
AWS
re:Invent
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NET209

Optimize website performance for SEO with Amazon CloudFront

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AWS

AGENDA

1 SEO What matters to Google for SEO?

2 

Role of Amazon CloudFront in your SEO toolkit

3 
Q&A

Timeline of performance-related SEO ranking changes

In 2021, Google ran over 700,000 experiments that resulted In more than **4,000 improvements to search**

Source:
https://blog.google/products/search/how-we-update-search-improve-results/

2010
In 2010, Google began factoring page speed into its webpage ranking algorithm for the first time

2015
Crawling and indexing of locale-adaptive pages

2018
In 2018, Google included page speed in mobile webpage rankings

2020
In 2020, Google announced web vitals – "Core Web Vitals are a set of real-world, user-centered metrics that quantify key aspects of the user experience."

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In 2021, Google rolls out Core Web Vitals updates for mobile searches

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In 2022, Google expands Core Web Vitals updates to desktop searches

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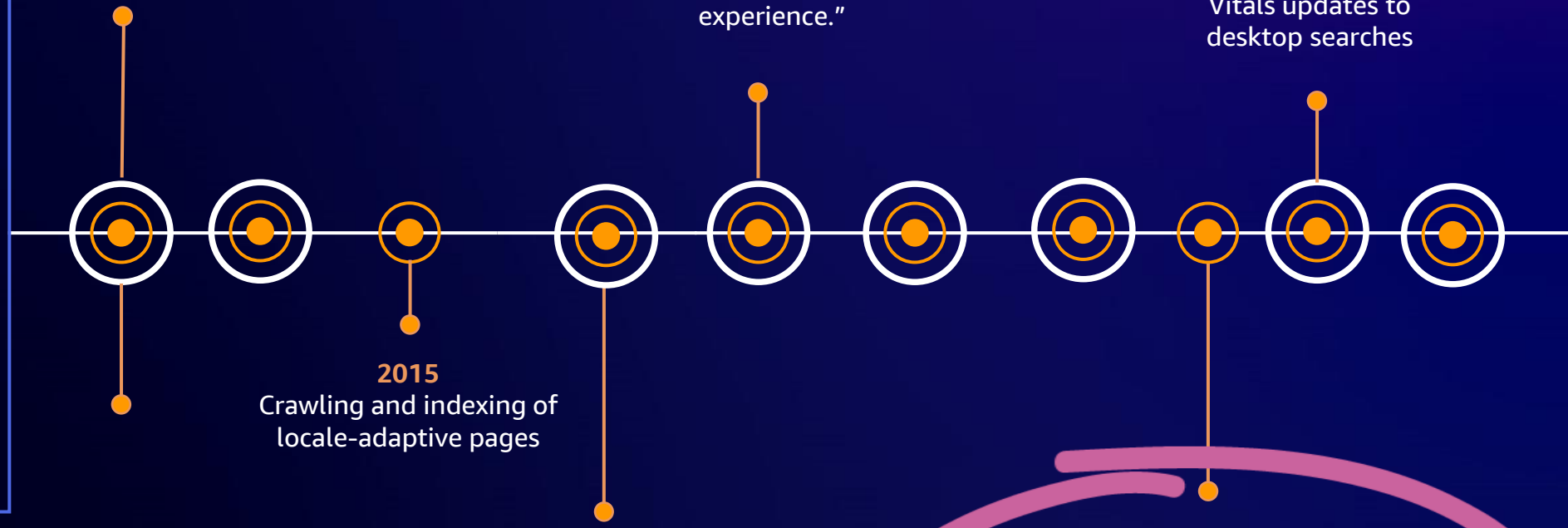

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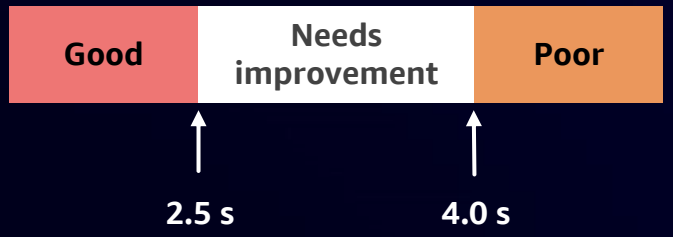
Core Web Vitals

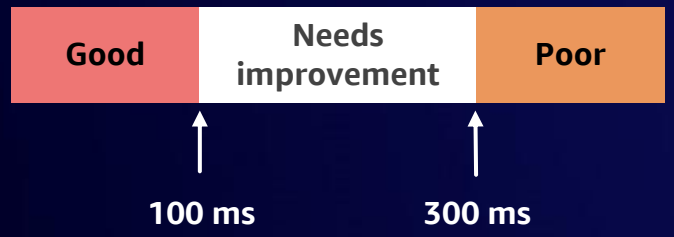
Largest Contentful Paint

Loading
Target = 2.5 seconds



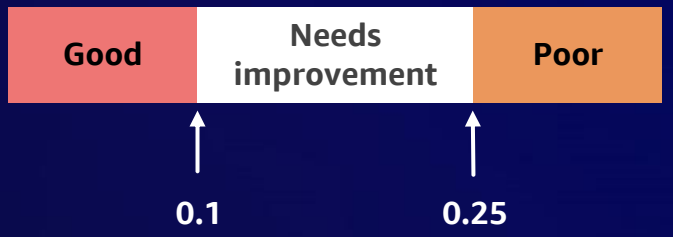
First Input Delay

Interactivity
Target = 100 milliseconds



Cumulative Layout Shift

Visual stability
Target Ratio = 0.1



How can CloudFront be part of your SEO toolkit?

Amazon CloudFront global edge network

GLOBAL NETWORK

Redundant 400 GbE network and private capacity between all Regions except for AWS China*

DIRECT CONNECT

Connect to every AWS Region from over 130 AWS Direct Connect PoPs worldwide (excluding AWS China Regions*)

