Migration from Akamai CDN to AWS Cloudfront

Introduction

This Document is about demonstrating the functionality of Cloud Front which is a CDN service like AKAMAI. We have assessed one of the site www-stg2.jetblue.com, we have gone ahead and mapped some of the functionality from AKAMAI to AWS CloudFront (CF).

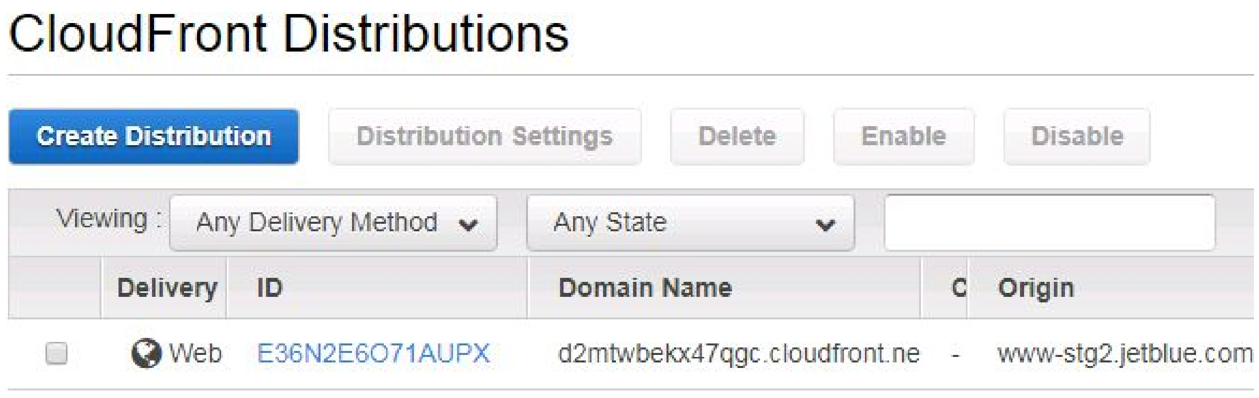
AWS cloudFront is webservice that speeds up the distribution of web content by delivering the content from the nearest edge of the user due to which latency is reduced and performance is increased

In this process we have identified several use cases and we have started working on them. We will go through each use case and explain the outcome. We have used CF as a CDN and Lamba@Edge as event trigger and automated the whole process using Terraform and also uploaded code in bitbucket.

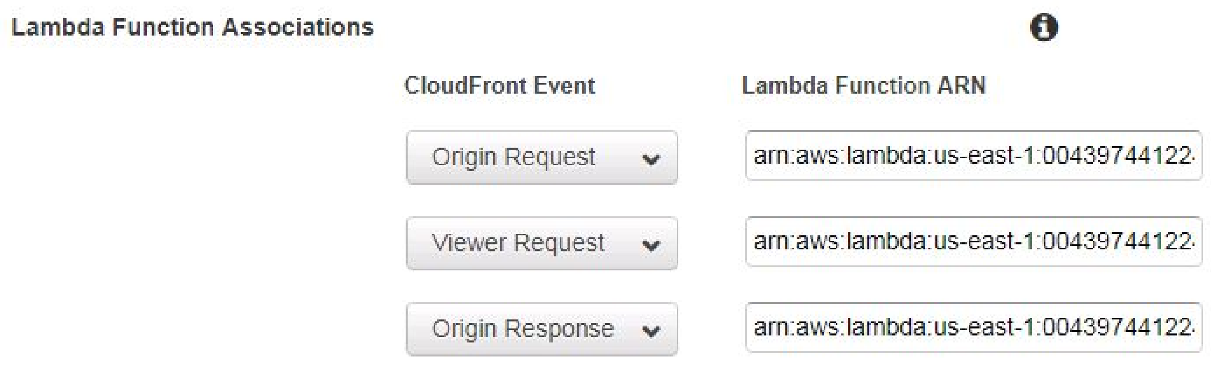
USE-CASES

AWSCF3 : As a developer I need to setup the Cloudfront setup in AWS

we have set up the coudfront in AWS with **www-stg2.jetblue.com** as a default origin.
we have triggered the lambda function on the different event triggers depending upon its functionality



