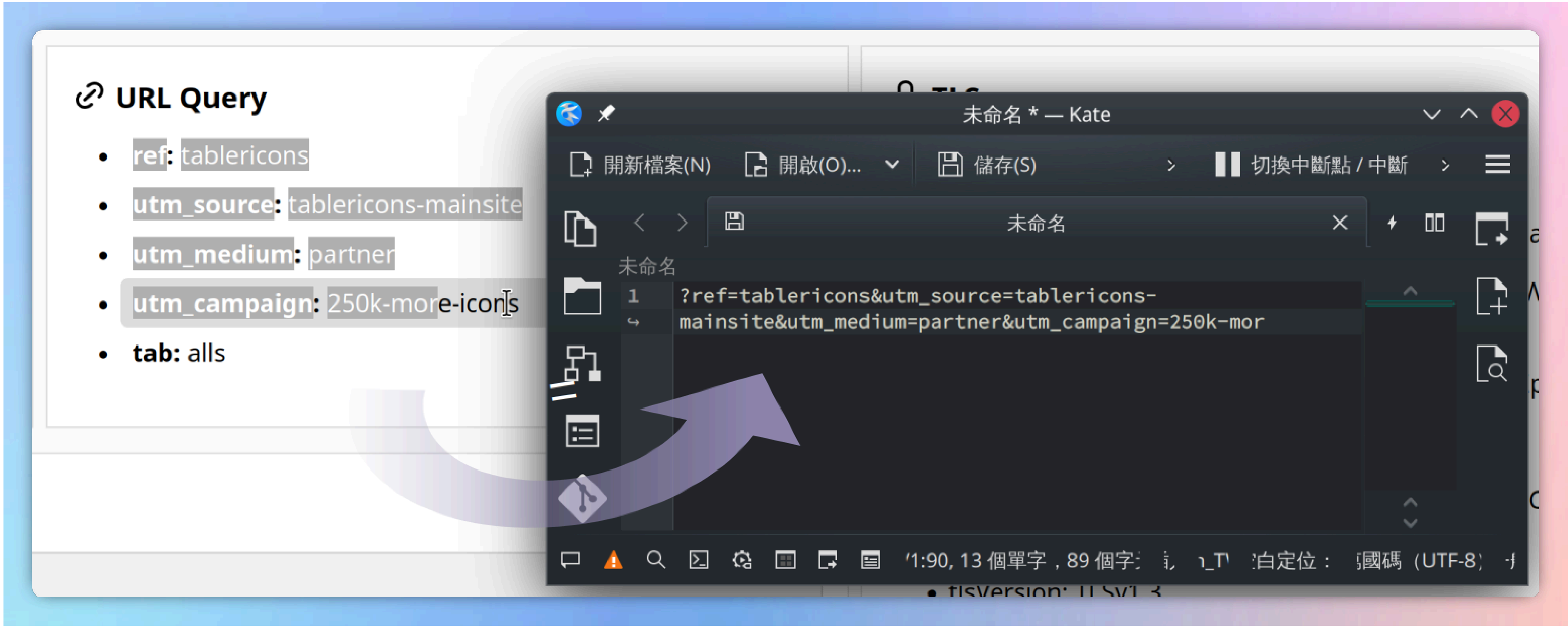
Cloudflare Worker執行能力有限

- 並不是完整的NodeJS環境，只能執行Cloudflare API名單內的function
- 沒有檔案概念，若需要額外資源檔案，需要另外加掛資源空間
  - 也直接導致很難使用ejs之類的模板框架（遇到底層有使用到 `eval` 與 `fs` 就會被拒絕執行）

對策：

- 所有資源全部Hard Code寫死內嵌，整理成JS陣列。
- 不使用模板系統，直接靠func整理HTML字串。
  - 但自己在規劃JS Function時仍然會盡量模組化。

網址文字友善複製



URL Query

- ref: tablericons
- utm_source: tablericons-mainsite
- utm_medium: partner
- utm_campaign: 250k-more-icons
- tab: alls

```
?ref=tablericons&utm_source=tablericons-
mainsite&utm_medium=partner&utm_campaign=250k-mor
```