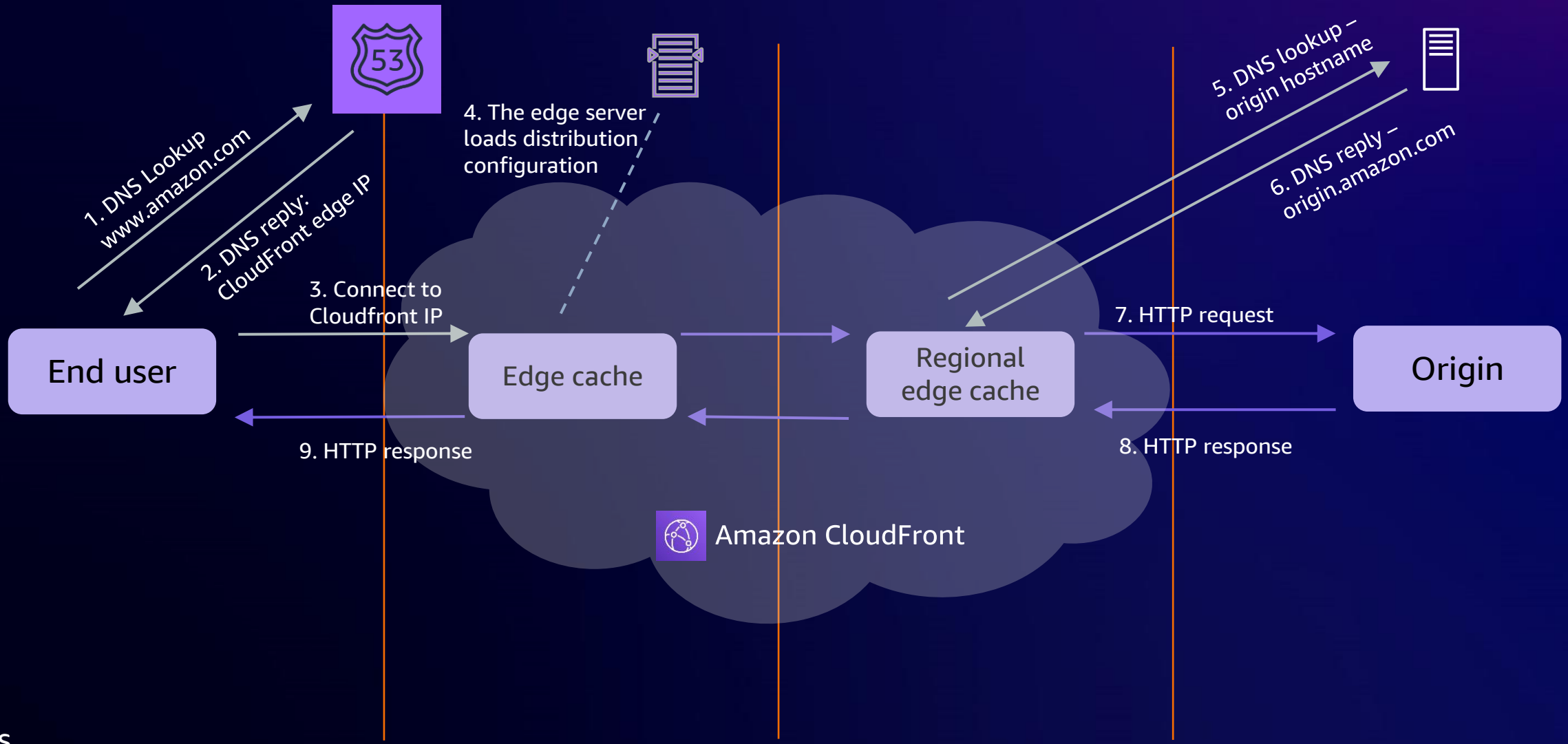
EDGE NETWORKING

550+ PoPs in 50 countries and 100+ cities, with direct peering to all major ISPs

aws

HTTP request flow on the public internet

HTTP request flow with Amazon CloudFront



How can CloudFront help you optimize SEO?

01 | Improving site speed

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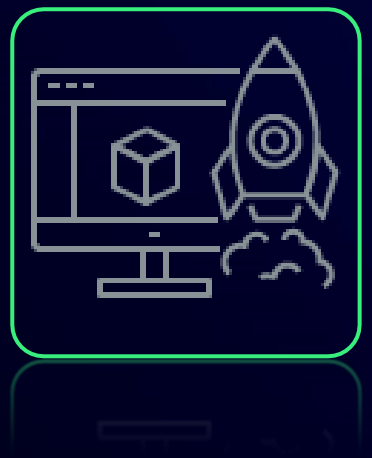
Improving your site speed



Out-of-the-box CloudFront features

AWS backbone network

TCP optimizations

TLS optimizations

Features you can configure

TLS 1.3

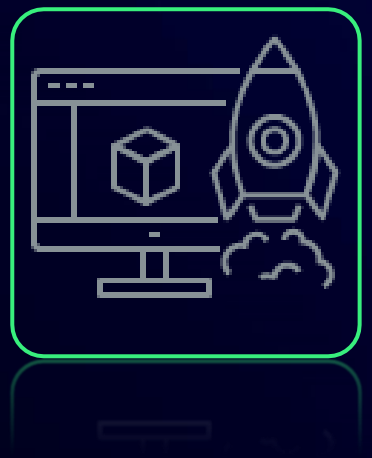
HTTP/3

Brotli compression

Run compute at the edge

Caching strategies

Improving your site speed



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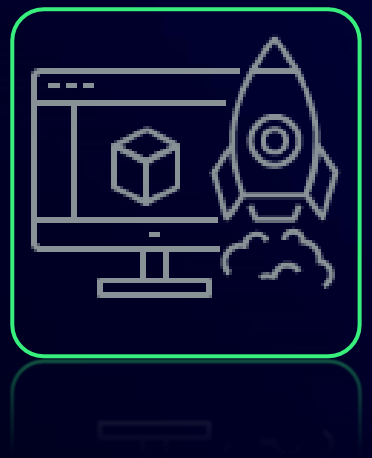

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Edge compute on Amazon CloudFront

01

Lambda@Edge

Deploy Python and Node.js functions

02

CloudFront Functions

Deploy JavaScript functions

03

KeyValueStore

Global storage for compute functions

NEW

aws

Edge compute on Amazon CloudFront

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Lambda@Edge
Deploy Python and Node.js functions

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CloudFront Functions
Deploy JavaScript functions

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KeyValueStore
Global storage for compute functions

