

Proxy

1. Create a self signed certificate with domain *.intern.phonepe.in with expiry validity for 2 years.

Steps:

1. Generate an openssl rsa private key.
openssl genrsa -des3 -out domain.key 2048

```
nginx-proxy@nginxproxy-VirtualBox:~$ openssl genrsa -des3 -out domain.key 2048
Generating RSA private key, 2048 bit long modulus (2 primes)
.....+++++
.....+++++
e is 65537 (0x010001)
Enter pass phrase for domain.key:
Verifying - Enter pass phrase for domain.key:
```

2. Generate a CSR using the command .
openssl req -key domain.key -new -out domain.csr

```
nginx-proxy@nginxproxy-VirtualBox:~$ openssl req -key domain.key -new -out domain.csr
Enter pass phrase for domain.key:
You are about to be asked to enter information that will be incorporated
into your certificate request.
What you are about to enter is what is called a Distinguished Name or a DN.
There are quite a few fields but you can leave some blank
For some fields there will be a default value,
If you enter '.', the field will be left blank.
-----
Country Name (2 letter code) [AU]:IN
State or Province Name (full name) [Some-State]:Bangalore
Locality Name (eg, city) []:Salarpuria
Organization Name (eg, company) [Internet Widgits Pty Ltd]:Phonepe Pvt Limited
Organizational Unit Name (eg, section) []:TechInfra
Common Name (e.g. server FQDN or YOUR name) []:*.intern.phonepe.in
Email Address []:ceccse.1802058@gmail.com

Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:
An optional company name []:
```

3. Generate the Certificate using the CSR and the private Key.
openssl x509 -signkey -in domain.csr -req -days 730 -out domain.crt

```

nginx-proxy@nginxproxy-VirtualBox:~$ openssl x509 -signkey domain.key -in domain.csr -req -days 730 -out domain.crt
Signature ok
subject=C = IN, ST = Bangalore, L = Salarpuria, O = Phonepe Pvt Limited, OU = TechInfra, CN = *.intern.phonepe.in, emailAddress = ceccse.1802058@gmail.com
Getting Private key
Enter pass phrase for domain.key:

```

This certificate is valid for 730 days (i.e 2 years)

The certificate is created. To view the certificate Use: openssl x509 -text -noout -in proxy.crt

```

nginx-proxy@nginxproxy-VirtualBox:~$ openssl x509 -text -noout -in domain.crt
Certificate:
    Data:
        Version: 1 (0x0)
        Serial Number:
            2a:16:ad:9f:fc:d3:8d:90:8a:ec:2b:36:82:c8:f7:c5:ca:7e:63:6f
        Signature Algorithm: sha256WithRSAEncryption
        Issuer: C = IN, ST = Bangalore, L = Salarpuria, O = Phonepe Pvt Limited, OU = TechInfra, CN = *.intern.phonepe.in, emailAddress = ceccse.1802058@gmail.com
        Validity
            Not Before: Mar  6 22:04:19 2022 GMT
            Not After : Mar  5 22:04:19 2024 GMT
        Subject: C = IN, ST = Bangalore, L = Salarpuria, O = Phonepe Pvt Limited, OU = TechInfra, CN = *.intern.phonepe.in, emailAddress = ceccse.1802058@gmail.com
        Subject Public Key Info:
            Public Key Algorithm: rsaEncryption
            RSA Public-Key: (2048 bit)
            Modulus:
                00:ad:e8:60:7a:59:cf:2c:84:8b:f2:9a:79:ec:b8:
                85:2d:1b:a5:4e:f0:93:23:55:f9:c0:14:84:36:49:
                99:a7:91:e0:28:37:39:fa:5f:2a:a3:5a:7b:e2:61:
                94:ba:b1:d3:61:e8:ed:f1:de:bd:40:36:0d:6d:57:
                87:e9:fa:da:06:68:8a:c3:54:1d:61:e9:d9:ef:53:
                6b:85:c1:de:8f:9b:0b:ef:fb:e3:d9:d8:18:98:ad:
                41:0b:66:ae:73:f8:87:6b:a6:cf:b2:ab:c9:b6:d8:
                a3:59:03:0d:07:e5:c9:9b:34:77:e2:99:fc:bc:ce:
                8a:4e:c0:df:aa:c5:03:70:5a:11:01:10:b3:c3:ff:

```

2. Setup a simple server running on port 5440 that implements ping/pong requests

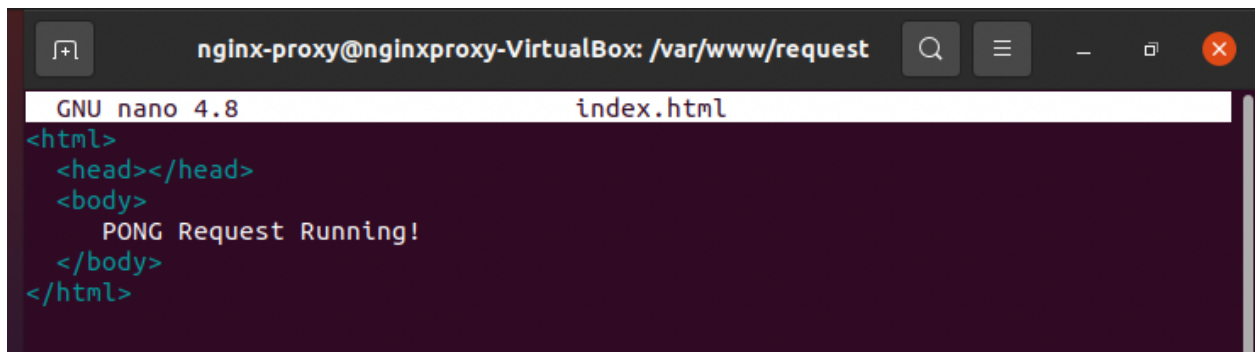
1. Install nginx on the machine.
sudo apt update

sudo apt install nginx

```
nginx-proxy@nginxproxy-VirtualBox:~$ sudo apt install nginx
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream nginx-common nginx-core
Suggested packages:
  fcgiwrap nginx-doc
The following NEW packages will be installed:
  libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream nginx nginx-common nginx-core
0 upgraded, 7 newly installed, 0 to remove and 0 not upgraded.
Need to get 603 kB of archives.
After this operation, 2,134 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common
  all 1.18.0-0ubuntu1.2 [37.5 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod
  -http-image-filter amd64 1.18.0-0ubuntu1.2 [14.4 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod
  -http-xslt-filter amd64 1.18.0-0ubuntu1.2 [12.7 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod
  -mail amd64 1.18.0-0ubuntu1.2 [42.5 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod
  -stream amd64 1.18.0-0ubuntu1.2 [67.3 kB]
```

2. Create a page in the /var/www/request (index.html) which will print the Pong message.

```
nginx-proxy@nginxproxy-VirtualBox:/var/www$ sudo mkdir request
nginx-proxy@nginxproxy-VirtualBox:/var/www$ cd request
nginx-proxy@nginxproxy-VirtualBox:/var/www/request$ sudo nano index.html
nginx-proxy@nginxproxy-VirtualBox:/var/www/request$ cd
```



```
nginx-proxy@nginxproxy-VirtualBox: /var/www/request
GNU nano 4.8 index.html
<html>
  <head></head>
  <body>
    PONG Request Running!
  </body>
</html>
```

3. Create a file in the sites enabled directory of the nginx and create a file inside it.

cd /etc/nginx/sites-enabled

sudo nano request

```
nginx-proxy@nginxproxy-VirtualBox:~$ cd /etc/nginx/sites-enabled
nginx-proxy@nginxproxy-VirtualBox:/etc/nginx/sites-enabled$ ls
default
nginx-proxy@nginxproxy-VirtualBox:/etc/nginx/sites-enabled$ sudo nano request
```

```
GNU nano 4.8 request
server {
    listen 5440;
    listen [::]:5440;
    server_name example.ubuntu.com;
    root /var/www/request;
    index index.html;

    location /{
        try_files $uri $uri/ =404;
    }
}
```

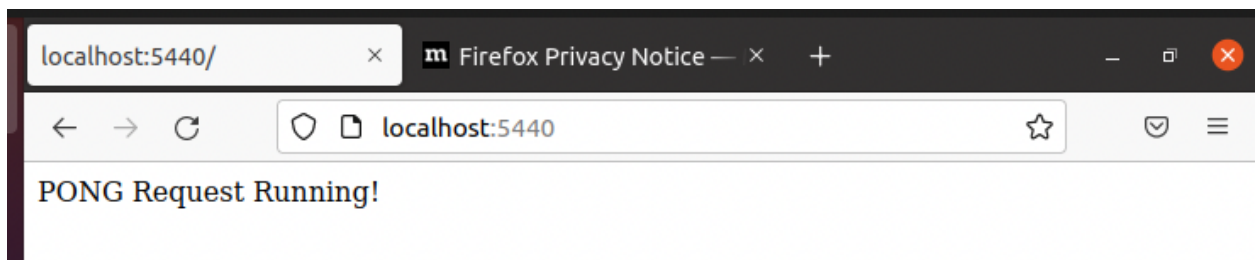
Do the following configuration in the /etc/nginx/sites-enabled/request.

4. Restart the nginx using systemctl restart nginx.

```
nginx-proxy@nginxproxy-VirtualBox:~$ sudo systemctl restart nginx
```


5. Check if the server we set up is running properly with the help of curl localhost:5440

```
nginx-proxy@nginxproxy-VirtualBox:~$ curl localhost:5440
<html>
  <head></head>
  <body>
    PONG Request Running!
  </body>
</html>
```



