Content Delivery Network

Version 0.95

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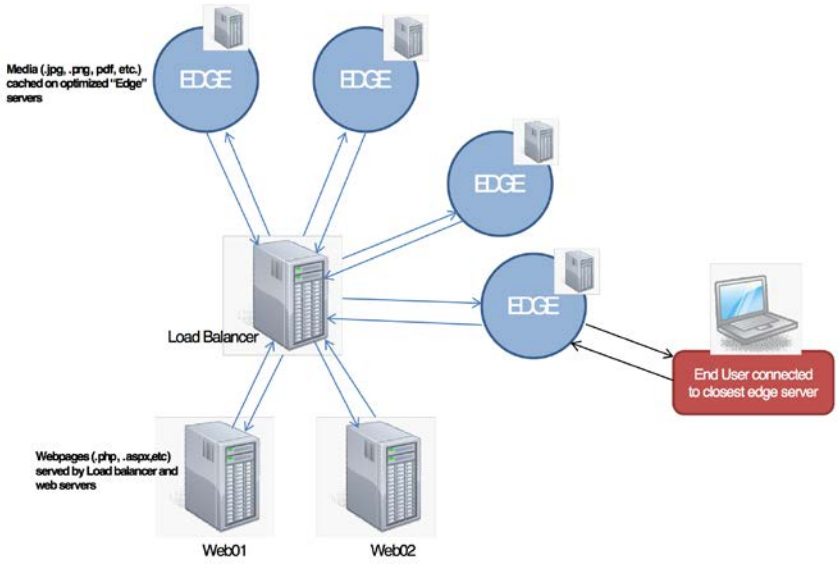
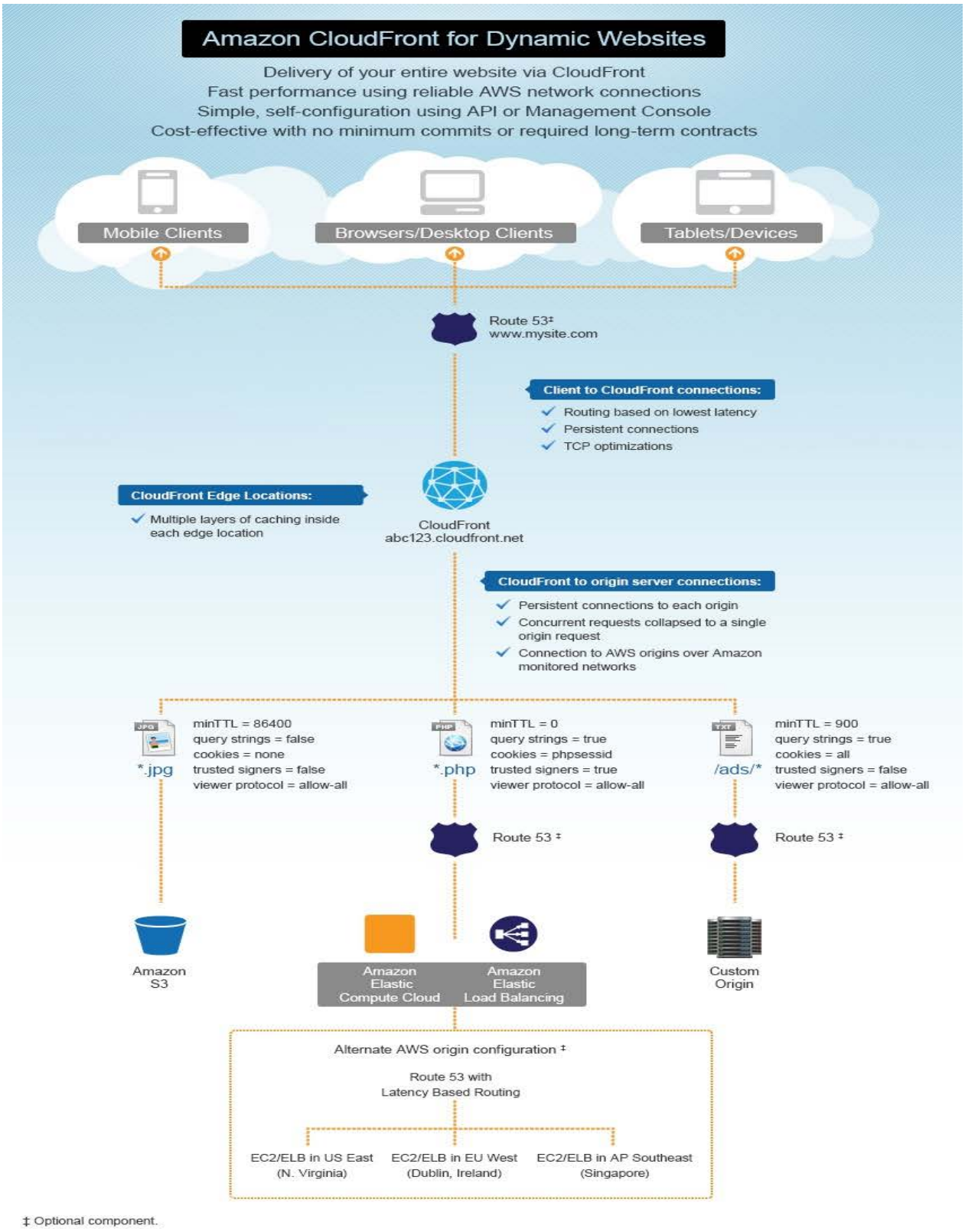
Amazon Cloudfront Content Delivery Network (CDN)