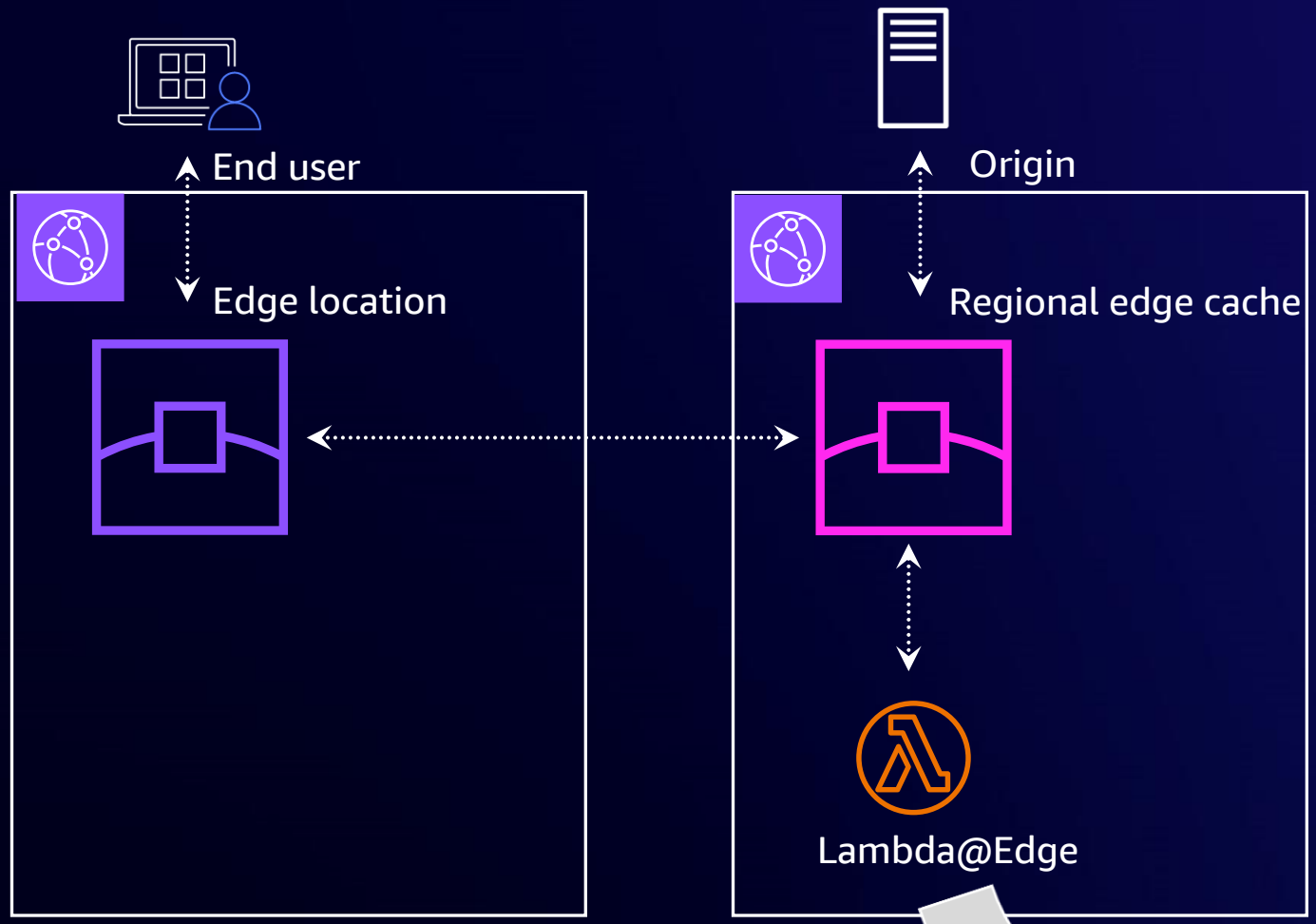
NEW

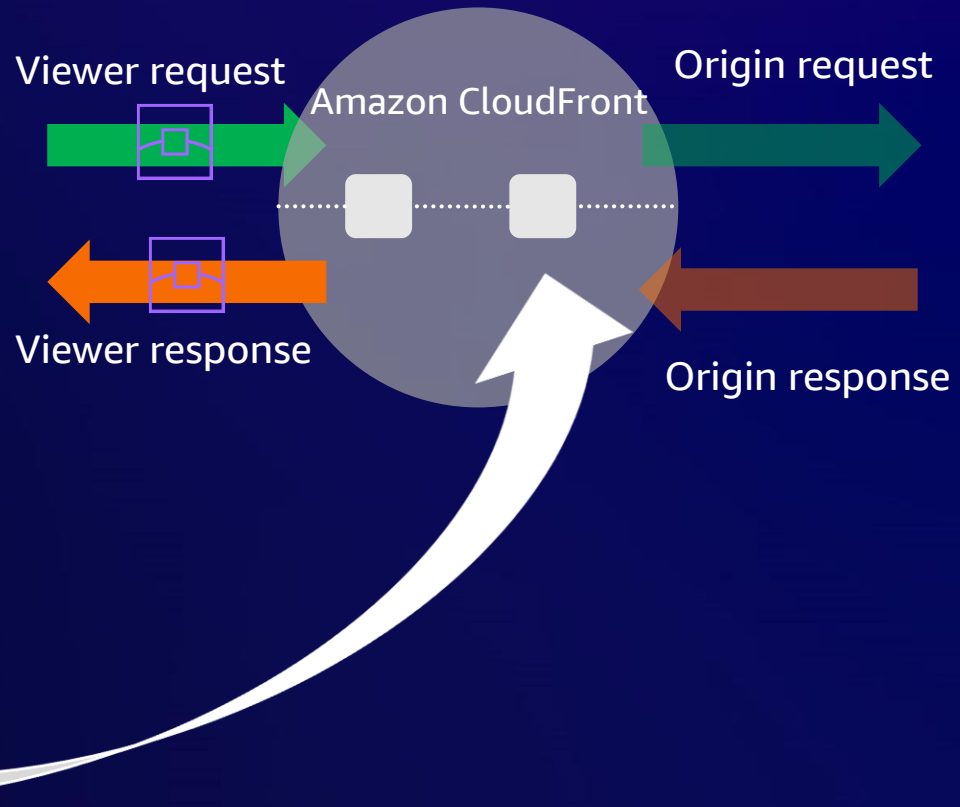
Run code simultaneously across the CloudFront edge network

