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Практическая работа № 1

Тема: «HTTP»

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1. Установка обновлений. Установка утилиты 'curl'. Проверка доступности ресурсов посредством telnet.

```
lemp001@U20-001: ~  
lemp001@U20-001:~$ sudo telnet -d localhost 22  
[sudo] password for lemp001:  
Trying 127.0.0.1...  
Connected to localhost.  
Escape character is '^]'.  
SSH-2.0-OpenSSH_8.2p1 Ubuntu-4ubuntu0.5  
  
Invalid SSH identification string.  
Connection closed by foreign host.  
lemp001@U20-001:~$ sudo telnet opennet.ru 80  
Trying 217.65.3.21...  
Connected to opennet.ru.  
Escape character is '^]'.  
  
Connection closed by foreign host.  
lemp001@U20-001:~$ sudo telnet india.colorado.edu 13  
Trying 128.138.140.44...  
Connected to india.colorado.edu.  
Escape character is '^]'.  
  
59835 22-09-13 07:56:14 50 0 0 893.4 UTC(NIST) *  
Connection closed by foreign host.  
lemp001@U20-001:~$ sudo telnet -d mgpu.ru 80  
Trying 37.230.157.233...  
Connected to mgpu.ru.  
Escape character is '^]'.  
^CConnection closed by foreign host.
```

2. Проверка сайта mgpu.ru

```
lemp001@U20-001:~$ sudo curl -v http://mgpu.ru  
* Trying 37.230.157.233:80...  
* TCP_NODELAY set  
* Connected to mgpu.ru (37.230.157.233) port 80 (#0)  
> GET / HTTP/1.1  
> Host: mgpu.ru  
> User-Agent: curl/7.68.0  
> Accept: */*  
>  
* Mark bundle as not supporting multiuse  
< HTTP/1.1 301 Moved Permanently  
< Content-length: 0  
< Location: https://mgpu.ru/  
<  
* Connection #0 to host mgpu.ru left intact
```

```
Connection #0 to host mgpu.ru left intact
lemp001@U20-001:~$ sudo curl -v https://mgpu.ru
* Trying 37.230.157.233:443...
* TCP_NODELAY set
* Connected to mgpu.ru (37.230.157.233) port 443 (#0)
* ALPN, offering h2
* ALPN, offering http/1.1
* successfully set certificate verify locations:
*   CAfile: /etc/ssl/certs/ca-certificates.crt
*   CAPath: /etc/ssl/certs
* TLSv1.3 (OUT), TLS handshake, Client hello (1):
* TLSv1.3 (IN), TLS handshake, Server hello (2):
* TLSv1.3 (IN), TLS handshake, Encrypted Extensions (8):
* TLSv1.3 (IN), TLS handshake, Certificate (11):
* TLSv1.3 (IN), TLS handshake, CERT verify (15):
* TLSv1.3 (IN), TLS handshake, Finished (20):
* TLSv1.3 (OUT), TLS change cipher, Change cipher spec (1):
* TLSv1.3 (OUT), TLS handshake, Finished (20):
* SSL connection using TLSv1.3 / TLS_AES_256_GCM_SHA384