A CDN is a large distributed system of servers are deployed in data centers around the world, often over multiple backbones. Their key purpose is to serve the end user with the best experience possible by lowering latency and increasing performance and more noticeably to the end user, improving page load times. This is done by caching static content in locations closer to the user.

Amazon Cloudfront CDN provides a seamless integration with all of its other Web Services.





‡ Optional component.

Cloudfront CDN Benefits

- Fast – CDN uses “edges” around the world to cache static content close to end users and to provide lower latency and higher sustained data transfer rates in a scalable manner.
- Simple to use – Amazons AWS management console allows for easy setup.
- Designed to work with other Amazon Web Services – Since we are already using Amazon’s EC2 servers behind an Elastic Load Balancer, we can use Cloudfront to deliver the client’s entire site.
- Cost-Effective – Pay for the content you deliver.
- Flexible – The service automatically adjusts when server load increases and decreases.
- Reliable – Built with Amazon’s highly reliable infrastructure and with edges around the world, end users are routed to the closest available edge.
- Global – As mentioned before, edge locations can be setup around the world.
- Safe - Better protection from DoS attacks on origin server.

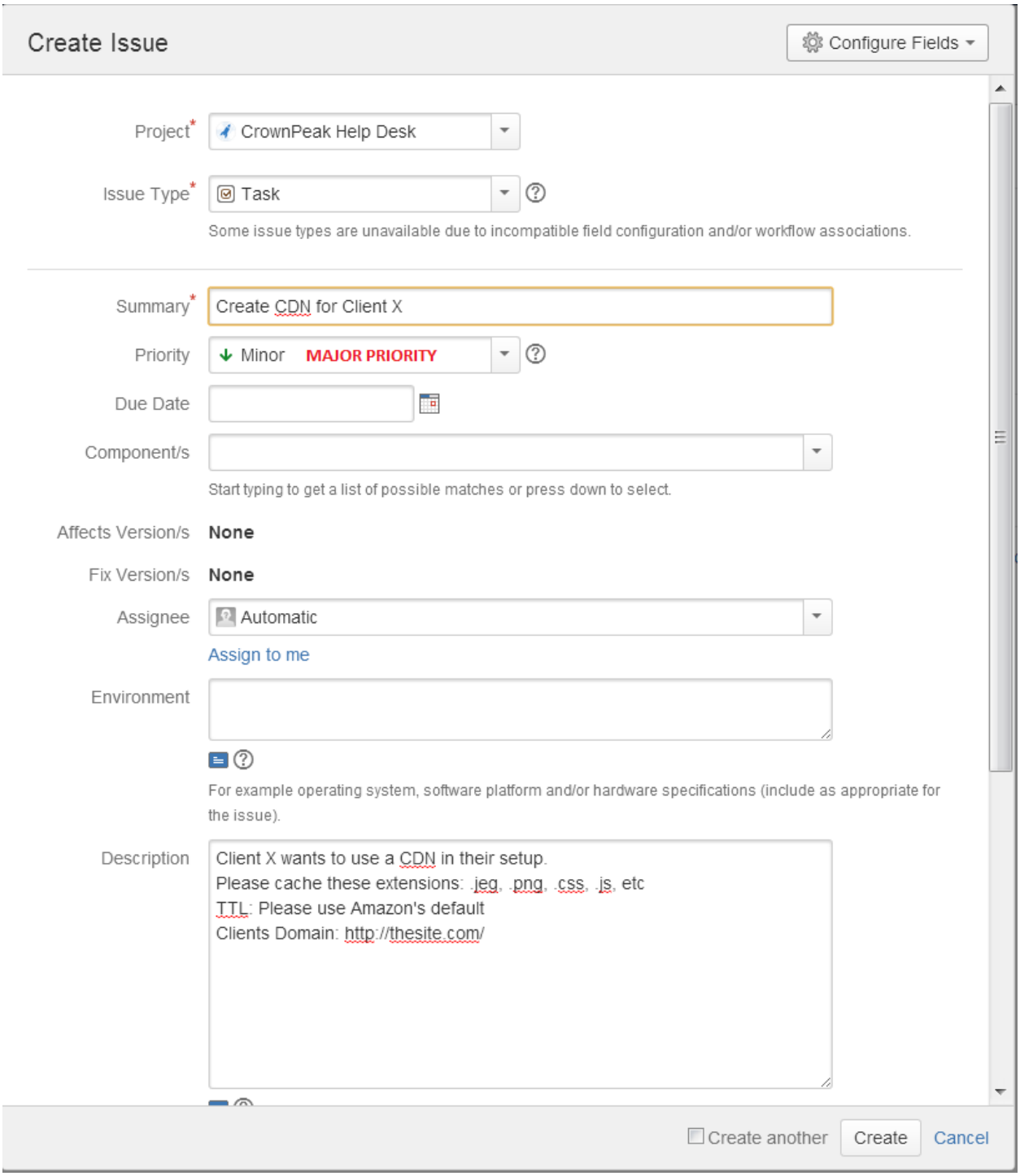
Configuring Cloudfront CDN

CrownPeak Professional Services completes the following:

- Create a Jira task and assign it to CrownPeak Help Desk providing the clients domain.
- Provide in the ticket what static files the client would like cached. (i.e. jpg, png, css, js, etc) In most instances, all static files would be cached. For more detailed instances, we may want to define this by folder. (It maybe a best practice when setting up the CMS, that we include one folder that houses all static content)