Enhanced security with process-based isolation

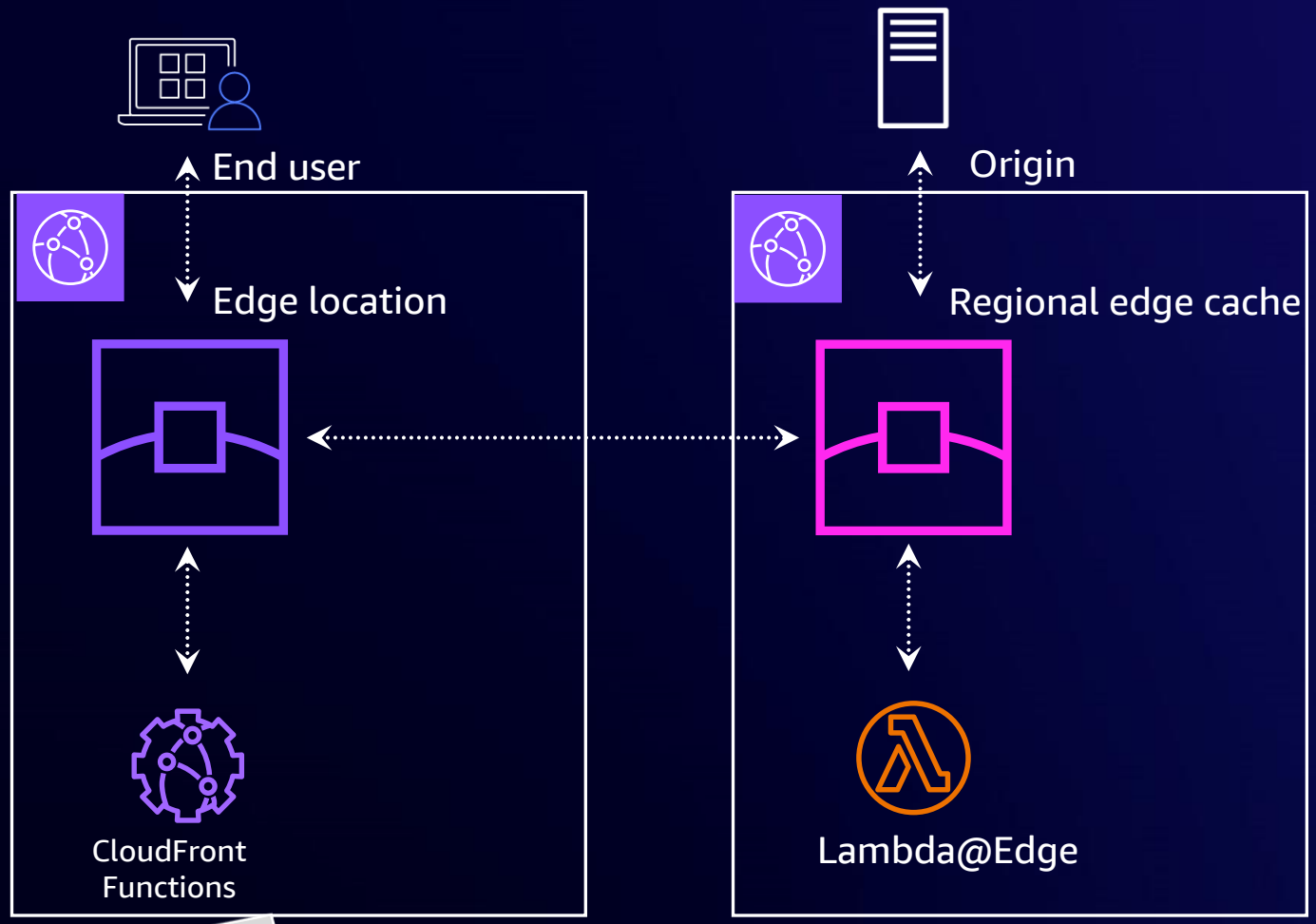
Use the same AWS APIs, tools

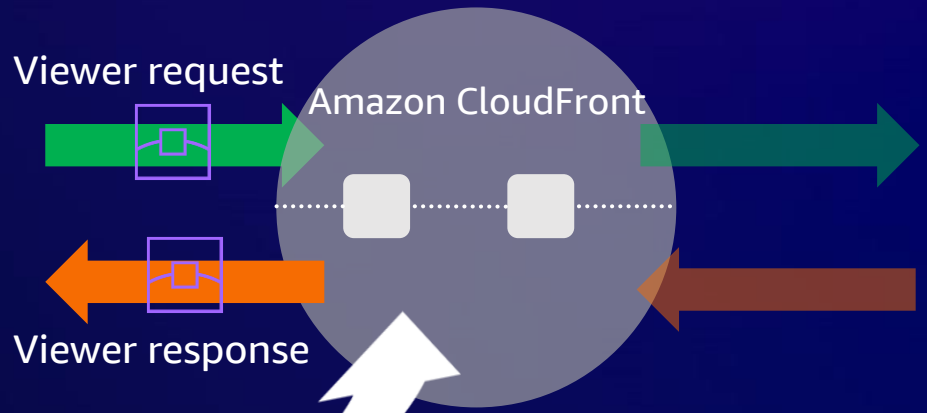
Edge computing with Lambda@Edge





Edge computing with CloudFront Functions



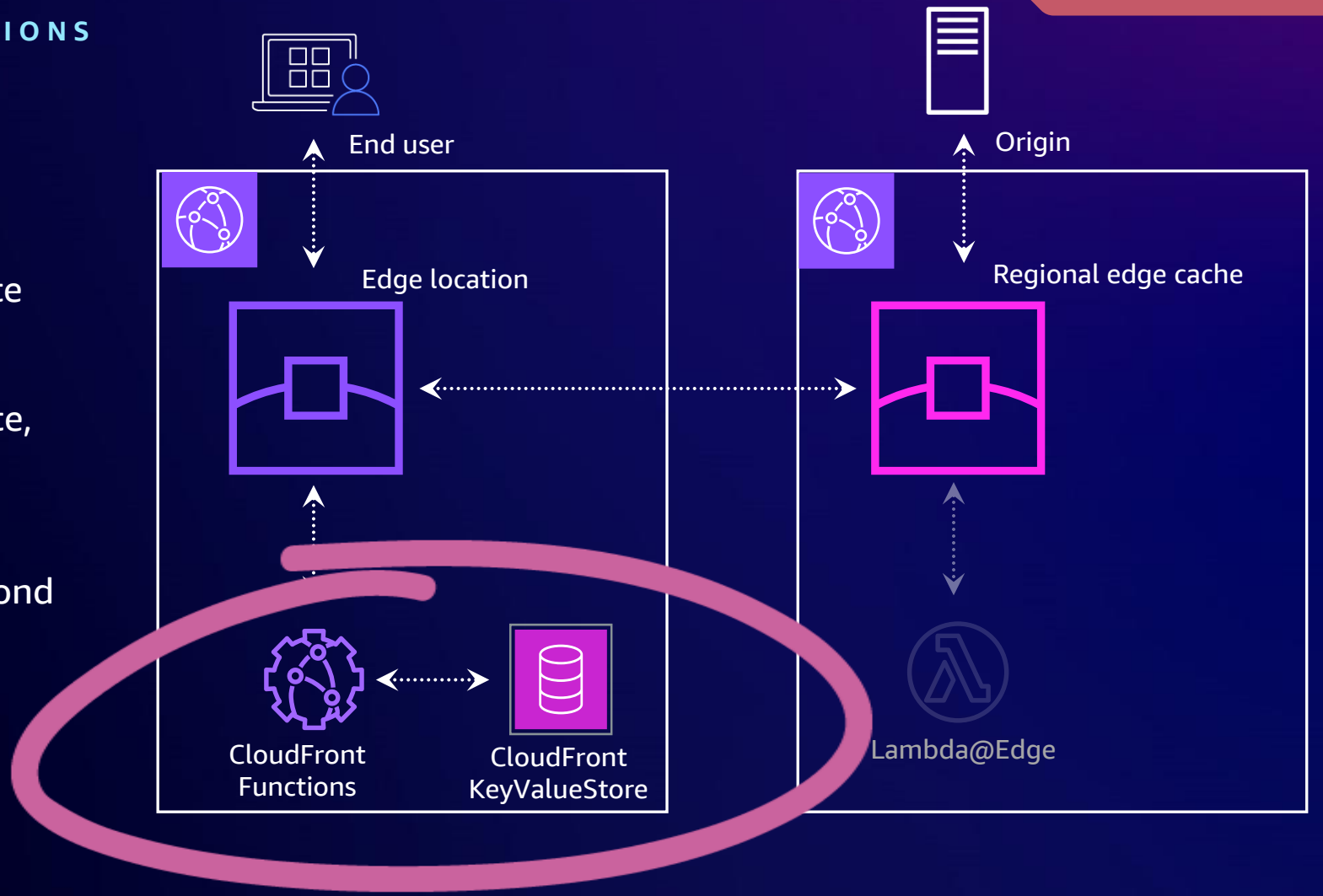


CloudFront KeyValueStore

NEW

GLOBAL STORAGE FOR COMPUTE FUNCTIONS

- Global, key-value data store for compute functions at the edge
- Build your application with a global state, while maintaining extremely low latency reads
- Can support millions of request per second



Moving compute to the edge – Common use cases

Request/response manipulation

Cache key normalization

URI rewrite/redirect

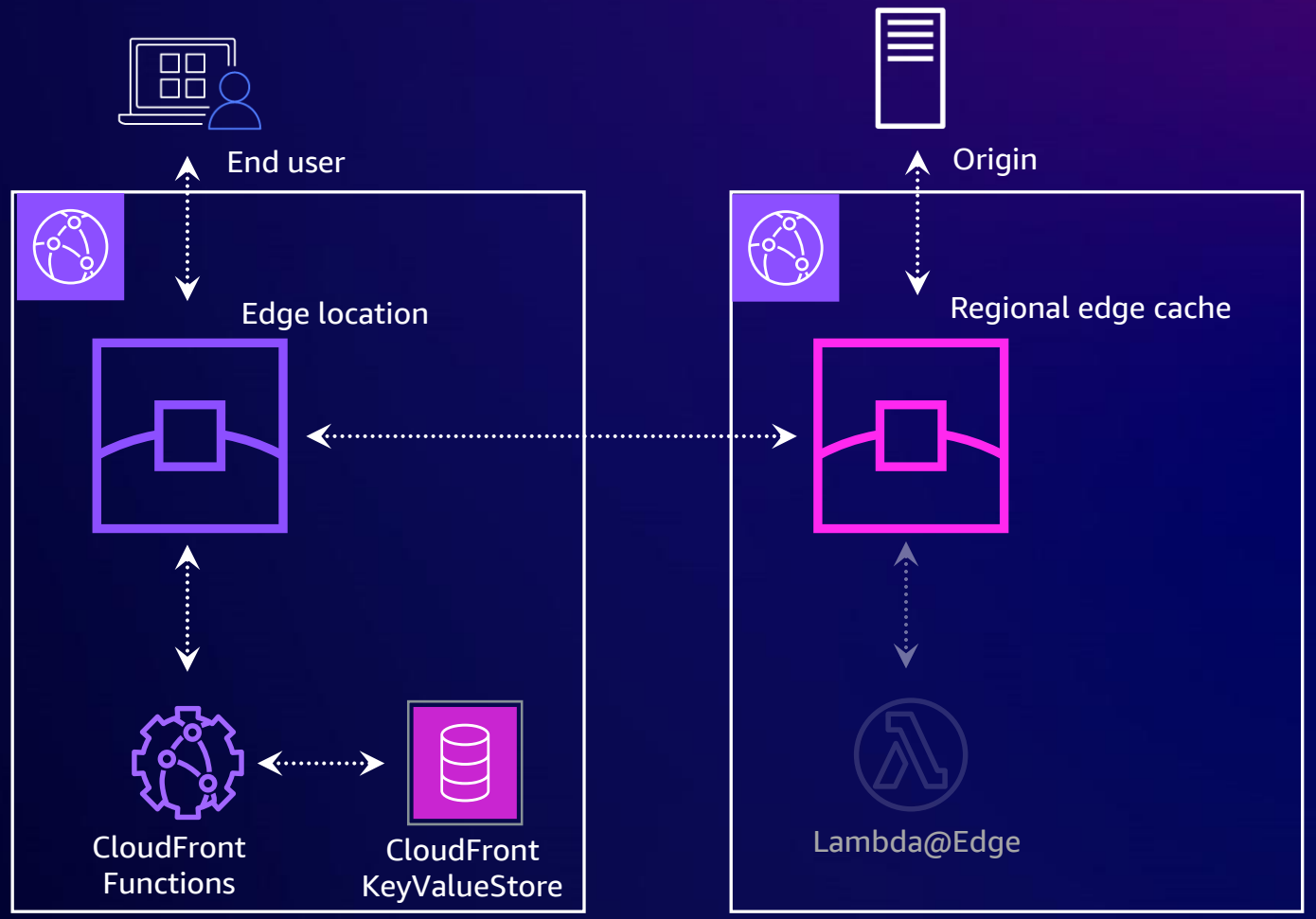
Experimentation framework

Custom origin routing

Waiting room functionality

Access authorization

Video watermarking



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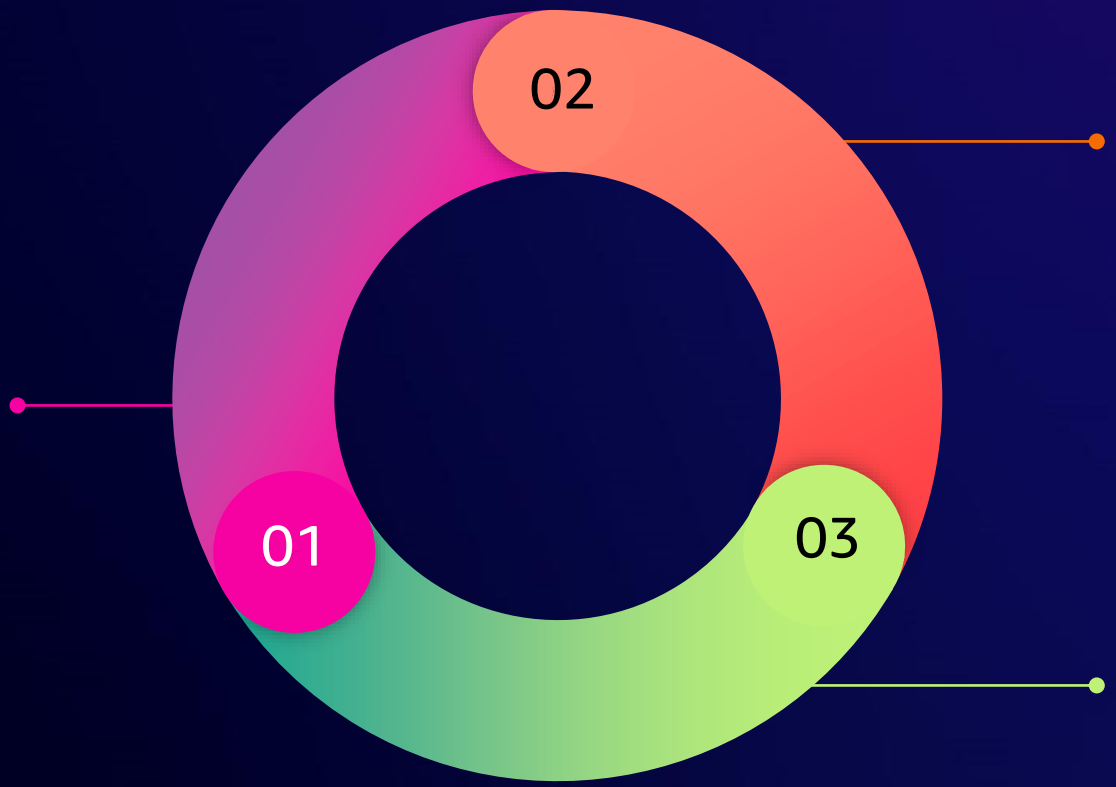
Location-based SEO strategies with CloudFront

