



Curriculum

SE Foundations ^

Average: 158.95% v

**We're moving to Discord!**

In a few days, we will be leaving Slack in favor of Discord 🎉

👉 **Click here for more information (/concepts/100033)**

0x10. HTTPS SSL

DevOps

SysAdmin

Security

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⚙️ Weight: 1

📅 Project over - took place from Apr 6, 2023 6:00 AM to Apr 7, 2023 6:00 AM

☑️ An auto review will be launched at the deadline

In a nutshell...

- **Auto QA review:** 4.0/8 mandatory & 0.5/1 optional
- **Altogether: 75.0%**
 - Mandatory: 50.0%
 - Optional: 50.0%
 - Calculation: $50.0\% + (50.0\% * 50.0\%) == 75.0\%$

Concepts

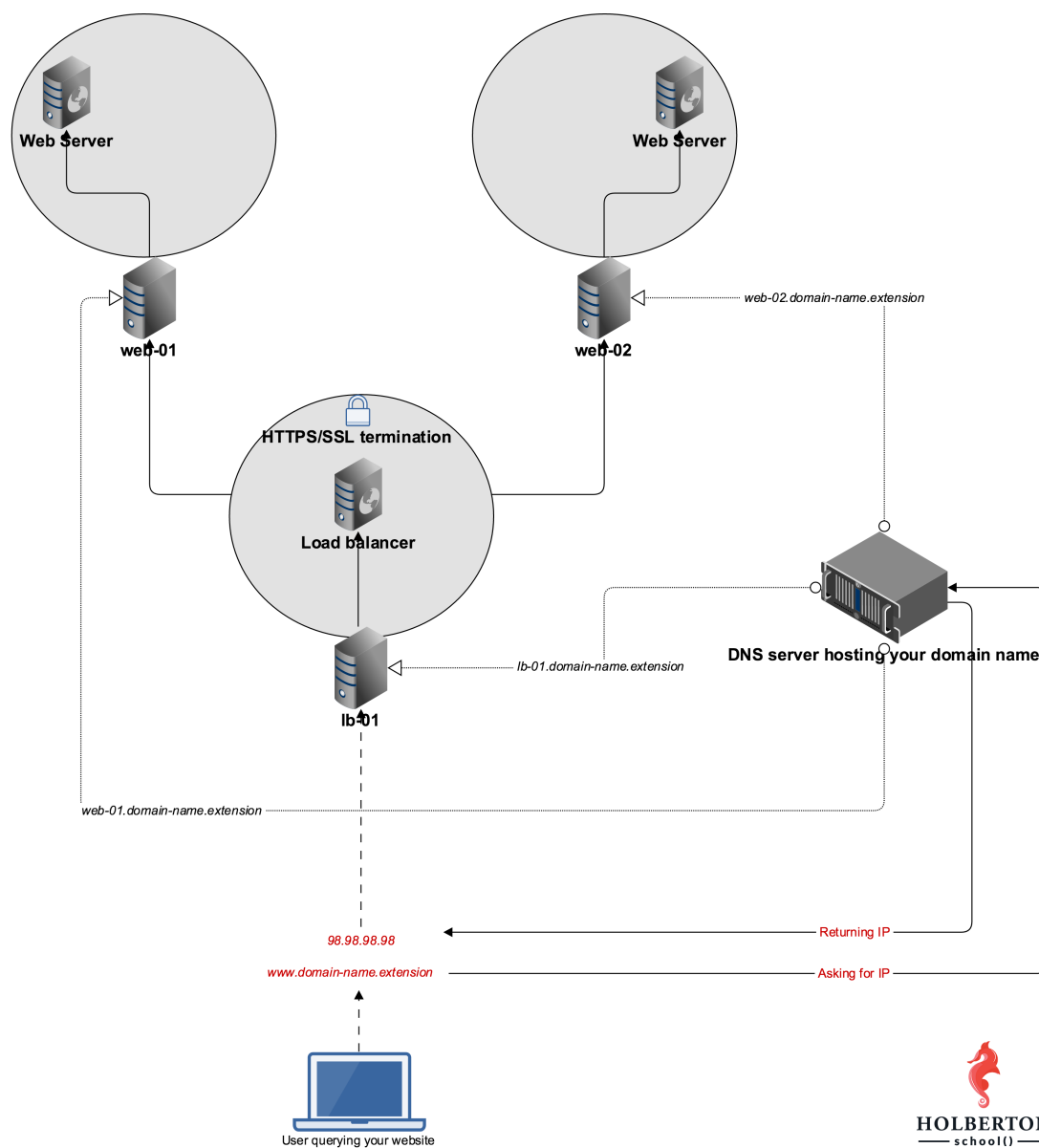
For this project, we expect you to look at these concepts:

- DNS (/concepts/12)
- Web stack debugging (/concepts/68)



(/)

HTTPS



Background Context

What happens when you don't secure your website traffic?