	Delivery	ID	Domain Name	C	Origin
	Web	E36N2E6O71AUPX	d2mtwbekx47qgc.cloudfront.ne	-	www-stg2.jetblue.com


Lambda Function Associations

CloudFront Event	Lambda Function ARN
Origin Request	arn:aws:lambda:us-east-1:00439744122
Viewer Request	arn:aws:lambda:us-east-1:00439744122
Origin Response	arn:aws:lambda:us-east-1:00439744122

AWSCF4 : <u>As a user I need to get the response based on the device it is requested from</u>

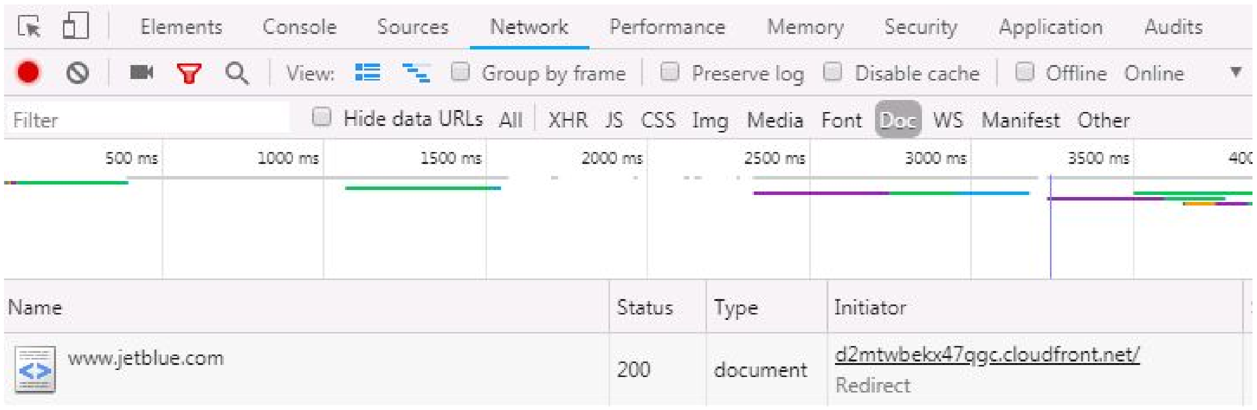
This user story demonstrates how the AWS cloudfront routes the pages based on the device request

Brief about it : When the user requests the URL it goes to AWS cloudfront distribution. AWS Cloudfront adds the whitelist headers (**CloudFront-Is-Desktop-Viewer** and **CloudFront-Is-Mobile-Viewer**) and sets the value (true / false depending upon the device from where the request is originated and the request is forwarded to lambda function, finally lambda function will extract the header values and based on the value it serves the appropriate page.

Lambda function event trigger is "**origin-request**"

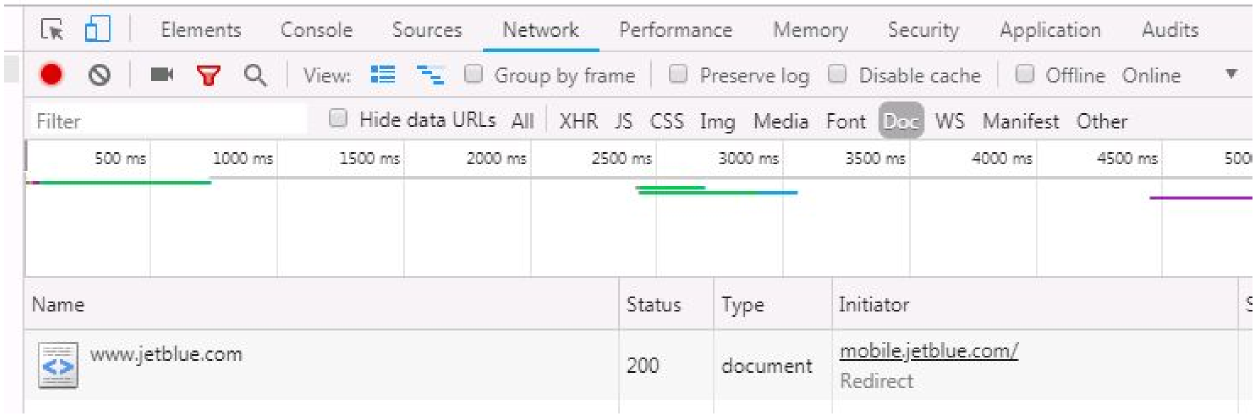
DEMO:
1.Inspect the browser set the mode to the desktop
2.Hit aws Cloudfront domain "d2mtwbekx47qgc.cloudfront.net" and see inspect --> network --> doc
3. Change device mode to mobile on the browser and repeat the step 2