- Decide on a specific TTL or use Amazon's default for invaliding the cache. The default TTL is 24 hours. Invalidating the cache more frequently will decrease performance. Clients should only cache static content.
- Static content should be defined as content that does not get updated on a regular basis. Dynamic content, or content that is edited on a regular basis should be not be included.

Some other basic questions for customers are:

- Do alternate domains exist (can usually be found in the server's Web bindings)?
- Is it http or https (what SSL certificate is used, including private server.Key)?
- If https, will sessions be managed?
- What regional coverage do they want? Think about cost?
- Will they want to have static content to be staged in s3 buckets?



CrownPeak Hosting requires one week turnaround time.
IT creates all CNAMEs that will map to edge locations.
There will be 1 Cloudfront per site that will contain all CNAMEs mappings.
IT configures all defined static content served by Cloudfront. (.jpg, .png, .js, .css, etc) Static content will need to be defined by the client prior to setup. If specific folder need different rules on what files should be cached, this needs to be defined prior to setup as well.

Using Cloudfront CDN

Within Amazon's Cloudfront, CrownPeak IT will be able to test performance. Cloudfront provides detailed reporting and graphical information inside AWS.
Developers will not have to change the path to access the cached static files. Amazon does this automatically.
The end user will not have to do anything differently.

Costs

Pricing details can be found here: *http://aws.amazon.com/cloudfront/pricing/*

Notes

Client's changing content that is cached on the edge servers will not see their updates until the next TTL is reached. If the client is using the default 24 hours, their pages will not see the updates until then. CDN is made for static content and should be treated that way.

