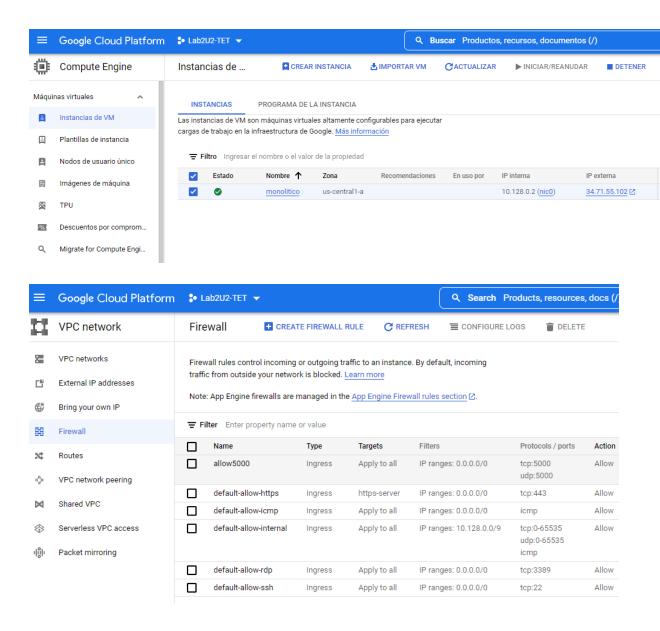
Tópicos especiales en telemática – Lab 2 - Unidad 2

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- 1. Aplicación monolítica en contenedores.
 - Se crea la instancia de maquina virtual en GCP y se habilitan los puertos 443 y 5000 (backend)



• Dentro de la maquina instalar mongodb (BareMetal) e insertar los libros.

```
svaneg11@monolitico:~$ mongo --version
MongoDB shell version v5.0.7
Build Info: {
    "version": "5.0.7",
    "gitVersion": "b977129dc70eed766cbee7e412d901ee213acbda",
    "openSSLVersion": "OpenSSL 1.1.1n 15 Mar 2022",
    "modules": [],
    "allocator": "tcmalloc",
    "environment": {
        "distmod": "debian10",
        "distarch": "x86_64",
        "target_arch": "x86_64"
    }
}
svaneg11@monolitico:~$
```

```
Current Mongosh Log ID: 625fab09195f9060312fac4f
Connecting to:
Using MongoDB:
 Jsing Mongosh:
                                                1.3.1
For mongosh info see: https://docs.mongodb.com/mongodb-shell/
To help improve our products, anonymous usage data is collected and sent to MongoDB periodically (https:/
You can opt-out by running the disableTelemetry() command.
     The server generated these startup warnings when booting:
2022-04-20T05:01:36.052+00:00: Using the XFS filesystem is strongly recommended with the WiredTiger sta
2022-04-20T05:01:37.178+00:00: Access control is not enabled for the database. Read and write access to
2022-04-20T05:01:37.178+00:00: /sys/kernel/mm/transparent_hugepage/enabled is 'always'. We suggest set
  Varning: Found ~/.mongorc.js, but not ~/.mongoshrc.js. ~/.mongorc.js will not be loaded. You may want to copy or rename ~/.mongorc.js to ~/.mongoshrc.js.
 test> use bookstore-production
 switched to db bookstore-production
  ookstore-production> db.books.insertOne({
                e-production> db.books.insertOne({
    name: 'Leonardo Davinci: La Biografia',
    image: '/images/img-id-iabiografia.jpeg',
    author: 'Walter Issacson',
    description:'Basándose en las miles de páginas de los cuadernos manuscritos de Leonardo y nu
    y nos muestra cómo el genio del hombre más visionario de la historia nació de habilidades que to
    todo gran innovador, resultó de la intersección entre la tecnología y las humanidades. Despelle
    historia, la de la Mona Lisa. Exploró las leyes de la óptica, demostró como la luz incidía en la
    convitatoria.
                      countInStock: '2',
                      price: '$
 Browserslist: caniuse-lite is outdated. Please run:
   npx browserslist@latest --update-db
   Why you should do it regularly: https://github.com/browserslist/browserslist#browsers-data-updating
   acknowledged: true,
insertedId: ObjectId("625fac9cb1bbfecac9e67a0c")
 bookstore-production>
                     name: 'Inteligencia Genial',
image: '/inteligencia Genial',
image: '/images/img-ld-inteligenciagenial.jpeg',
author: 'Michael Gelb',
description: 'El que, para muchos, ha sido el mayor genio de todos los tiempos, Leonardo da
cios, técnicas y lecciones, este libro muestra el camino para ampliar los horizontes de la men
countInStock: '3',
price: '$30.000.00'
  ookstore-production> db.books.insertOne({
   acknowledged: true,
insertedId: ObjectId("625facc8blbbfecac9e67a0d")
```