* ALPN, server did not agree to a protocol
* Server certificate:
*   subject: CN=*.mgpu.ru
*   start date: Mar 29 11:44:41 2022 GMT
*   expire date: Apr 30 11:44:40 2023 GMT
*   subjectAltName: host "mgpu.ru" matched cert's "mgpu.ru"
*   issuer: C=BE; O=GlobalSign nv-sa; CN=AlphaSSL CA - SHA256 - G2
*   SSL certificate verify ok.
> GET / HTTP/1.1
> Host: mgpu.ru
> User-Agent: curl/7.68.0
> Accept: */*
>
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* old SSL session ID is stale, removing
* Mark bundle as not supporting multiuse
< HTTP/1.1 301 Moved Permanently
< Content-length: 0
< Location: https://www.mgpu.ru/
<
* Connection #0 to host mgpu.ru left intact
```

```

Lemp001@U20-001:~$ sudo curl -v https://www.mgpu.ru/
* Trying 37.230.157.233:443...
* ELAY set
* Files ed to www.mgpu.ru (37.230.157.233) port 443 (#0)
* ALPN, offering h2
* ALPN, offering http/1.1
* successfully set certificate verify locations:
*   CAfile: /etc/ssl/certs/ca-certificates.crt
*   Cpath: /etc/ssl/certs
* TLSv1.3 (OUT), TLS handshake, Client hello (1):
* TLSv1.3 (IN), TLS handshake, Server hello (2):
* TLSv1.3 (IN), TLS handshake, Encrypted Extensions (8):
* TLSv1.3 (IN), TLS handshake, Certificate (11):
* TLSv1.3 (IN), TLS handshake, CERT verify (15):
* TLSv1.3 (IN), TLS handshake, Finished (20):
* TLSv1.3 (OUT), TLS change cipher, Change cipher spec (1):
* TLSv1.3 (OUT), TLS handshake, Finished (20):
* SSL connection using TLSv1.3 / TLS_AES_256_GCM_SHA384
* ALPN, server did not agree to a protocol
* Server certificate:
*   subject: CN=*.mgpu.ru
*   start date: Mar 29 11:44:41 2022 GMT
*   expire date: Apr 30 11:44:40 2023 GMT
*   subjectAltName: host "www.mgpu.ru" matched cert's "*.mgpu.ru"
*   issuer: C=BE; O=GlobalSign nv-sa; CN=AlphaSSL CA - SHA256 - G2
*   SSL certificate verify ok.
> GET / HTTP/1.1
> Host: www.mgpu.ru
> User-Agent: curl/7.68.0
> Accept: */*
>
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* old SSL session ID is stale, removing
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
< Server: nginx/1.18.0 (Ubuntu)
< Date: Tue, 13 Sep 2022 08:15:07 GMT
< Content-Type: text/html; charset=UTF-8
< Transfer-Encoding: chunked
< Vary: Accept-Encoding
< Vary: Cookie
< Link: <https://www.mgpu.ru/wp-json/>; rel="https://api.w.org/"
< Link: <https://www.mgpu.ru/wp-json/wp/v2/pages/2>; rel="alternate"; type="application/json"
< Link: <https://www.mgpu.ru/>; rel=shortlink
<
<!DOCTYPE html>