When the request comes from Desktop (Desktop mode activated)



Name	Status	Type	Initiator
www.jetblue.com	200	document	d2mtwbekx47qgc.cloudfront.net/ Redirect

When the request comes from mobile (mobile mode activated)



Name	Status	Type	Initiator
www.jetblue.com	200	document	mobile.jetblue.com/ Redirect

<u>AWSCF5 : As a user I need to get the response based on the respective Geo Location</u>

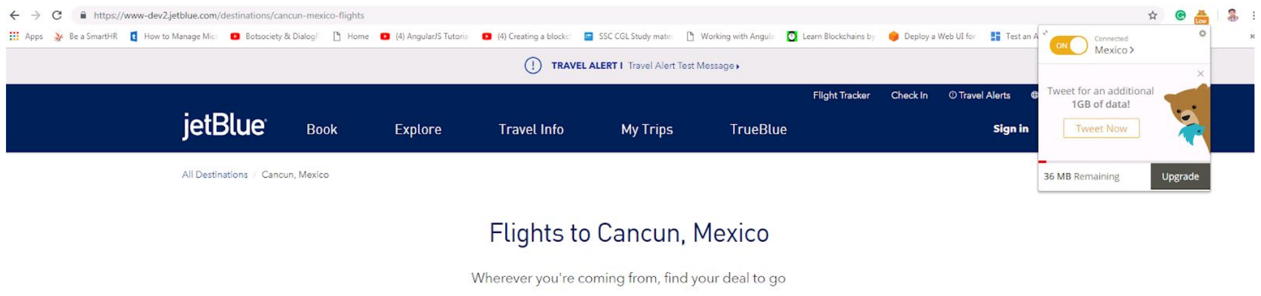
This user story demonstrates how the AWS cloudfront serves the pages based on geolocation (Mexico (MX) and Jamaica (JM))

Brief about it: When the user requests the URL it goes to AWS cloudfront distribution. AWS Cloudfront adds the whitelist headers (**CloudFront-Country-Viewer**) and sets the value as country code depending upon the country from where the request is originated and the request is forwarded to lambda function, finally lambda function will extract the header values and based on the value it serves the appropriate page.

Lambda function event trigger is "**origin-request**"

DEMO: VPN - hit from mexico (MX) this will route to Mexico destination page
d2mtwbekx47qgc.cloudfront.net/country/flight

When request comes from Mexico (VPN of Mexico Activated)
Note : Used a Chrome extension (tunnel bear) for VPN


https://www-dev2.jetblue.com/destinations/cancun-mexico-flights
TRAVEL ALERT | Travel Alert Test Message
Flight Tracker
Check In
Travel Alerts
jetBlue
Book
Explore
Travel Info
My Trips
TrueBlue
Sign in
All Destinations / Cancun, Mexico
ON
Connected
Mexico
Tweet for an additional 1GB of data!
Tweet Now
36 MB Remaining
Upgrade

Flights to Cancun, Mexico

Wherever you're coming from, find your deal to go

<u>AWSCF6 : As a Developer I need to serve the Dynamic content from Custom Origin</u>

This user story demonstrates how the specific request are routed to custom Origin (**dev.b6orgeng.net**)

Brief about it: This ticket calls the request from the users and if the request is among the specific URLs then it is routed to custom origin. Configuration of the custom origin is done in lambda function only.