Location-specific keywords

Example: Pizza



Help Google understand your location – Vary header

Example:

Vary: Accept-Language

Vary: User-Agent

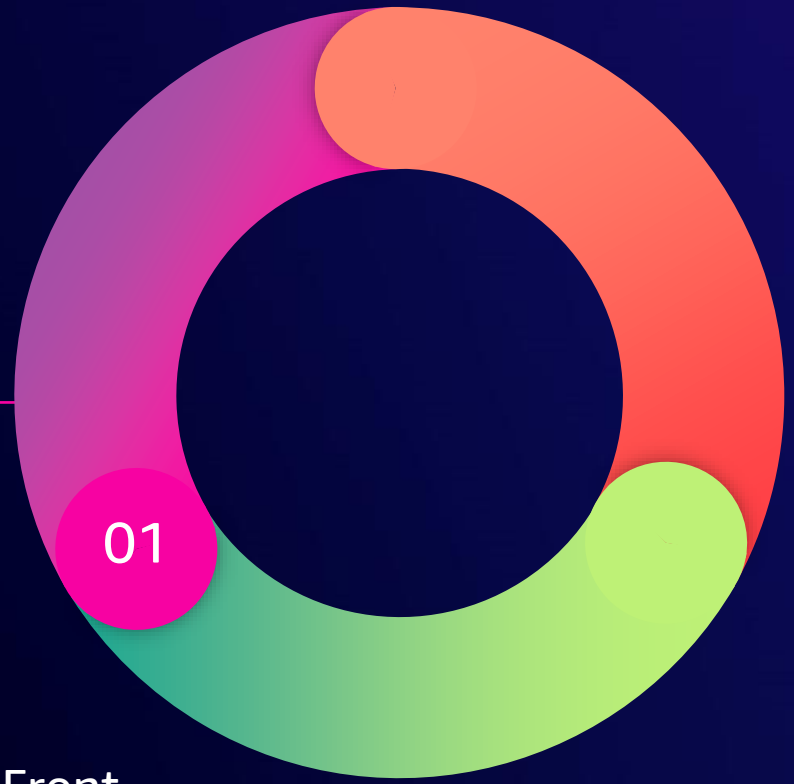
Use of Content-Language header, or add hreflang attribute in the header

Add the header on CloudFront to send it downstream

Location-based SEO strategies with CloudFront

Location-specific keywords

Example: Pizza

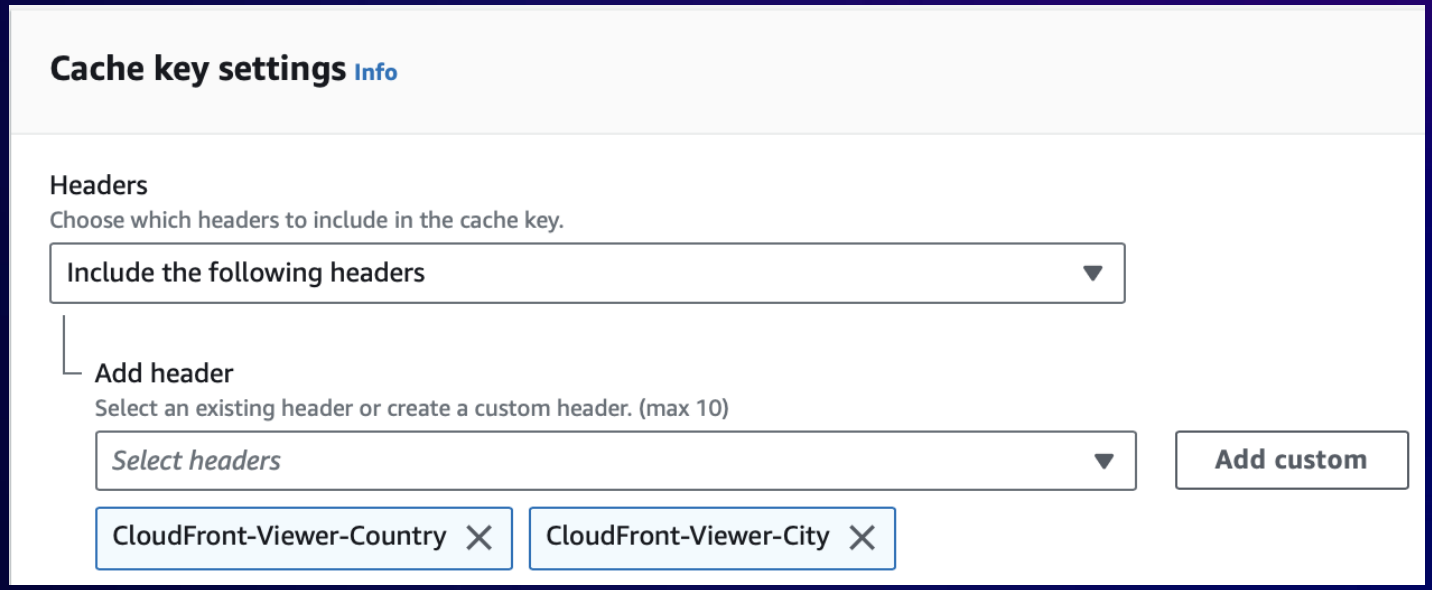


Example cache keys on CloudFront

- EPW2ABCDEF12345-HOSTNAME.cloudfront.net/pizzarestaurants?city=lasvegas&country=US
- EPW2ABCDEF12345-HOSTNAME.cloudfront.net/pizzarestaurants?city=newyork&country=US

Building caching strategies with cache policies

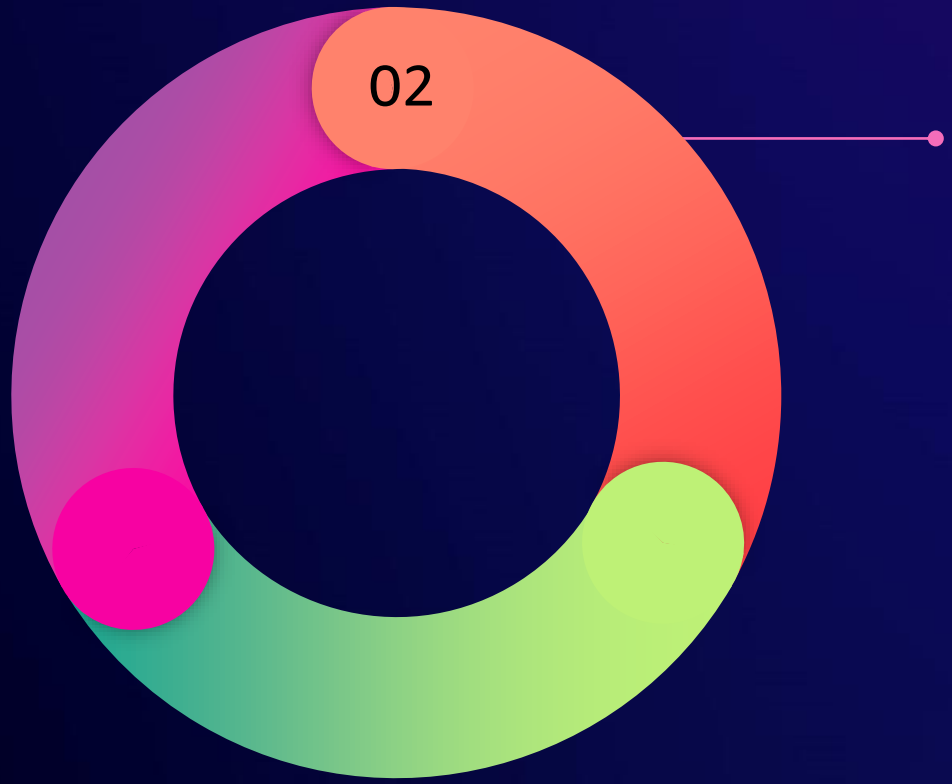
- Conditionally cache the base page, based on the attributes of the incoming request
- Provides several built-in cache policy templates for common use cases



