Nginx

Upgrade to GeoIP2 with nginx on CentOS / RHEL 7

by Danila Vershinin, May 15, 2019

GeoLite Legacy databases are discontinued as of January 2, 2019. They are not updated nor any longer available for download. Every user should move to GeoLite2 databases, a more contemporary version of the GeoLite Legacy geolocation databases which are still available in a free version updated every month.

I've recently added the GeoIP2 module to nginx extras repository (/redhat) for CentOS 6 and 7 to easily migrate from GeoIP to GeoIP2. By using *nginx-module-geoip2 package*, only a couple of lines in NGINX configuration file are needed to configure the module.

GeoIP2 module installation

If you haven't used our repository in the past, add up the release package for it first.

For CentOS / RHEL () 6, run: `yum -y install https://extras.getpagespeed.com/release-el6-latest.rpm`
For CentOS / RHEL 7, run: `yum -y install https://extras.getpagespeed.com/release-el7-latest.rpm`

Now, to install NGINX and the GeoIP2 module, you would run:

```
yum install nginx nginx-module-geoip2
```

Then add the following at the top of your `/etc/nginx/nginx.conf` :

```
load_module modules/ngx_http_geoip2_module.so;
```

If your NGINX was running, reload it to pick up on the newly added module via `service nginx reload`.

Otherwise, run NGINX service via `service nginx start`.

GeoIP2 configuration

First, you need to get a hold of the latest MaxMind GeoLite2 country/city free databases.

Life is so easy when you use our repository, eh? We provide the `geoipupdate` program that is capable of fetching those databases.

Run:

```
yum install geoipupdate geoipupdate-cron
```

Then, make sure that /etc/GeoIP.conf specifies these in order to use free databases:

```
AccountID 0
LicenseKey 000000000000
```

If you're using commercial databases, you will adjust those settings appropriately.

Now you can fetch the databases by running `geoipupdate` without arguments, once. The `geoipupdate` will download `GeoLite2-City.mmdb` and `GeoLite2-Country.mmdb` over to `/usr/share/GeoIP/` directory.

The weekly cron that was installed will take care of continuous updates of database files.

Tip: you can query IP () geolocation using command line by installing `libmaxminddb-devel` package then running geolookups like this:

```
mmdblookup --file /usr/share/GeoIP/GeoLite2-Country.mmdb --ip 8.8.8.8 country names en
```

Now it's time to tell NGINX about our GeoIP databases. In `nginx.conf`, preferably in the `http { ... }` section:

```
http {
    ...
    geoip2 /usr/share/GeoIP/GeoLite2-Country.mmdb {
        auto_reload 5m;
        $geoip2_metadata_country_build metadata build_epoch;
        # $geoip2_data_country_code default=US source=$variable_with_ip country iso_code;
        $geoip2_data_country_code default=US country iso_code;
        $geoip2_data_country_name country names en;
    }

    geoip2 /usr/share/GeoIP/GeoLite2-City.mmdb {
        $geoip2_data_city_name default=London city names en;
    }
    ....

    fastcgi_param COUNTRY_CODE $geoip2_data_country_code;
    fastcgi_param COUNTRY_NAME $geoip2_data_country_name;
    fastcgi_param CITY_NAME    $geoip2_data_city_name;
    ....
}
```

Testing GeoIP2 country and city fetching

The easiest way to confirm that nginx is fetching all GeoIP information is using a temporary header on any `server { }`. Using Headers-More module to avoid common configuration pitfalls:

```
more_set_headers "X-Country: $geoip2_data_country_name";
```

If you're not using Headers-More module already, stick to standard directive:

```
add_header X-Country $geoip2_data_country_name;
```

Then check headers via `curl -IL https://your.example.com/`. This should yield, among other headers:

```
x-country: Your Country Name
```

Block countries from accessing your website

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Now that GeoIP2 module is confirmed to work, we can restrict a vhost to specific countries. Let's restrict public directory of this vhost to only visitors from Canada and USA:

```
map $geoip2_data_country_code $allowed_country {
  default no;
  CA yes;
  US yes;
}
location / {
  if ($allowed_country = no) {
    return 403;
  }
}
```
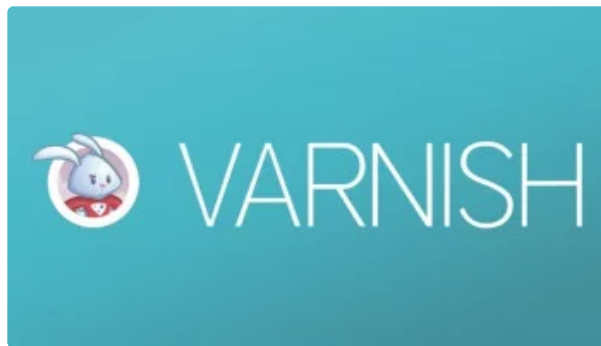
Display country ID in nginx access_log

It can be useful for debugging or monitoring to see country code of each visitor in nginx access_log. Simply add `$geoip2_data_country_code` in your nginx log_format:

```
log_format main
'$remote_addr - $remote_user [$time_local] "$request" '
'$status $body_bytes_sent "$http_referer" '
'"$http_user_agent" "$http_x_forwarded_for" '
'$request_time $upstream_response_time $pipe '
'$geoip2_data_country_code';
```

Literature:

- Rewritten from here for the sake of GetPageSpeed extras repo and the community (https://medium.com/@karljohnson/geoip-discontinuation-upgrade-to-geoip2-with-nginxon-centos-c2a3dbcf8fd)
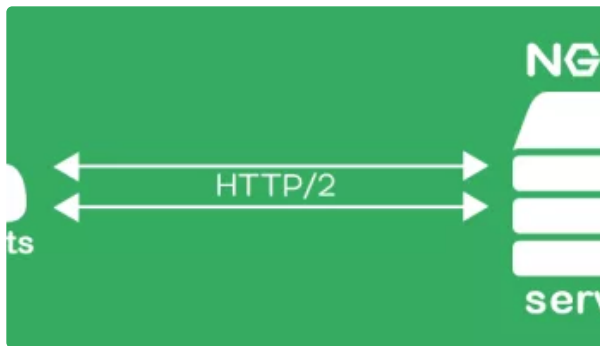
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(https://www.getpagespeed.com/server-setup/varnish-geoip)
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(https://www.getpagespeed.com/server-setup/nginx/install-modsecurity-nginx-module-on-centos-7)
How Install ModSecurity NGINX module in RHEL 7 / CentOS 7
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