Practical: AWS Route53

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Route53 is AWS's managed DNS service. It can respond to DNS queries based on Geolocation or IP address range, and can also be used for load balancing and failover. Here we will look at the basic usage of a single IP address.

Prerequisites and references

- AWS CAB432 login (https://d-97671c4bd0.awsapps.com/start/#/?tab=accounts)
- AWS CAB432 Route 53 hosted zones (https://us-east-1.console.aws.amazon.com/route53/v2/hostedzones?region=ap-southeast-2#)

Creating and using a domain name

Route 53 (like other DNS servers) uses the notion of *zones*, which are a set of records in a common domain. We have registered the `cab432.com` domain and have set up a zone for it. It is possible to have a zone which is a subdomain of another zone. For example, we could create a zone for `projects.cab432.com`, but we'll keep it simple and use a single zone.

In this practical you'll create a record for a subdomain of `cab432.com` which points to an EC2 instance. You can then use your subdomain name to connect to your EC2 instance.

View hosted zones and records

- Find *Route53* on the AWS console. You may see several errors. This is because of the permissions setup on oun account and is normal.
- Click on *Hosted zones* on the navigation panel on the left. This is all the domains (zones) that are managed by Route 53. We have only one.
- Click on `cab432.com`. This will show the records.
  - Each record has domain name and a record type
  - `A` records associate an IP address with the domain name
  - `CNAME` records create alias to other names (which may be in other domains)

Note: while it is possible to create a hosted zone for subdomains of `cab432.com` (or other domains), they won't function unless some additional configuration is done which we won't cover

here.

Create a new record

Before starting, copy the public DNS name for an EC2 instance that you would like to give a nice domain name to. It will be helpful if it already has a web server running on it, but this isn't required.

In the page for the `cab432.com` zone (as above), click *Create record* and fill in the following details.

- *Record name*: choose a subdomain. It can be anything suitable for general public consumption that is also a valid domain name part.
  - We'll use `bebop` in this example. The full domain name will have `.cab432.com` at the end, like `bebop.cab432.com`.
  - You subdomain can also have multiple parts like `www.bebop` (so full domain name will be `www.bebop.cab432.com`). This isn't required.
- *Record type*: choose CNAME. This creates an alias to another domain name.
- *Value*: paste in the public DNS name for your EC2 instance.

You can also use the public DNS name for other resources, such as load balancers or API gateways, which may be useful in later weeks. It is also possible to create an `A` record and fill in an IP address.

Use the new domain name

Assuming that your EC2 instance already has a web server running, you should now be able to access it from your browser using your new subdomain. You'll still have to add the port number if it is not 80. For example, `http://bebop.cab432.com:3000`. You can also use this for SSH, for example `ssh bebop.cab432.com` (adding the usual `-i` option for a key file if necessary.)

If you make a change to your record it may take some time to see the change reflected at your computer. This is because DNS uses caching in several places and it takes a while for those cached entries to expire. The default is 5 minutes.

If you stop your EC2 instance (which also happens automatically at 1am every night) then when you restart it, it will have a new public IP address. The public DNS name for your EC2 instance will also change and the `CNAME` record you created in Route53 will no longer be valid. You will need to update the `CNAME` record. There are ways around this problem (using Elastic IPs) but they are not available to students on our AWS account. This problem does not affect load balancers and such that we will use later on in the unit.

Cleaning up

If you are done with your record please delete it. You are welcome to add more records and use them during practicals and for your assessment items.

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