Forking the cache based on viewer device and location

Location-based SEO strategies with CloudFront

SCAN ME



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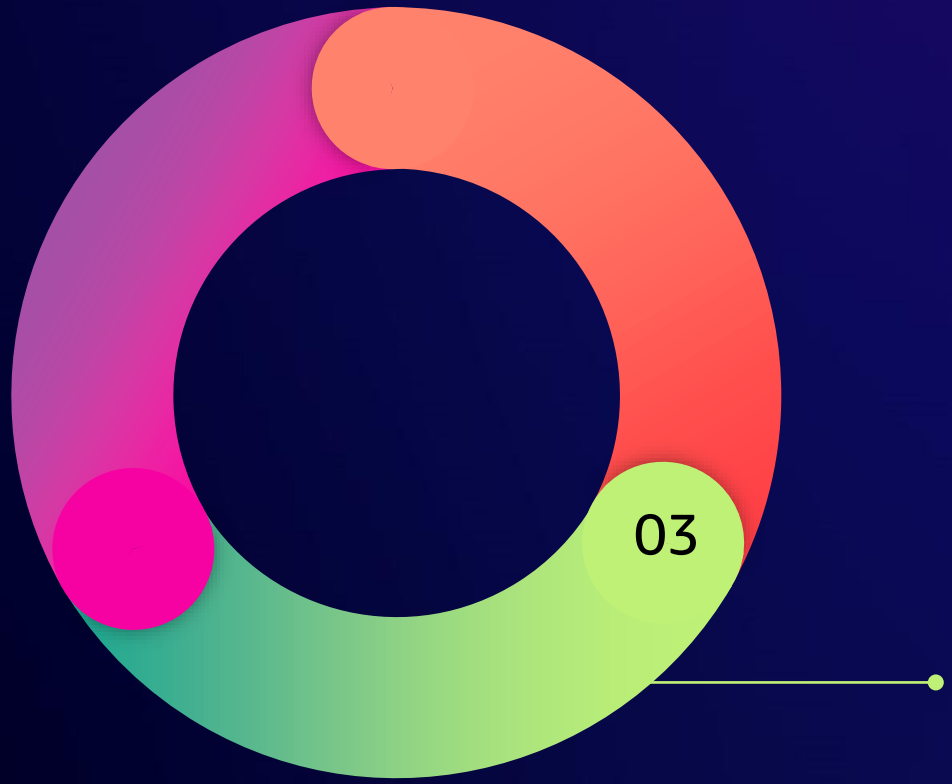
Location-based SEO strategies with CloudFront

hreflang

HTML attribute used to specify the language and geographical targeting of a webpage



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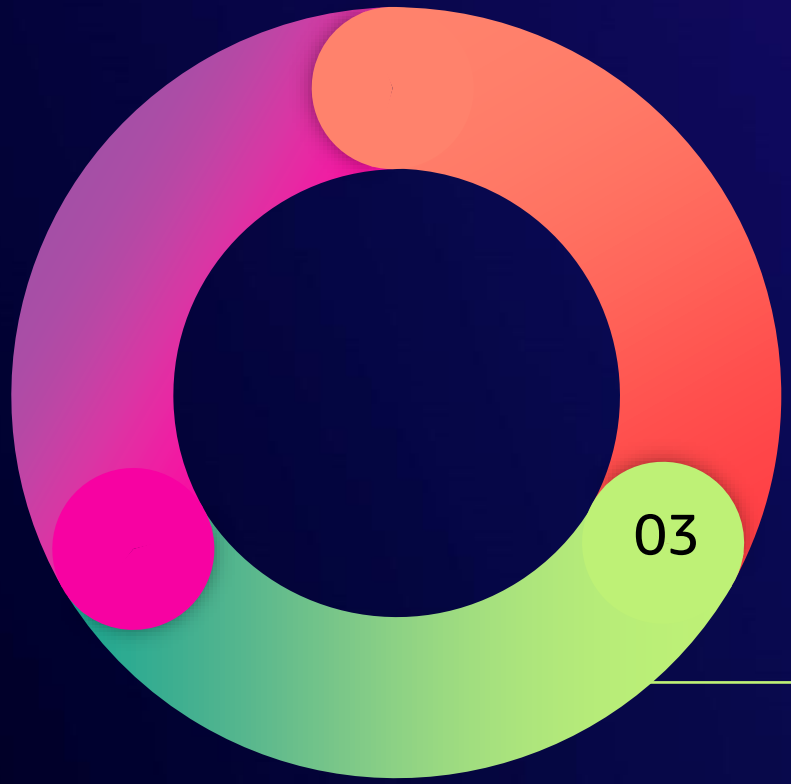


Use of Content-Language header, or add hreflang attribute in the header

Add the header on CloudFront to send it downstream

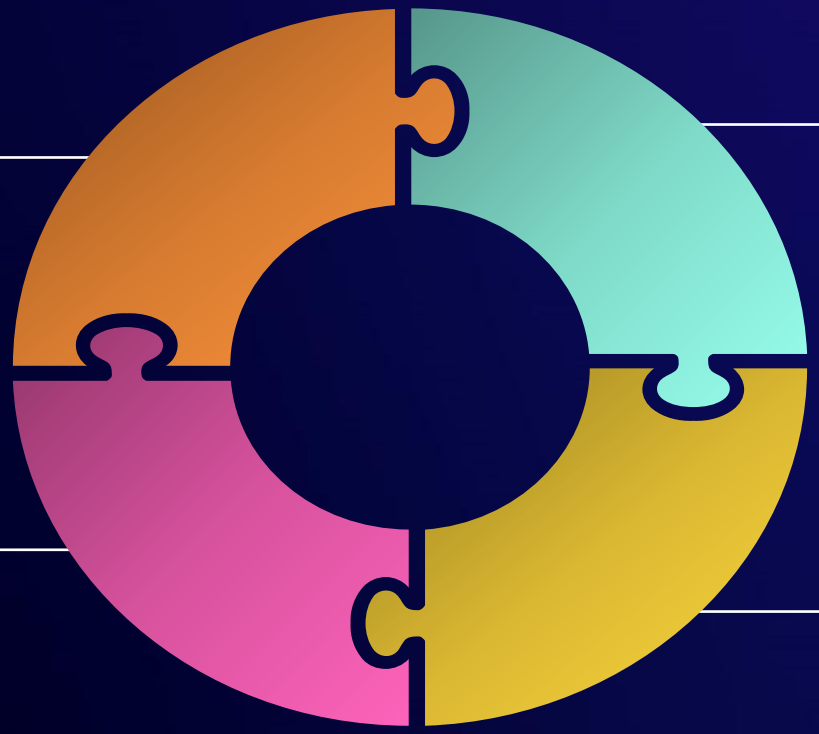
Mobile SEO and how it differs from desktop

User location

Example: Pizza

Users are “on the move”

Keep your mobile advertisements and landing page simple



Screen size

Easy-to-read font size, understanding how user behavior varies based on screen size

Product selling strategy: High-value products

A complex buying decision with a high degree of financial and emotional risk is less likely to happen on a mobile device

Use CloudFront detection headers with cache policies and Lambda@Edge

01 | User location

02 | Screen size

03 | Product-selling strategy: High-value products

04 | Users are “on the move”

Cloudfront-Is-Android-Viewer
Cloudfront-Is-Desktop-Viewer
Cloudfront-Is-Ios-Viewer
Cloudfront-Is-Mobile-Viewer
Cloudfront-Is-Smarttv-Viewer
Cloudfront-Is-Tablet-Viewer

CloudFront-Viewer-Country-Name
CloudFront-Viewer-Country-Region –Name
CloudFront-Viewer-City
CloudFront-Viewer-Postal-Code
CloudFront-Viewer-Latitude
CloudFront-Viewer-Longitude