• Dentro de la maquina instalar Docker, configurarlo para que corra el servicio y probar que funciona.

```
svaneq11@monolitico:~$ sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable docker
svaneq11@monolitico:~$ sudo systemctl start docker
svaneq11@monolitico:~$ sudo usermod -a -G docker svaneq11
svaneq11@monolitico:~$ docker ps -a
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock:
svaneq11@monolitico:~$ sudo docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
svaneq11@monolitico:~$
```

Instalar docker-compose

 Agregar la IP interna del host (172.17.0.1) en la configuración de mongod para que permita al contenedor del backend conectarse.

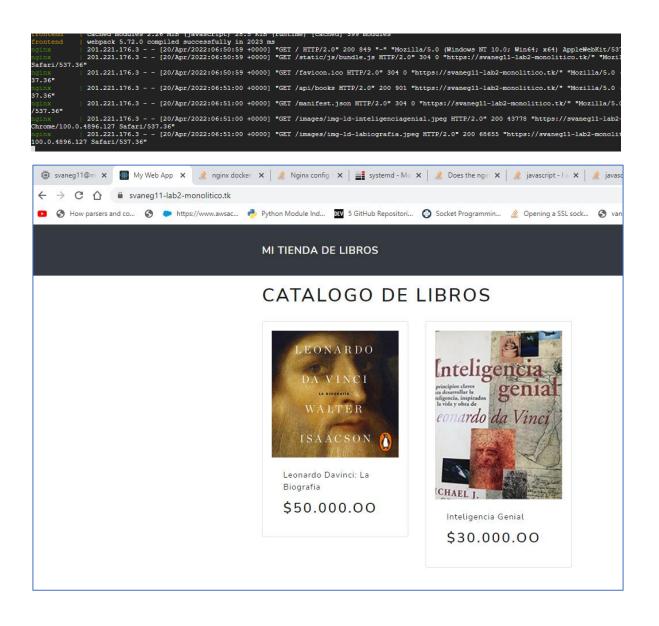
/etc/mongod.conf

```
# network interfaces
net:
  port: 27017
  bindIp: 127.0.0.1,172.17.0.1
```

• Correr el Docker-compose.

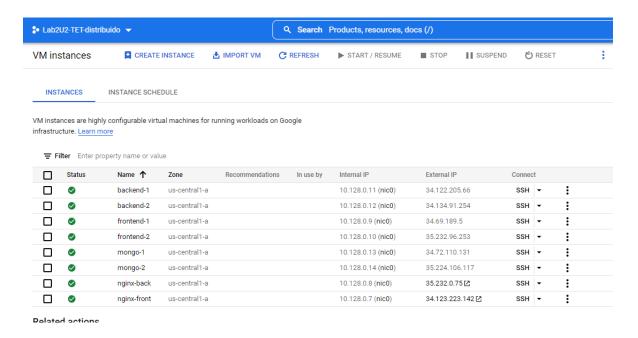
```
:~/svaneg11 ST0263/U2-Lab2/monolitico/frontend$ docker-compose up --build
Creating frontend ...
Creating backend ...
Creating nginx
Attaching to frontend, backend, nginx
                /docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration /docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
                /docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
                10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
                10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
                /docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
                / \texttt{docker-entry} \\ \texttt{point.sh: Launching / docker-entry} \\ \texttt{point.d/30-tune-worker-processes.sh}
                /docker-entrypoint.sh: Configuration complete; ready for start up
                > backend@1.0.0 start
                > node server.js
 rontend
                > frontend@0.1.0 start
                > react-scripts start
 rontend
                Server running in production and listening on PORT 5000
                MongoDB is connected:host.docker.internal
                {\tt MongoDB\_URL=\ mongodb://host.docker.internal/bookstore-production}
                (node:30) [DEP_WEBPACK_DEV_SERVER_ON_AFTER_SETUP_MIDDLEWARE] DeprecationWarning: 'onAfterSetupMiddlewar' (Use `node --trace-deprecation ...` to show where the warning was created) (node:30) [DEP_WEBPACK_DEV_SERVER_ON_BEFORE_SETUP_MIDDLEWARE] DeprecationWarning: 'onBeforeSetupMiddleware')
 rontend
 rontend
                Starting the development server...
 rontend
                Compiled successfully!
                You can now view frontend in the browser.
                   Local:
                                         http://localhost:3000
                   On Your Network: http://172.21.0.3:3000
 rontend
                Note that the development build is not optimized.
                To create a production build, use npm run build.
                asset static/js/bundle.js 2.22 MiB [emitted] (name: main) 1 related asset
                asset index.html 1.67 KiB [emitted]
                asset asset-manifest.json 190 bytes [emitted] orphan modules 290 KiB [orphan] 171 modules
 rontend
                runtime modules 28.5 KiB 13 modules
 rontend
                modules by path ./ 1.97 MiB
                   modules by path ./node modules/ 1.61 MiB 193 modules modules by path ./src/ 373 KiB 12 modules
                asset modules 2.66 KiB
 rontend
                   data:image/svg+xml,%3csvg xmlns=%27.. 324 bytes [built] [code generated]
                   data:image/svg+xml,%3csvg xmlns=%27.. 216 bytes [built] [code generated]
                   data:image/svg+xml,%3csvg xmlns=%27.. 390 bytes [built] [code generated]
                   data:image/svg+xml, %3csvg xmlns=%27.. 261 bytes [built] [code generated] data:image/svg+xml, %3csvg xmlns=%27.. 193 bytes [built] [code generated]
 rontend
                   + 5 modules
 rontend
                webpack 5.72.0 compiled successfully in 14679 ms
```