```

3. Проверка сайта высшей школы экономики


```
lemp001@U20-001:~$ sudo curl -v http://www.hse.ru
* Trying 178.248.234.104:80...
* TCP_NODELAY set
* Connected to www.hse.ru (178.248.234.104) port 80 (#0)
> GET / HTTP/1.1
> Host: www.hse.ru
> User-Agent: curl/7.68.0
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 301 Moved Permanently
< Server: QRATOR
< Date: Tue, 13 Sep 2022 08:19:42 GMT
< Content-Type: text/html
< Content-Length: 162
< Connection: keep-alive
< Keep-Alive: timeout=15
< Location: https://www.hse.ru/
< Strict-Transport-Security: max-age=15552000
< X-XSS-Protection: 1; mode=block; report=https://www.hse.ru/n/api/xss/report
<
<html>
<head><title>301 Moved Permanently</title></head>
<body>
<center><h1>301 Moved Permanently</h1></center>
<hr><center>nginx</center>
</body>
</html>
* Connection #0 to host www.hse.ru left intact
lemp001@U20-001:~$
```

```
Connection to host www.hse.ru not established
lenp001@U20-001:~$ sudo curl -v https://www.hse.ru
* Trying 178.248.234.104:443...
* TCP_NODELAY set
* Connected to www.hse.ru (178.248.234.104) port 443 (#0)
* ALPN, offering h2
* ALPN, offering http/1.1
* successfully set certificate verify locations:
*   CAfile: /etc/ssl/certs/ca-certificates.crt
*   CApath: /etc/ssl/certs
* TLSv1.3 (OUT), TLS handshake, Client hello (1):
* TLSv1.3 (IN), TLS handshake, Server hello (2):
* TLSv1.3 (IN), TLS handshake, Encrypted Extensions (8):
* TLSv1.3 (IN), TLS handshake, Certificate (11):
* TLSv1.3 (IN), TLS handshake, CERT verify (15):
* TLSv1.3 (IN), TLS handshake, Finished (20):
* TLSv1.3 (OUT), TLS change cipher, Change cipher spec (1):
* TLSv1.3 (OUT), TLS handshake, Finished (20):
* SSL connection using TLSv1.3 / TLS_AES_128_GCM_SHA256
* ALPN, server accepted to use h2
* Server certificate:
*   subject: CN=*.hse.ru
*   start date: Jan 21 00:00:00 2022 GMT
*   expire date: Feb 21 23:59:59 2023 GMT
*   subjectAltName: host "www.hse.ru" matched cert's "*.hse.ru"
*   issuer: C=GB; ST=Greater Manchester; L=Salford; O=Sectigo Limited; CN=Sectigo RSA Domain Validation Secure Server CA
*   SSL certificate verify ok.
* Using HTTP2, server supports multi-use
* Connection state changed (HTTP/2 confirmed)
* Copying HTTP/2 data in stream buffer to connection buffer after upgrade: len=0
* Using Stream ID: 1 (easy handle 0x555ca441d52f0)
> GET / HTTP/2
> Host: www.hse.ru
> user-agent: curl/7.68.0
> accept: */*
>
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* old SSL session ID is stale, removing