界面乍看下是ul li項目清單，但圈選文字後，會直接複製成可直接貼上網址列的字串

網址文字友善複製 實做方式

原始結構全部都是 <span>

```html
<span class="firstchar">?</span>
<span class="li">
    <span class="part">
        <span class="key">ref</span><span class="kvsplit">=</span>tablericons
    </span>
    <span class="split">&amp;</span>
</span>
<span class="li">
    <span class="part">
        <span class="key">utm_source</span><span class="kvsplit">=</span>tablericons-mainsite
    </span>
    <span class="split">&amp;</span>
</span>
<span class="li">
    <span class="part">
        <span class="key">utm_medium</span><span class="kvsplit">=</span>partner
    </span>
    <span class="split">&amp;</span>
</span>
<span class="li">
    <span class="part">
        <span class="key">utm_campaign</span><span class="kvsplit">=</span>250k-more-icons
    </span>
    <span class="split">&amp;</span>
</span>
<span class="li">
    <span class="part">
        <span class="key">tab</span><span class="kvsplit">=</span>alls
    </span>
</span>
```

全由CSS模擬 <ul><li> 的效果

0% JavaScript處理

```css
.urltext {margin-left:1em;margin-bottom:-1em;}
.urltext .li {
    display: inline-block;
    vertical-align: middle;
    padding-left: 0.5em;
    border-radius: 5px;
}
.urltext .firstchar { padding-left:1em; }
.urltext .firstchar,.urltext .split, .urltext .kvsplit{
    opacity: 0;
}
.urltext .li {
    display: list-item;
    margin-left: 1em;
    position: relative;
    top: -2em;
    line-height: 2em;
}
.urltext .key{ font-weight: bold; }
.urltext .key::after {
    content: ": ";
    position: absolute;
}
```

提供本地架設方式

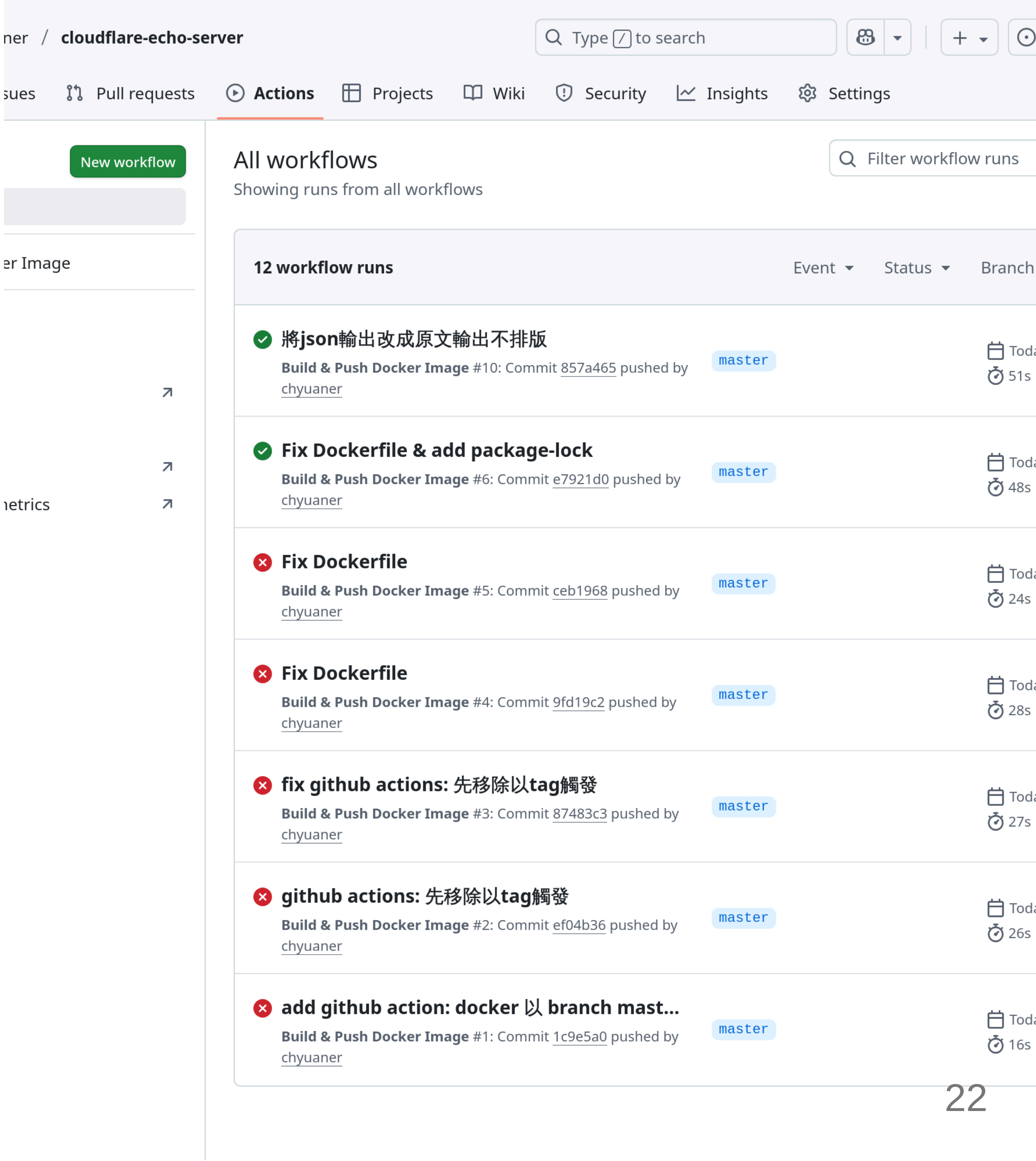
開發過程90%都是使用Cloudflare提供的wrangler模擬環境測試
但考量隨時會有獨立架設需求，仍有特別製作 `/src/server.js` 供獨立執行使用