• Al acceder a la página https://svaneg11-lab2-monolitico.tk/

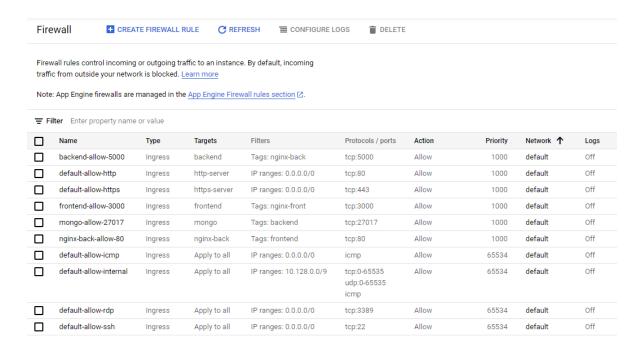


2. Aplicación distribuida

Crear las instancias



Crear las reglas de firewall para habilitar los puertos.



Registrar dominio en freenom y asignarle la IP de la máquina de Nginx.



- El proceso es similar a la versión monolítica, solo que esta vez se organizó en .sh los procesos de instalación de dependencias para agilizar un poco la instalación de Docker y las librerías de nodeJS entre otras cosas. Por cada maquina instalar git, bajar el repositorio, y correr el respectivo archivo .sh.
- Después de desplegar todas las partes de la aplicación, se puede acceder a https://svaneg11-lab2-distribuido.tk/ para comprobar que funciona.



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• Al recargar la pagina 2 veces se observa que la peticion pasa por el servidor de nginxfront y cada servidor de frontend responde una vez, el balancedor de cargas funciona!