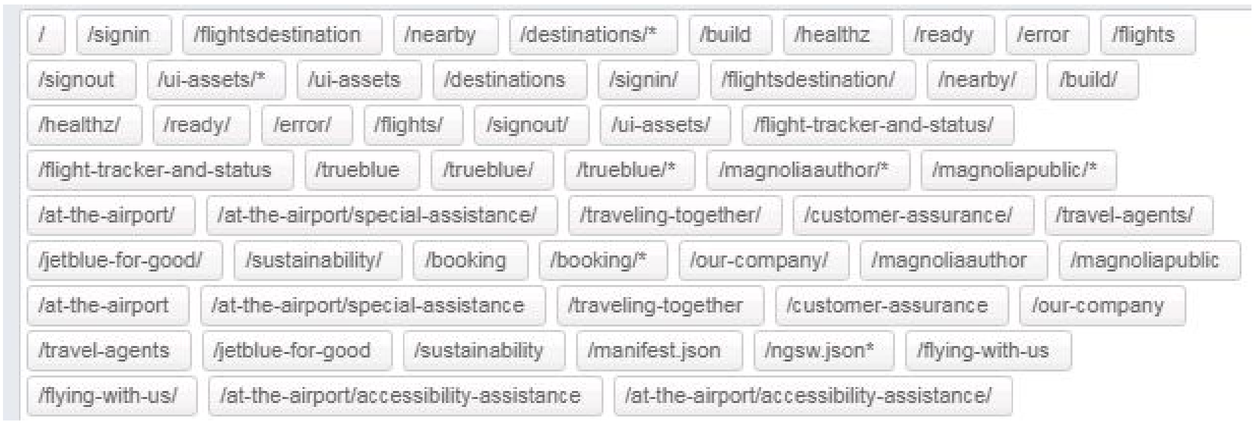
Lambda function event trigger is "**origin-request**"

Custom origin: **dev.b6orgeng.net**
default origin: **www.stg2.jetblue.com**

Demo:
Akami rules in jetblue:
dev.b6orgeng.net/signin
dev.b6orgeng.net/travel-agents

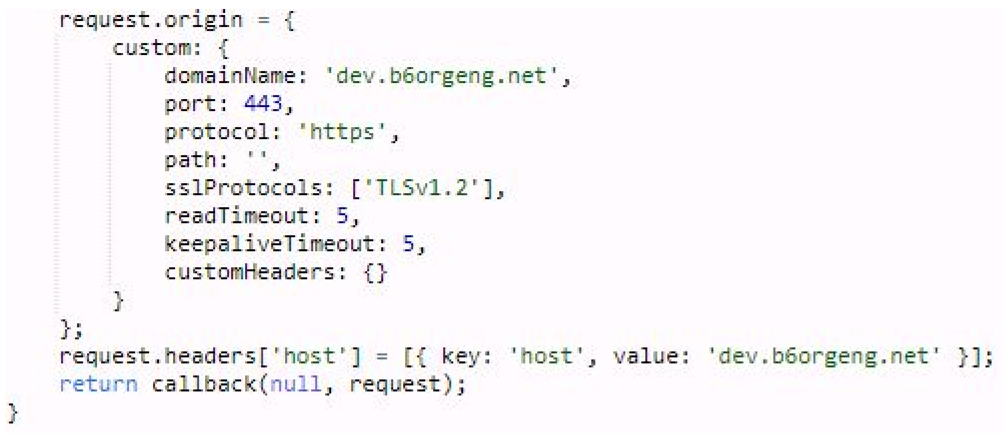
AWS cloudfront
d2mtwbekx47qgc.cloudfront.net/signin
d2mtwbekx47qgc.cloudfront.net/travel-agents

List of URIs which are redirected to the Custom Origin



```
/  /signin  /flightsdestination  /nearby  /destinations/*  /build  /healthz  /ready  /error  /flights
/signout  /ui-assets/*  /ui-assets  /destinations  /signin/  /flightsdestination/  /nearby/  /build/
/healthz/  /ready/  /error/  /flights/  /signout/  /ui-assets/  /flight-tracker-and-status/
/flight-tracker-and-status  /trueblue  /trueblue/  /trueblue/*  /magnoliaauthor/*  /magnoliapublic/*
/at-the-airport/  /at-the-airport/special-assistance/  /traveling-together/  /customer-assurance/  /travel-agents/
/jetblue-for-good/  /sustainability/  /booking  /booking/*  /our-company/  /magnoliaauthor  /magnoliapublic
/at-the-airport  /at-the-airport/special-assistance  /traveling-together  /customer-assurance  /our-company
/travel-agents  /jetblue-for-good  /sustainability  /manifest.json  /ngsw.json*  /flying-with-us
/flying-with-us/  /at-the-airport/accessibility-assistance  /at-the-airport/accessibility-assistance/
```