Resources

Read or watch:

- What is HTTPS? (/rltoken/XT1BAiBL3Jpq1bn1q6IYXQ)
- What are the 2 main elements that SSL is providing (/rltoken/STj5WkAPACBxOvwB77Ycrw)
- HAProxy SSL termination on Ubuntu16.04 (/rltoken/XD_RckEglds0UkoMsfxp2A)
- SSL termination (/rltoken/CKUICfpplWI6UC0coEMB8g)
- Bash function (/rltoken/zPjZ7-eSSQsLFsGA16C1HQ)

man or help:

- `awk`
- `dig`

Learning Objectives

At the end of this project, you are expected to be able to explain to anyone (/rltoken/fJ20wsMngb_yNAhGgBwzlQ), **without the help of Google**:

General

- What is HTTPS SSL 2 main roles
- What is the purpose encrypting traffic
- What SSL termination means

Requirements

General

- Allowed editors: `vi`, `vim`, `emacs`
- All your files will be interpreted on Ubuntu 16.04 LTS
- All your files should end with a new line
- A `README.md` file, at the root of the folder of the project, is mandatory
- All your Bash script files must be executable
- Your Bash script must pass `Shellcheck` (version `0.3.7`) without any error
- The first line of all your Bash scripts should be exactly `#!/usr/bin/env bash`
- The second line of all your Bash scripts should be a comment explaining what is the script doing

Quiz questions

Great! You've completed the quiz successfully! Keep going! ([Show quiz](#))



Your servers

Name	Username	IP	State
124330-web-01			Actions ▼
124330-web-02			Actions ▼
124330-lb-01			Actions ▼

Tasks

0. World wide web

mandatory

Score: 50.0% (Checks completed: 100.0%)

Configure your domain zone so that the subdomain `www` points to your load-balancer IP (`lb-01`). Let's also add other subdomains to make our life easier, and write a Bash script that will display information about subdomains.

Requirements:

- Add the subdomain `www` to your domain, point it to your `lb-01` IP (your domain name might be configured with default subdomains, feel free to remove them)
- Add the subdomain `lb-01` to your domain, point it to your `lb-01` IP
- Add the subdomain `web-01` to your domain, point it to your `web-01` IP
- Add the subdomain `web-02` to your domain, point it to your `web-02` IP
- Your Bash script must accept 2 arguments:
 1. `domain`:
 - `type`: string
 - `what`: domain name to audit
 - `mandatory`: yes
 2. `subdomain`:
 - `type`: string
 - `what`: specific subdomain to audit
 - `mandatory`: no
- **Output:** The subdomain `[SUB_DOMAIN]` is a `[RECORD_TYPE]` record and points to `[DESTINATION]`
- When only the parameter `domain` is provided, display information for its subdomains `www`, `lb-01`, `web-01` and `web-02` - in this specific order
- When passing `domain` and `subdomain` parameters, display information for the specified subdomain
- Ignore shellcheck case SC2086



- Must use:
 - (/)
 - awk
 - at least one Bash function
- You do not need to handle edge cases such as:
 - Empty parameters
 - Nonexistent domain names
 - Nonexistent subdomains