`/src/index.js` 核心主功能流程與Cloudflare Workers直接進入點

`/src/server.js` 獨立執行專用 進入點

- 以NodeJS最原生的node:http為主
    - 本次需求沒有複雜的 router、session...等等 ，也沒有多頁面需求，所以不使用express這類框架減少無謂的依賴與效能損耗
- 會銜接回 `/src/index.js` ，讓所有功能都與Cloudflare Workers模式對齊
    - 但... Cloudflare專屬功能提供的GeoIP資料則無法使用，需要用替代方式處理GeoIP問題。因為我暫時還沒有常駐用的獨立架設需求，就暫時不處理了。

搭配 Github Actions 自動更新到 Docker Hub



All workflows

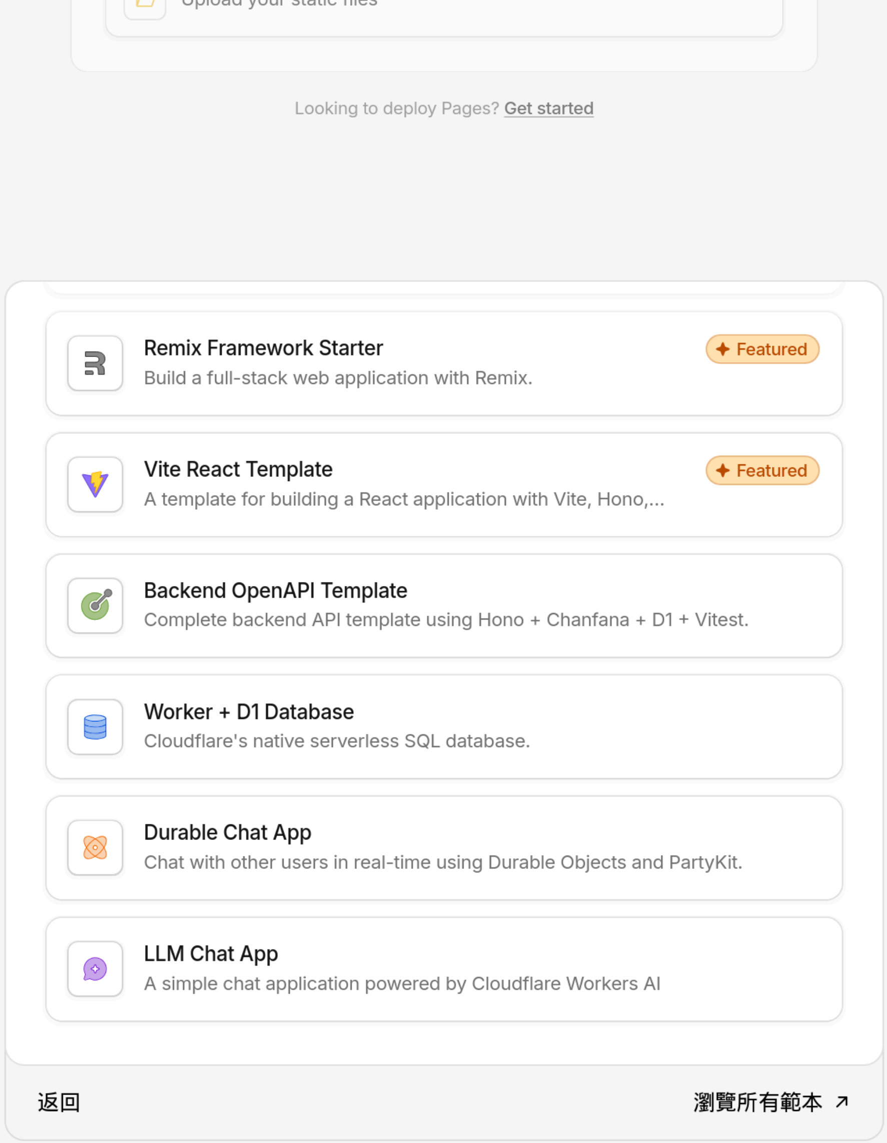
Showing runs from all workflows

12 workflow runs

- ✓ 將json輸出改成原文輸出不排版 — Build & Push Docker Image #10: Commit 857a465 pushed by chyuaner — master — Toda — 51s
- ✓ Fix Dockerfile & add package-lock — Build & Push Docker Image #6: Commit e7921d0 pushed by chyuaner — master — Toda — 48s
- ✗ Fix Dockerfile — Build & Push Docker Image #5: Commit ceb1968 pushed by chyuaner — master — Toda — 24s
- ✗ Fix Dockerfile — Build & Push Docker Image #4: Commit 9fd19c2 pushed by chyuaner — master — Toda — 28s
- ✗ fix github actions: 先移除以tag觸發 — Build & Push Docker Image #3: Commit 87483c3 pushed by chyuaner — master — Toda — 27s