Lambda code snippet showing configuration of the Custom origin (dev.b6orgeng.net)



```
    request.origin = {
        custom: {
            domainName: 'dev.b6orgeng.net',
            port: 443,
            protocol: 'https',
            path: '',
            sslProtocols: ['TLSv1.2'],
            readTimeout: 5,
            keepaliveTimeout: 5,
            customHeaders: {}
        }
    };
    request.headers['host'] = [{ key: 'host', value: 'dev.b6orgeng.net' }];
    return callback(null, request);
}
```

<u>AWSCF7 : As a Developer I need to redirect HTTP requests to HTTPS</u>

This user story is to demonstrates how redirecting is happening and HTTP protocol is redirected to HTTPS protocol.

Brief about it : We have sourced that from "Redirection for Digital 2020" rules from AKAMAI luna dashboard and we have implemented the same redirection rules in AWS Cloudfront by using lambda function with redirection from HTTP to HTTPS.

We have mapped all the rules in lambda function based on the conditions.

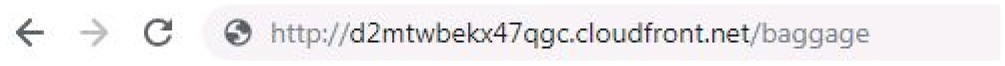
Lambda function event trigger is "**viewer-request**"

Demo :

Requested URL :
http://d2mtwbekx47qgc.cloudfront.net/corporate-social-responsibility/
http://d2mtwbekx47qgc.cloudfront.net/baggage
http://d2mtwbekx47qgc.cloudfront.net/congrats

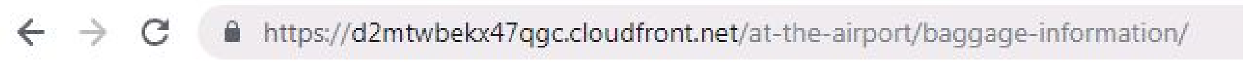
Response URL :
https://d2mtwbekx47qgc.cloudfront.net/corporate-social-responsibility/
https://d2mtwbekx47qgc.cloudfront.net/baggage
https://d2mtwbekx47qgc.cloudfront.net/congrats

Requested URL:



http://d2mtwbekx47qgc.cloudfront.net/baggage

Response URL



https://d2mtwbekx47qgc.cloudfront.net/at-the-airport/baggage-information/

AWSCF8 : As a Developer I need to add additional header in the response for security purpose

This user story is to demonstrates how additional headers are added in the response for the security .

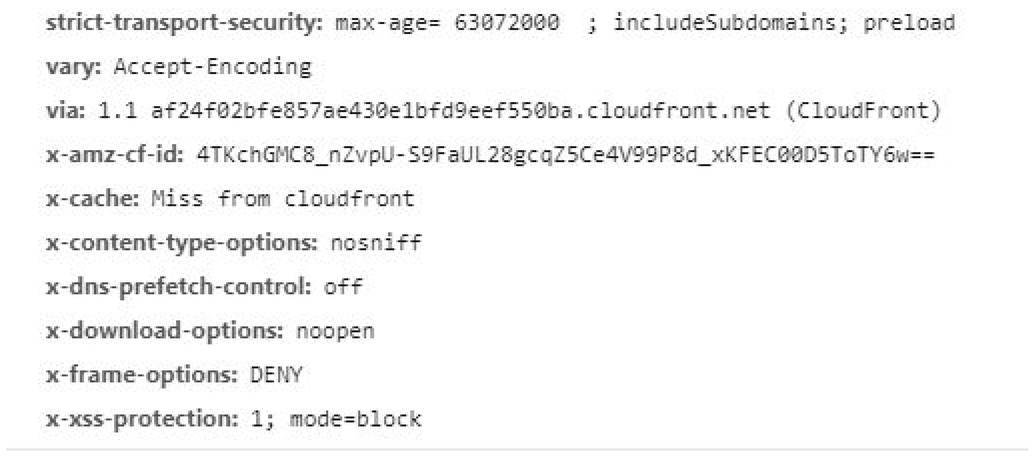
Brief about it: This ticket calls the request from the users and Cloudfront forwards the request to the Lambda function on origin-response as an event trigger which adds the headers in the response, which improves the security and privacy for a website and the response is securely delivered to the viewer.