* Connection state changed (MAX_CONCURRENT_STREAMS == 16)!
< HTTP/2 302
< server: QRATOR
< date: Tue, 13 Sep 2022 08:21:16 GMT
< content-type: text/html
< content-length: 138
< location: https://www.hse.ru/en/
< expires: Tue, 13 Sep 2022 08:21:16 GMT
< cache-control: max-age=0
< strict-transport-security: max-age=15552000
```

```

lemp001@U20-001:~$ sudo curl -v https://www.hse.ru/en/
* Trying 178.248.234.104:443...
* TCP_NODELAY set
* Connected to www.hse.ru (178.248.234.104) port 443 (#0)
* ALPN, offering h2
* ALPN, offering http/1.1
* successfully set certificate verify locations:
*   CAfile: /etc/ssl/certs/ca-certificates.crt
*   CApath: /etc/ssl/certs
* TLSv1.3 (OUT), TLS handshake, Client hello (1):
* TLSv1.3 (IN), TLS handshake, Server hello (2):
* TLSv1.3 (IN), TLS handshake, Encrypted Extensions (8):
* TLSv1.3 (IN), TLS handshake, Certificate (11):
* TLSv1.3 (IN), TLS handshake, CERT verify (15):
* TLSv1.3 (IN), TLS handshake, Finished (20):
* TLSv1.3 (OUT), TLS change cipher, Change cipher spec (1):
* TLSv1.3 (OUT), TLS handshake, Finished (20):
* SSL connection using TLSv1.3 / TLS_AES_128_GCM_SHA256
* ALPN, server accepted to use h2
* Server certificate:
*   subject: CN=*.hse.ru
*   start date: Jan 21 00:00:00 2022 GMT
*   expire date: Feb 21 23:59:59 2023 GMT
*   subjectAltName: host "www.hse.ru" matched cert's "*.hse.ru"
*   issuer: C=GB; ST=Greater Manchester; L=Salford; O=Sectigo Limited; CN=Sectigo RSA Domain Validation Secure Server CA
*   SSL certificate verify ok.
* Using HTTP2, server supports multi-use
* Connection state changed (HTTP/2 confirmed)
* Copying HTTP/2 data in stream buffer to connection buffer after upgrade: len=0
* Using Stream ID: 1 (easy handle 0x55dfa14f42f0)
> GET /en/ HTTP/2
> Host: www.hse.ru
> user-agent: curl/7.68.0
> accept: */*
>
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* TLSv1.3 (IN), TLS handshake, Newsession Ticket (4):
* old SSL session ID is stale, removing
* Connection state changed (MAX_CONCURRENT_STREAMS == 16)!
< HTTP/2 200
< server: QRATOR
< date: Tue, 13 Sep 2022 08:24:37 GMT
< content-type: text/html; charset=utf-8
< content-length: 100547
< etag: W/"188c3-TTRGgiSJ8Xq6BiuGAC4y1eeBTdc"
< x-ireland-cache-status: HIT
< strict-transport-security: max-age=15552000
< x-xss-protection: 1; mode=block; report=https://www.hse.ru/n/api/xss/report
get cookies: tracking=35uRGM=0WV0385uCYe4A9m; expires=Thu, 21 Sep 27 22:55:55 GMT; domain=hse.ru; path=/

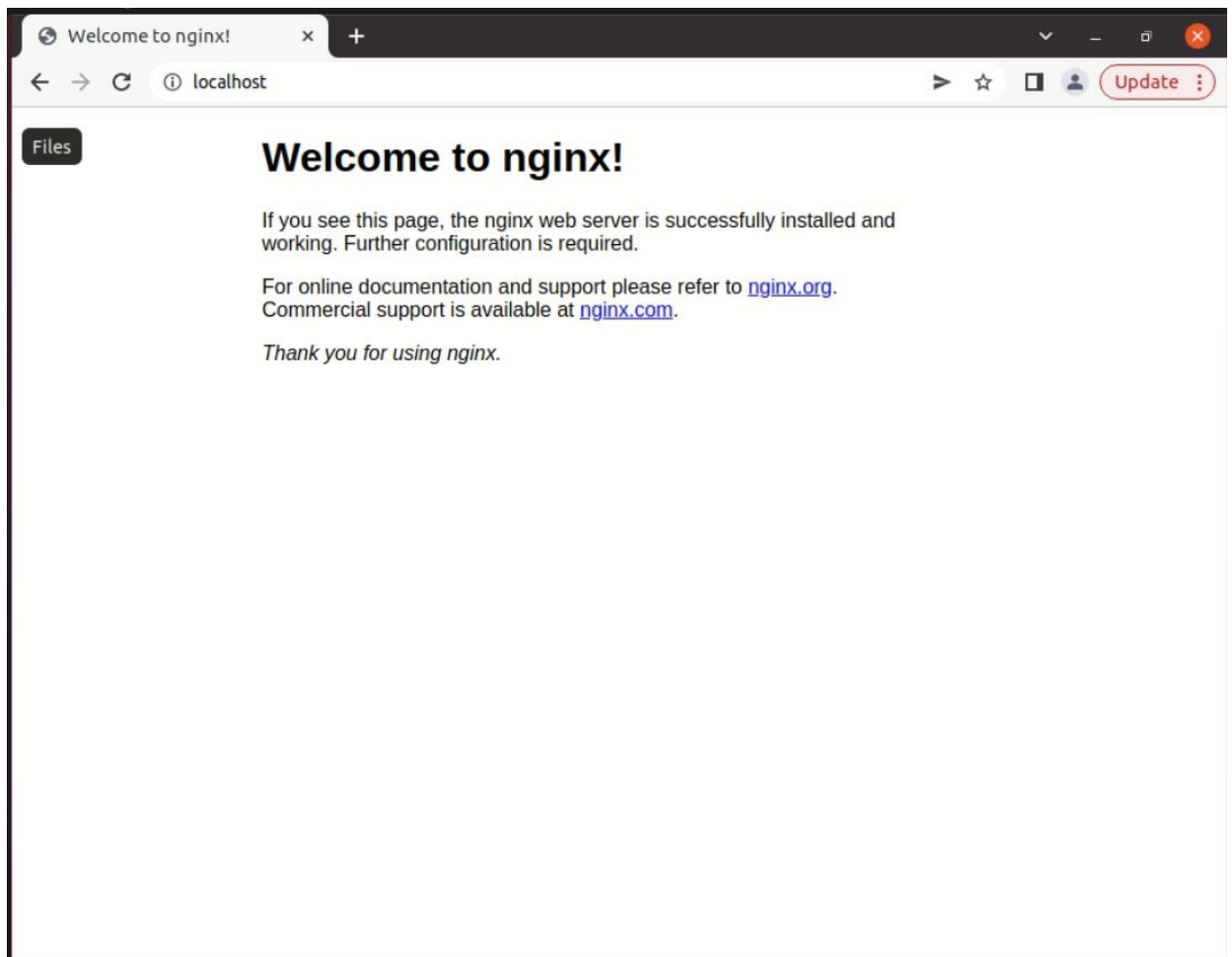
```