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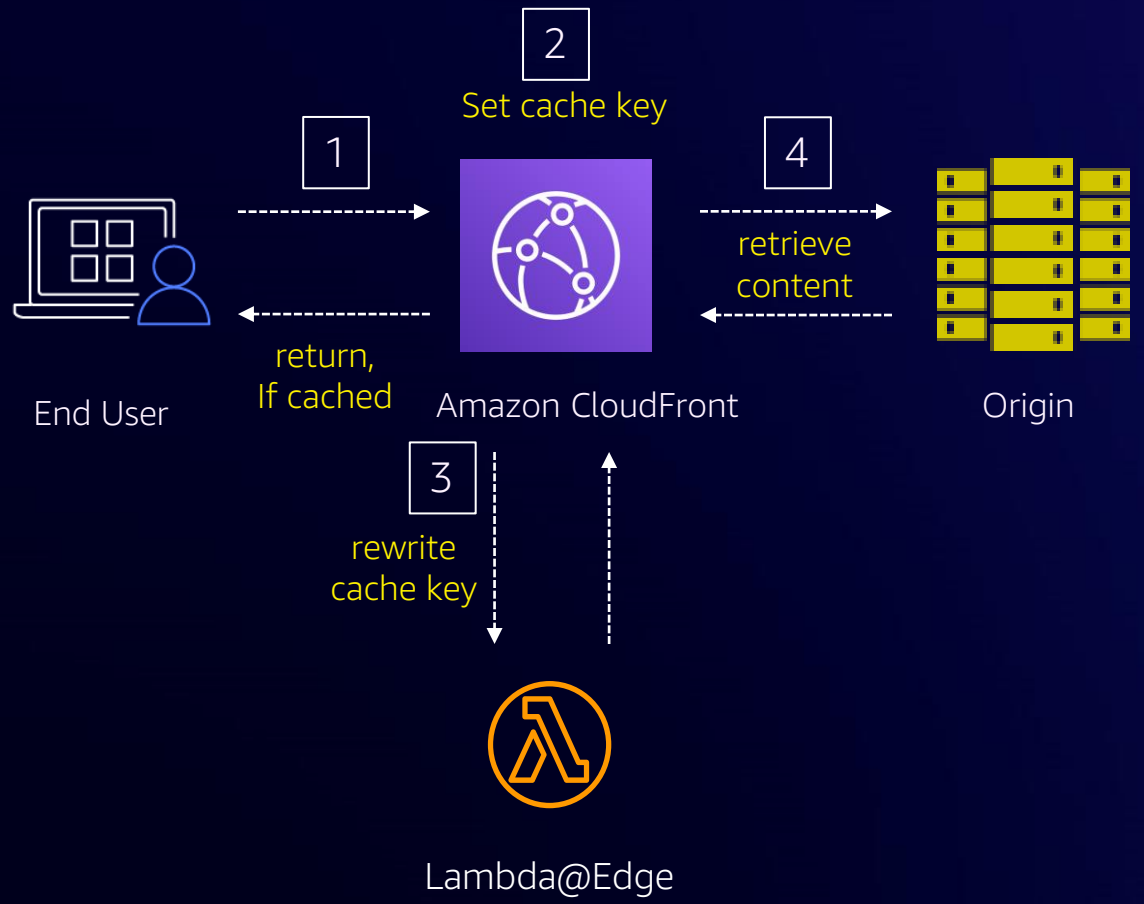

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CloudFront-Viewer-Country-Name
CloudFront-Viewer-Country-Region –Name
CloudFront-Viewer-City
CloudFront-Viewer-Postal-Code
CloudFront-Viewer-Latitude
CloudFront-Viewer-Longitude

Keyword targeting by domain name

Request headers

Host: blackfriday.amazon.com

Method: GET

Path: /

Request headers

Status: 301

Location:
https://www.amazon.com/blackfriday

Date: Thu, 27 Apr 2023 06:04:13 GMT

Content-type: text/html

Keyword targeting by URLs with Lambda@Edge

How can CloudFront help you optimize SEO?

01 | Improving site speed

02 | Crawling and indexing

03 | Robots.txt for crawlers

04 | Handling errors and redirects

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Robots.txt for crawlers

- Use Amazon S3 and CloudFront to serve your robots.txt file efficiently and reduce origin server load
- Specify rules for search engine crawlers using the user-agent directive; use the wildcard (*) to apply rules to all crawlers
- Keep your robots.txt file up to date

```
User-agent: *
Disallow: /admin/
Disallow: /login/
Disallow: /checkout/
Disallow: /cart/
Disallow: /search/
Disallow: /error/
Disallow: /contact-us/
Disallow: /thank-you/
Disallow: /privacy-policy/
Disallow: /terms-of-use/
Disallow: /unsubscribe/
Disallow: /subscribe/
Disallow: /user-account/
Disallow: /wishlist/
Disallow: /compare/
Disallow: /reviews/
Disallow: /feedback/
Disallow: /forum/
Disallow: /faq/
Disallow: /category/
Disallow: /tag/
Disallow: /author/
Disallow: /page/
Disallow: /archive/
Disallow: /feed/
Allow: /$
Sitemap: https://example.com/sitemap.xml
```

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Handling errors on the website

HTTP STATUS CODES

- HTTP 404: Page Not Found
- HTTP 503: Temporary server error + “Retry-After” header
- HTTP 301: Search engines pass the old page's ranking to the new one

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Response headers

HTTP/2 503

Date: Sat, 20 Oct 2023 14:00:02 GMT

access-control-allow-origin: *

content-type: text/html

cache-control: max-age=0, must-revalidate, no-cache, no-store

Retry-After: Sat, 20 Oct 2023 15:30:00 GMT

connection: close

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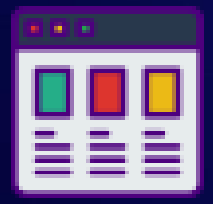

Old webpage

HTTP 301 redirect

1. Loses some percentage of page rank
2. Pass old page’s ranking to the new

New webpage

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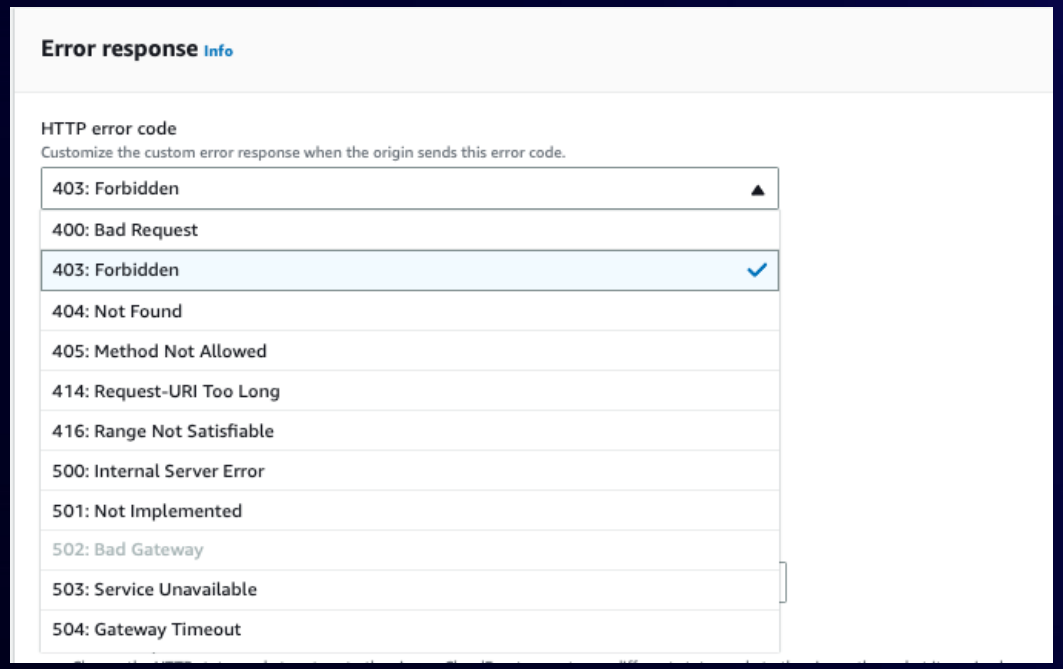
CUSTOM ERROR PAGES

- Retain users on the website, and prevent users from bouncing
- Serving a custom error page with HTTP 200 response can prevent search engines from indexing the error page

Serving custom error pages on CloudFront



- Serve a friendly error page to the end users to protect the user experience and reduce your bounce rate
- Create a custom error response page in the CloudFront console for the HTTP error response codes