Lambda function event trigger is "**origin-response**"

DEMO: inspect the browser and go to network and doc
http://d2mtwbekx47qgc.cloudfront.net/our-company/

You can find the headers in the response header section

Additional headers added in the response by lambda function



```
strict-transport-security: max-age= 63072000  ; includeSubdomains; preload
vary: Accept-Encoding
via: 1.1 af24f02bfe857ae430e1bfd9eef550ba.cloudfront.net (CloudFront)
x-amz-cf-id: 4TKchGMC8_nZvpU-S9FaUL28gcqZ5Ce4V99P8d_xKFEC00D5ToTY6w==
x-cache: Miss from cloudfront
x-content-type-options: nosniff
x-dns-prefetch-control: off
x-download-options: noopen
x-frame-options: DENY
x-xss-protection: 1; mode=block
```

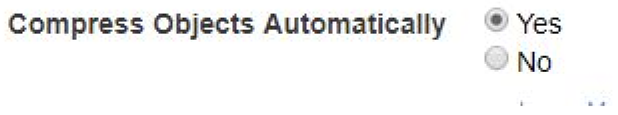
AWSCF9 : As a Developer I need to send the compressed Content in the response

This user story is to demonstrates how the AWS CF serves the content in compressed form

Brief about it: This ticket calls the request from the users for any content and cloudfront will process the request and serves objects in compressed form in the gzip format.

DEMO: Inspect --> Network--> All-->size
d2mtwbekx47qgc.cloudfront.net/baggage

AWS Cloudfront comes with a inbuilt feature of compression, we have to only set the value to true so that all the web content delivered to the user is in compressed format



Compress Objects Automatically [✓ Yes] No

AWSCF10 : As a Developer I need to rewrite the URL so that the end user finds it user friendly

Need to rewrite the URL, so that the end user will have a user friendly url for access. In viewer request as an event trigger we have to map all the user friendly urls with the original URLs.

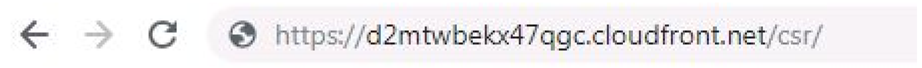
Lambda function event trigger is "**viewer-request**"

DEMO:

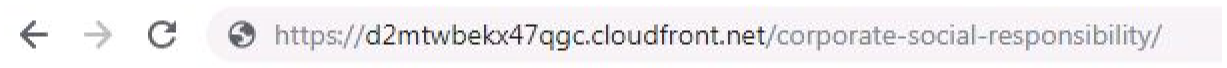
d2mtwbekx47qgc.cloudfront.net/csr/ (Original route is d2mtwbekx47qgc.cloudfront.net/corporate-social-responsibility/) based on the Redirection rule this will route to "/jetblue-for-good" path.

d2mtwbekx47qgc.cloudfront.net/csr/military/ (Original route is http://d2mtwbekx47qgc.cloudfront.net/jetblue-for-good/military) based on the Redirection rule this will route to "/jetblue-for-good/military/" path.

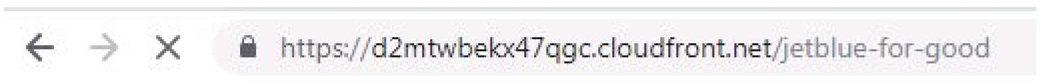
Requested URL :


https://d2mtwbekx47qgc.cloudfront.net/csr/

OR


https://d2mtwbekx47qgc.cloudfront.net/corporate-social-responsibility/

Response URL :


https://d2mtwbekx47qgc.cloudfront.net/jetblue-for-good