4. Установка nginx.

```

lemp001@U20-001: ~
lemp001@U20-001:~$ s -l /etc/nginx/sites-enabled/
s: command not found
lemp001@U20-001:~$ ls -l /etc/nginx/sites-enabled/
total 0
lrwxrwxrwx 1 root root 34 сен 13 11:27 default -> /etc/nginx/sites-available/default
lemp001@U20-001:~$ ls -l /etc/nginx/sites-available/
total 4
-rw-r--r-- 1 root root 2416 map 26 2020 default
lemp001@U20-001:~$

```



5. Проверка содержимого папок 'sites-enabled' и 'sites-available'. Удаление конфигурации default. Создание статики, которой можно раздать html файл и картинку.

```
lemp001@U20-001:~$ sudo rm /etc/nginx/sites-enabled/default
lemp001@U20-001:~$ sudo mkdir -p /var/www/simple_static
lemp001@U20-001:~$ sudo chown lemp001 /var/www/simple_static
lemp001@U20-001:~$ $ cd /var/www/simple_static
$: command not found
lemp001@U20-001:~$ cd /var/www/simple_static
lemp001@U20-001:/var/www/simple_static$ curl https://www.google.com/images/branding/googlelogo/2x/googlelogo_color_272x92dp.png
Warning: Binary output can mess up your terminal. Use "--output -" to tell
Warning: curl to output it to your terminal anyway, or consider "--output
Warning: <FILE>" to save to a file.
lemp001@U20-001:/var/www/simple_static$ curl https://www.google.com/images/branding/googlelogo/2x/googlelogo_color_272x92dp.png > google.png
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100 13504  100 13504    0     0  164k      0 --:--:-- --:--:-- --:--:-- 164k
lemp001@U20-001:/var/www/simple_static$ printf "<body>This is our first html file</body>\n" > index.html
lemp001@U20-001:/var/www/simple_static$ ls
google.png  index.html
```


6. Создание файла `/etc/nginx/sites-available/simple_static.conf`, запись конфигурации в него, помещение ссылки на файл в `'sites-enabled'`, перезагрузка nginx, запрос к сайту

```
lemp001@U20-001: /etc/nginx
lemp001@U20-001:~$ sudo nano /etc/nginx/sites-available/simple_static.conf
lemp001@U20-001:~$ cd /etc/nginx/
lemp001@U20-001:/etc/nginx$ sudo ln sites-available/simple_static.conf sites-enabled/simple_static.conf
lemp001@U20-001:/etc/nginx$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
lemp001@U20-001:/etc/nginx$
```

```
lemp001@U20-001: /etc/nginx
lemp001@U20-001:/etc/nginx$ sudo service nginx start
lemp001@U20-001:/etc/nginx$ curl -v http://localhost:80
* Trying 127.0.0.1:80...
* TCP_NODELAY set
* Connected to localhost (127.0.0.1) port 80 (#0)
> GET / HTTP/1.1
> Host: localhost
> User-Agent: curl/7.68.0
> Accept: */*
>
* Mark bundle as not supporting multiuse
< HTTP/1.1 200 OK
< Server: nginx/1.18.0 (Ubuntu)
< Date: Tue, 13 Sep 2022 08:57:33 GMT
< Content-Type: text/html
< Content-Length: 41
< Last-Modified: Tue, 13 Sep 2022 08:47:05 GMT
< Connection: keep-alive
< ETag: "63204389-29"
< Accept-Ranges: bytes
<
<body>This is our first html file</body>
* Connection #0 to host localhost left intact
lemp001@U20-001:/etc/nginx$
```