CDN's can only be setup on Client's that are on Amazon web servers. Clients who are currently using Rackspace are not eligible for a CDN.

It may be a best practice to get the CDN setup, but not launch until the site is up and running (maybe in UAT) as developers may have issues testing during a launch if files that are cached are constantly being updated.

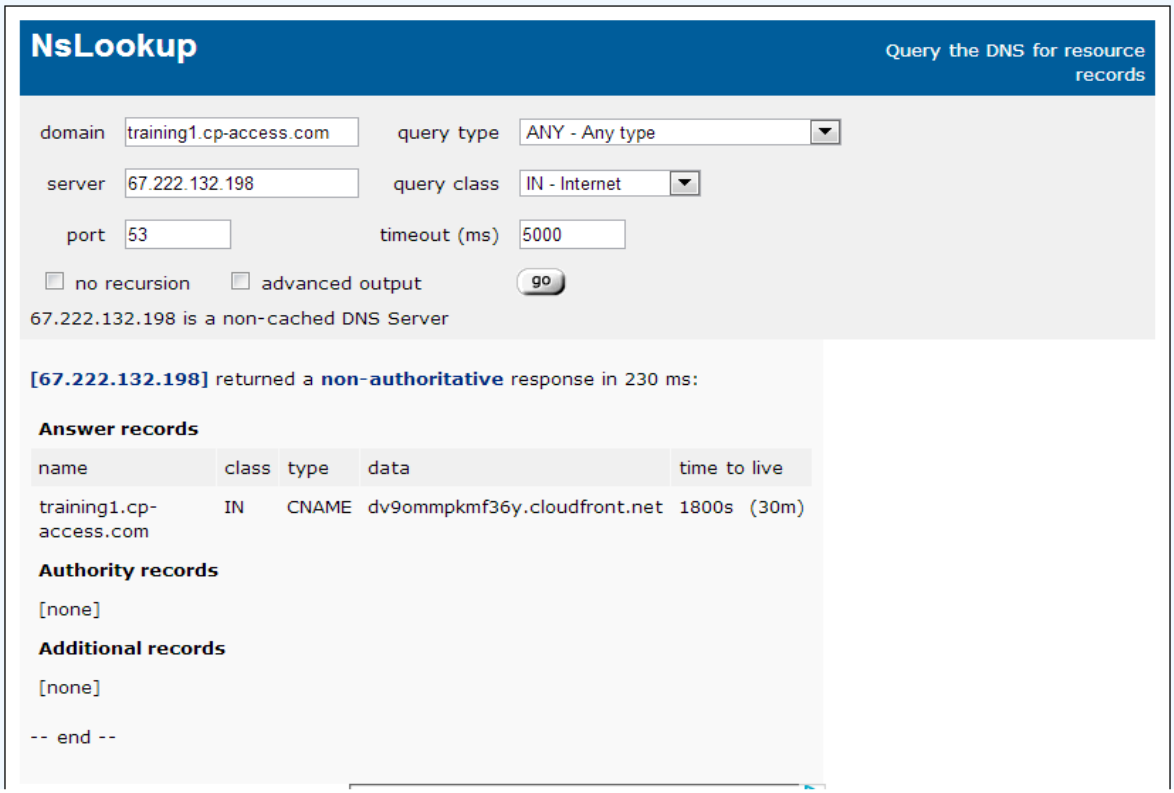
Known Issues

Not adding a '/' at the end of the URL will target the origin server, not edge server.

Redirects must use a fully qualified domain.

Testing

You can verify by running a nslookup, *http://network-tools.com/nslook/,* or any other DNS query services using the domain name.



Resources

http://aws.amazon.com/cloudfront/
http://en.wikipedia.org/wiki/Content_delivery_network

Glossary

CDN – Content Delivery Network – explained in detail in document

DoS – Denial of Service - is an attempt to make a machine or network resource unavailable to its intended users. Although the means to carry out, motives for, and targets of a DoS attack may vary, it generally consists of efforts to temporarily or indefinitely interrupt or suspend services of a host connected to the Internet.

TTL – Time to Live - is a mechanism that limits the lifetime of data in a computer or network. Once the timespan has elapsed, the data is discarded.