Example:

```
sylvain@ubuntu$ dig www.holberton.online | grep -A1 'ANSWER SECTION:'  
;; ANSWER SECTION:  
www.holberton.online. 87 IN A 54.210.47.110  
sylvain@ubuntu$ dig lb-01.holberton.online | grep -A1 'ANSWER SECTION:'  
;; ANSWER SECTION:  
lb-01.holberton.online. 101 IN A 54.210.47.110  
sylvain@ubuntu$ dig web-01.holberton.online | grep -A1 'ANSWER SECTION:'  
;; ANSWER SECTION:  
web-01.holberton.online. 212 IN A 34.198.248.145  
sylvain@ubuntu$ dig web-02.holberton.online | grep -A1 'ANSWER SECTION:'  
;; ANSWER SECTION:  
web-02.holberton.online. 298 IN A 54.89.38.100  
sylvain@ubuntu$  
sylvain@ubuntu$  
sylvain@ubuntu$ ./0-world_wide_web holberton.online  
The subdomain www is a A record and points to 54.210.47.110  
The subdomain lb-01 is a A record and points to 54.210.47.110  
The subdomain web-01 is a A record and points to 34.198.248.145  
The subdomain web-02 is a A record and points to 54.89.38.100  
sylvain@ubuntu$  
sylvain@ubuntu$ ./0-world_wide_web holberton.online web-02  
The subdomain web-02 is a A record and points to 54.89.38.100  
sylvain@ubuntu$
```


Repo:

- GitHub repository: alx-system_engineering-devops
- Directory: 0x10-https_ssl
- File: 0-world_wide_web

☒ Done!

Help

Check your code

 Get a sandbox

QA Review

1. HAproxy SSL termination

mandatory

Score: 50.0% (Checks completed: 100.0%)

“Terminating SSL on HAproxy” means that HAproxy is configured to handle encrypted traffic, unencrypt it and pass it on to its destination.



Create a certificate using `certbot` and configure `HAproxy` to accept encrypted traffic for your subdomain `www. .`

Requirements:

- `HAproxy` must be listening on port TCP 443
- `HAproxy` must be accepting SSL traffic
- `HAproxy` must serve encrypted traffic that will return the `/` of your web server
- When querying the root of your domain name, the page returned must contain `Holberton School`
- Share your `HAproxy` config as an answer file (`/etc/haproxy/haproxy.cfg`)

The file `1-haproxy_ssl_termination` must be your `HAproxy` configuration file

Make sure to install `HAproxy` 1.5 or higher, SSL termination (`/rltoken/CKUICfppIWI6UC0coEMB8g`) is not available before v1.5.

Example:

```
sylvain@ubuntu$ curl -sI https://www.holberton.online
HTTP/1.1 200 OK
Server: nginx/1.4.6 (Ubuntu)
Date: Tue, 28 Feb 2017 01:52:04 GMT
Content-Type: text/html
Content-Length: 30
Last-Modified: Tue, 21 Feb 2017 07:21:32 GMT
ETag: "58abea7c-1e"
X-Served-By: 03-web-01
Accept-Ranges: bytes
sylvain@ubuntu$
sylvain@ubuntu$ curl https://www.holberton.online
Holberton School for the win!
sylvain@ubuntu$
```

Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x10-https_ssl`
- File: `1-haproxy_ssl_termination`

☒ Done!

[Help](#)

[Check your code](#)

[> Get a sandbox](#)

[QA Review](#)

2. No loophole in your website traffic

#advanced

Score: 50.0% (Checks completed: 100.0%)

A good habit is to enforce HTTPS traffic so that no unencrypted traffic is possible. Configure `HAproxy` to automatically redirect HTTP traffic to HTTPS.

Requirements:



- This should be transparent to the user
- (/). HAproxy should return a 301 (/rltoken/yGdTSvZAzHMnDEhalTjNUw)
- HAproxy should redirect HTTP traffic to HTTPS
- Share your HAproxy config as an answer file (/etc/haproxy/haproxy.cfg)

The file `100-redirect_http_to_https` must be your HAproxy configuration file

Example:

```
sylvain@ubuntu$ curl -sIL http://www.holberton.online
HTTP/1.1 301 Moved Permanently
Content-length: 0
Location: https://www.holberton.online/
Connection: close

HTTP/1.1 200 OK
Server: nginx/1.4.6 (Ubuntu)
Date: Tue, 28 Feb 2017 02:19:18 GMT
Content-Type: text/html
Content-Length: 30
Last-Modified: Tue, 21 Feb 2017 07:21:32 GMT
ETag: "58abea7c-1e"
X-Served-By: 03-web-01
Accept-Ranges: bytes

sylvain@ubuntu$
```


Repo:

- GitHub repository: `alx-system_engineering-devops`
- Directory: `0x10-https_ssl`
- File: `100-redirect_http_to_https`

☒ Done!

Help

Check your code

 Get a sandbox

QA Review