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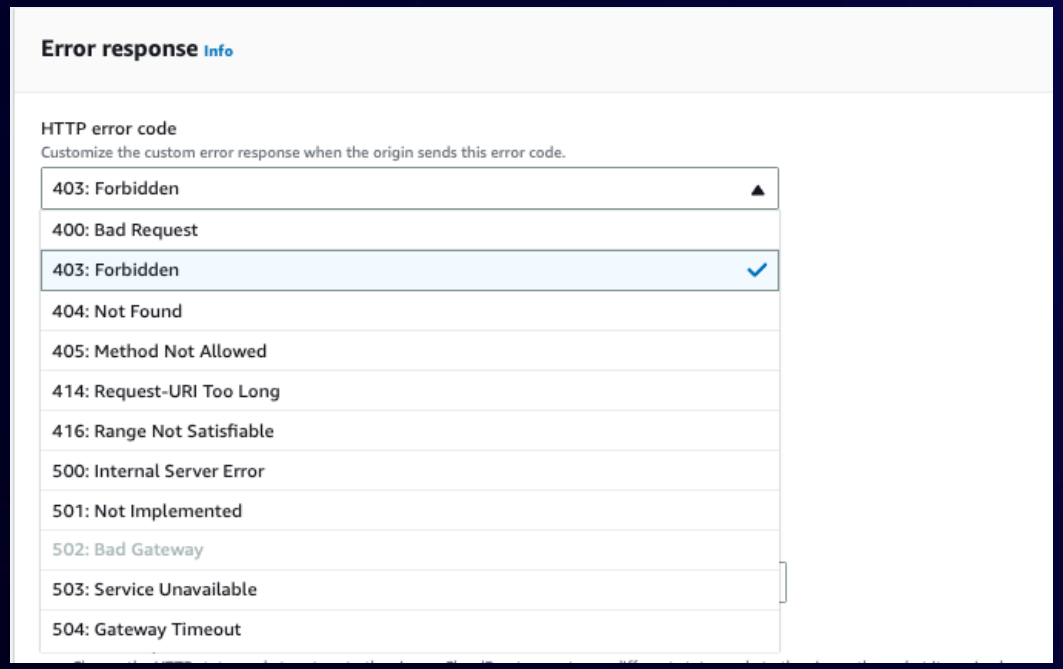

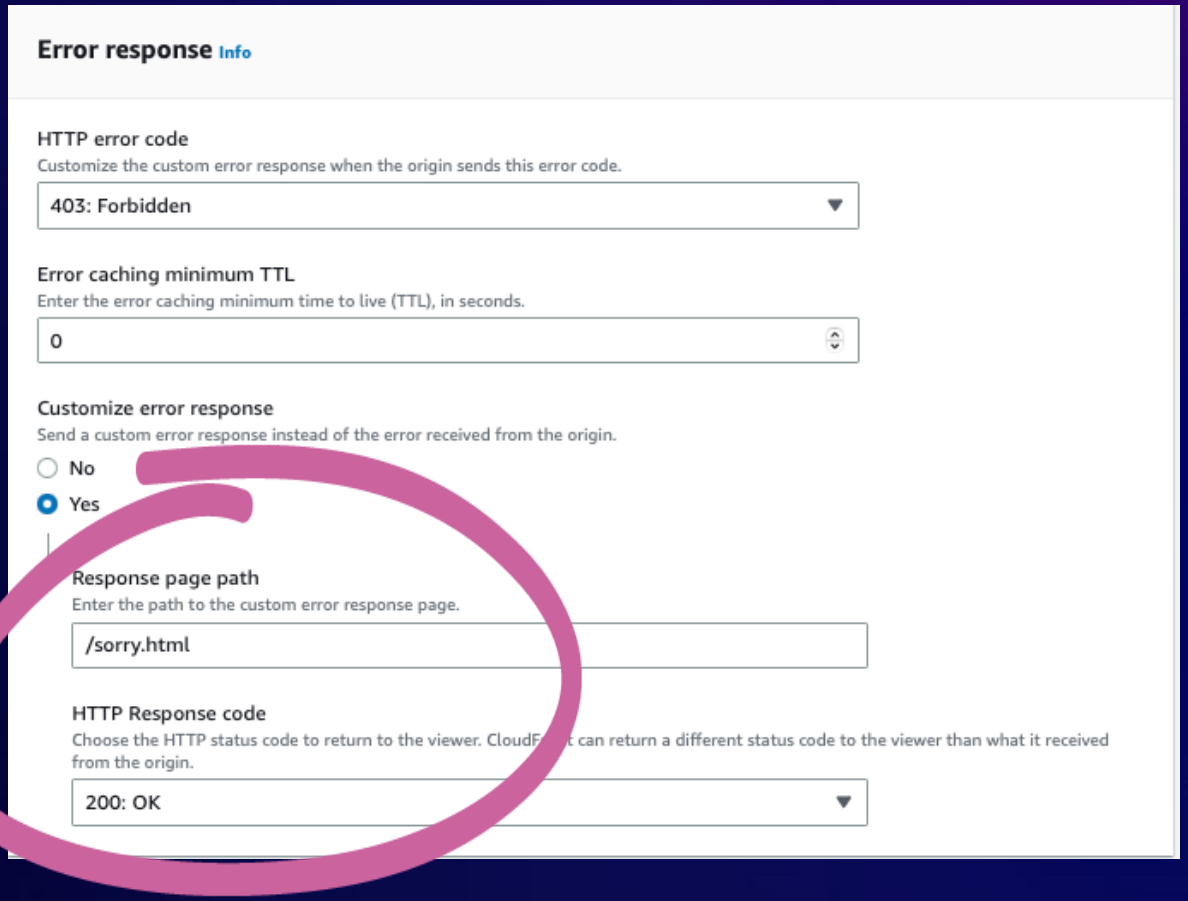

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DESCRIPTIVE ERROR MESSAGES

- Helps users to understand the error, and take actions to resolve it

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FIX BROKEN LINKS

- Broken links can negatively impact user experience and website authority
- Regularly monitor CloudFront logs to identify and fix recurring errors

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Managing multiregional and multilingual sites

- A multilingual website provides content in more than one language
- A multiregional website targets visitors in different regions or countries

To geotarget your site on Google

Site level	Page/directory level
Use locale-specific URLs for your site or page	Use hreflang or sitemaps to tell Google which pages apply to which locations or languages
Recommendations	**Recommendations**
Country-specific domain: example.de	Subdirectories with gTLD: example.com/us/

Considerations to decide your domain strategy

WHAT WE SEE

- Trend of websites consolidating their websites into a single .com domain
- Retiring device-specific websites (m., t.)

WHY

- Helps build a strong, authoritative presence on that domain

- Simplifies your CloudFront setup
  - SSL certificate handling
  - Easier CDN management

CONSIDERATIONS

- Register a country code top-level domain (.cn) for China

Site migration and its impact on SEO

- Changing the URL structure
- Making significant changes to the content
- Site migrations can impact site speed
- Technical SEO factors, such as meta tags, structured data, and XML sitemaps
- Changes to site architecture
    1. Navigation or internal linking structure
    2. Making significant changes to the content of the website
    3. CDN change

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Key takeaways

Consider CloudFront as a part of your site architecture

1. Improved page load speed

2. Location-based SEO: Use of cache policies to fork the cache

3. Lambda@Edge: Serve device-specific content

4. Mobile SEO: Use of CloudFront detection headers and Lambda@Edge to create custom caching rules

5. Keyword targeting by domain names and URLs

6. Error handling: Send a ‘Retry-After’ header with HTTP 503, and deliver custom error page with HTTP 200

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2. Location-based SEO: Use of cache policies to fork the cache
3. Lambda@Edge: Serve device-specific content
4. Mobile SEO: Use of CloudFront detection headers and Lambda@Edge to create custom caching rules
5. Keyword targeting by domain names and URLs
6. Error handling: Send a ‘Retry-After’ header with HTTP 503, and deliver custom error page with HTTP 200

Key takeaways

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Key takeaways

	
Consider CloudFront as a part of your site architecture	No Accept-language targeting
1. Improved page load speed	No Parameter-based targeting
2. Location-based SEO: Use of cache policies to fork the cache	Don’t enforce geo-specific site access with no easy switching
3. Lambda@Edge: Serve device-specific content	Don’t make content accessible across geos by using cookies or browser settings to adjust the content language on the page
4. Mobile SEO: Use of CloudFront detection headers and Lambda@Edge to create custom caching rules	
5. Keyword targeting by domain names and URLs	
6. Error handling: Send a ‘Retry-After’ header with HTTP 503, and deliver custom error page with HTTP 200	

Q&A

Thank you!

Please complete the session survey in the mobile app

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