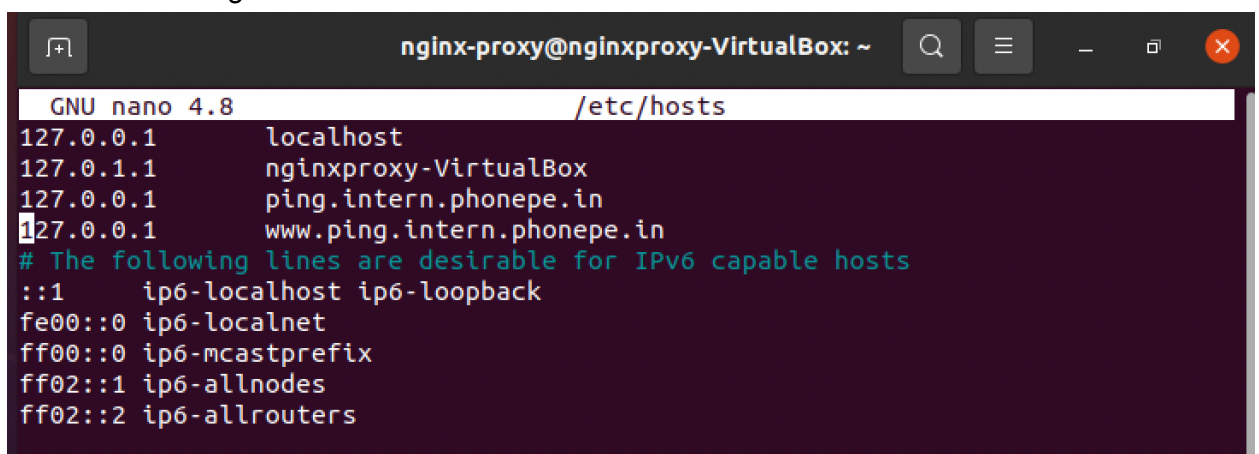
3. Using certificates from step 1, setup a nginx ssl proxy (domain ping.intern.phonepe.in) running on port 444. Proxy should redirect to the locally setup ping-pong server.

1. Setup the below configuration on the /etc/nginx/sites-enabled/request



```
nginx-proxy@nginxproxy-VirtualBox: /etc/nginx
GNU nano 4.8 sites-enabled/request
server {
    listen 444 ssl http2;
    listen [::]:444 ssl;
    server_name ping.intern.phonepe.in www.ping.intern.phonepe.in;
    ssl_certificate /home/nginx-proxy/domain.crt;
    ssl_certificate_key /home/nginx-proxy/domain_without_pass.key;
    return 301 https://www.ping.intern.phonepe.in:5440$request_uri;
}
server {
    listen 5440 ssl http2;
    listen [::]:5440 ssl;
    server_name ping.intern.phonepe.in www.ping.intern.phonepe.in;
    ssl_certificate /home/nginx-proxy/domain.crt;
    ssl_certificate_key /home/nginx-proxy/domain_without_pass.key;
    root /var/www/request;
    index index.html;
}
```

2. Enter the following server to the hosts lists



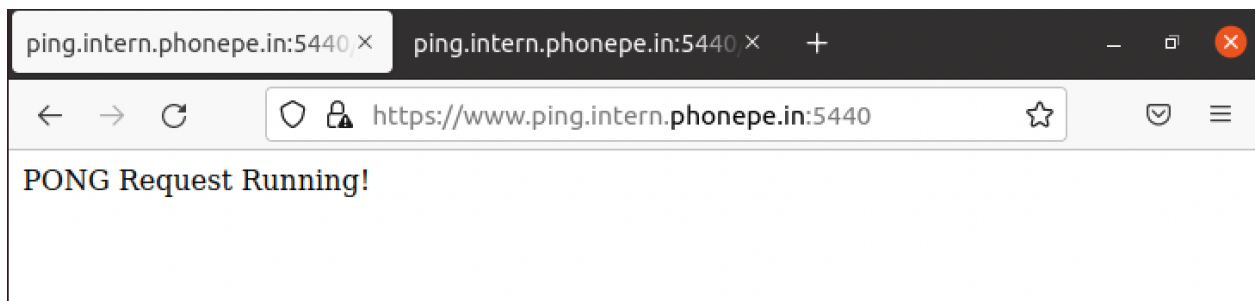
```
nginx-proxy@nginxproxy-VirtualBox: ~
GNU nano 4.8 /etc/hosts
127.0.0.1 localhost
127.0.1.1 nginxproxy-VirtualBox
127.0.0.1 ping.intern.phonepe.in
127.0.0.1 www.ping.intern.phonepe.in
# The following lines are desirable for IPv6 capable hosts
::1 ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

3. Try running it as localhost:444 it will redirect to the ping.intern.phonepe.in:5440

```
nginx-proxy@nginxproxy-VirtualBox:~$ sudo systemctl restart nginx
nginx-proxy@nginxproxy-VirtualBox:~$ curl -k https://localhost:444
<html>
<head><title>301 Moved Permanently</title></head>
<body>
<center><h1>301 Moved Permanently</h1></center>
<hr><center>nginx/1.18.0 (Ubuntu)</center>
</body>
</html>

nginx-proxy@nginxproxy-VirtualBox:~$ curl -k https://ping.intern.phonepe.in:5440
0
<html>
  <head></head>
  <body>
    PONG Request Running!
  </body>
</html>
```

This is returned after redirecting from the <https://localhost:444>



And , we can also see it running directly on the <https://ping.intern.phonepe.in>