nginx-front

```
:~/svaneg11 ST0263/U2-Lab2/distribuido/nginx-front$ docker-compose up
Starting nginx ...
Attaching to nginx
                  /docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
                 /docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/ /docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
                  10-listen-on-ipv6-by-default.sh: info: IPv6 listen already enabled
                 /docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh /docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
00.0.4896.127 Safari/537.36"
nginx | 201.221.176.3 - - [21/Apr/2022:14:02:57 +0000] "GET /favicon.ico HTTP/2.0" 304 0 "https://svaneg11-lab2-
distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/100.0.489
6.127 Safari/537.36"
 nginx | 201.221.176.3 - - [21/Apr/2022:14:02:57 +0000] "GET /api/books HTTP/2.0" 200 905 "https://svaneg11-lab2-
distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/100.0.489
6.127 Safari/537.36"
                 201.221.176.3 - - [21/Apr/2022:14:02:57 +0000] "GET /images/img-ld-inteligenciagenial.jpeg HTTP/2.0" 304
0 "https://svaneg11-lab2-distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, li ke Gecko) Chrome/100.0.4896.127 Safari/537.36"
                 201.221.176.3 - - [21/Apr/2022:14:02:57 +0000] "GET /images/img-ld-labiografia.jpeg HTTP/2.0" 304 0 "htt
hginx | 201.221.176.3 - [21/Apr/2022:14:02:57 +0000] "GET /Images/img-Id-lablografia.jpeg HITP/2.0" 304 0 "htt
ps://svaneg11-lab2-distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Geck
o) Chrome/100.0.4896.127 Safari/537.36"
nginx | 201.221.176.3 - [21/Apr/2022:14:02:57 +0000] "GET /manifest.json HTTP/2.0" 200 493 "https://svaneg11-1
ab2-distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/100.0
.4896.127 Safari/537.36"
.1696.127 Safari/537.36"

| 201.221.176.3 - - [21/Apr/2022:14:02:57 +0000] "GET / HTTP/2.0" 304 0 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/100.0.4896.127 Safari/537.36"

| 201.221.176.3 - - [21/Apr/2022:14:02:58 +0000] "GET /static/js/bundle.js HTTP/2.0" 304 0 "https://svaneg 11-lab2-distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/1
00.0.4896.127 Safari/537.36"
                201.221.176.3 - - [21/Apr/2022:14:02:58 +0000] "GET /favicon.ico HTTP/2.0" 304 0 "https://svaneg11-lab2-
distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/100.0.489
6.127 Safari/537.36"
nginx | 201.221.176.3 - - [21/Apr/2022:14:02:58 +0000] "GET /manifest.json HTTP/2.0" 200 493 "https://svaneg11-1
ab2-distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/100.0
 .4896.127 Safari/537.36"
.1895.12/ 301.221.176.3 - - [21/Apr/2022:14:02:58 +0000] "GET /api/books HTTP/2.0" 200 909 "https://swaneg11-lab2-
distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/100.0.489
 5.127 Safari/537.36"
nginx | 201.221.176.3 - - [21/Apr/2022:14:02:58 +0000] "GET /images/img-ld-labiografia.jpeg HTTP/2.0" 304 0 "htt
ps://svaneg11-lab2-distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Geck
o) Chrome/100.0.4896.127 Safari/537.36"
nginx | 201.221.176.3 - - [21/Apr/2022:14:02:58 +0000] "GET /images/img-ld-inteligenciagenial.jpeg HTTP/2.0" 304
0 "https://svaneg11-lab2-distribuido.tk/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, li
ke Gecko) Chrome/100.0.4896.127 Safari/537.36"
```

frontend-1

```
Starting frontend ... done
Attaching to frontend
asset saset-manifest.json 190 bytes [emitted]
frontend
frontend
frontend
frontend
gaset asset-manifest.json 190 bytes [emitted]
frontend
frontend
frontend
cached modules 2.26 MiB [ofwarscript) 28.5 KiB (runtime) [cached] 399 modules
frontend
frontend
webpack 5.72.0 compiled successfully in 2221 ms
```

frontend-2

```
Starting frontend -2:~/svanegi1_ST0263/U2-Lab2/distribuido/front$ docker-compose up

Starting frontend ... done
Attaching to frontend
frontend
frontend | > frontend@0.1.0 start
frontend | > react-scripts start

frontend | > react-scripts start

frontend | (node:27) [DEP_WEBPACK_DEV_SERVER_ON_AFTER_SETUP_MIDDLEWARE] DeprecationWarning: 'onAfterSetupMiddlew are' option is deprecated. Please use the 'setupMiddlewares' option.

frontend | (Use 'node --trace-deprecation ...' to show where the warning was created)

frontend | (node:27) [DEP_WEBPACK_DEV_SERVER_ON_BEFORE_SETUP_MIDDLEWARE] DeprecationWarning: 'onBeforeSetupMiddleware' option is deprecated. Please use the 'setupMiddlewares' option.

frontend | (node:27) [DEP_WEBPACK_DEV_SERVER_ON_BEFORE_SETUP_MIDDLEWARE] DeprecationWarning: 'onBeforeSetupMiddleware' option is deprecated. Please use the 'setupMiddlewares' option.

frontend | Starting the development server...

frontend | Compiled successfully!

frontend | You can now view frontend in the browser.

frontend | http://localhost:3000

frontend | http://localhost:3000

frontend | Note that the development build is not optimized.

frontend | To create a production build, use npm run build.

frontend | asset static/js/bundle.js 2.22 MiB [emitted] (name: main) 1 related asset

frontend | asset saset-manifest.json 190 bytes [emitted]

frontend | cached modules 2.26 MiB [javascript] 28.5 KiB [runtime) [cached] 399 modules

frontend | webpack 5.72.0 compiled successfully in 1924 ms
```

De forma similar se aplica el balanceador de cargas para las dos maquinas virtuales del backend, pero esto no se ve tan evidente ya que no producen logs visibles en el contenedor de backend.