- ✗ github actions: 先移除以tag觸發 — Build & Push Docker Image #2: Commit ef04b36 pushed by chyuaner — master — Toda — 26s
- ✗ add github action: docker 以 branch mast... — Build & Push Docker Image #1: Commit 1c9e5a0 pushed by chyuaner — master — Toda — 16s

後續新專案要不要用 Cloudflare Worker？

- 他有提供介接DB的機能，但...
- Cloudflare Workers執行能力有限！
  - 本次專案已經用了大量的Wordaround方法，
    尤其是有不少直接Hard Code寫死
- 如果是傳統電商需求，基本上不會考慮！
- Fake Images Please Workers形式復刻中 😛



Upload your static files

Looking to deploy Pages? Get started

Remix Framework Starter ✦ Featured
Build a full-stack web application with Remix.

Vite React Template ✦ Featured
A template for building a React application with Vite, Hono,...

Backend OpenAPI Template
Complete backend API template using Hono + Chanfana + D1 + Vitest.

Worker + D1 Database
Cloudflare's native serverless SQL database.

Durable Chat App
Chat with other users in real-time using Durable Objects and PartyKit.

LLM Chat App
A simple chat application powered by Cloudflare Workers AI

返回

瀏覽所有範本 ↗

就醬，歡迎交流😃