



## HW2 SIOT

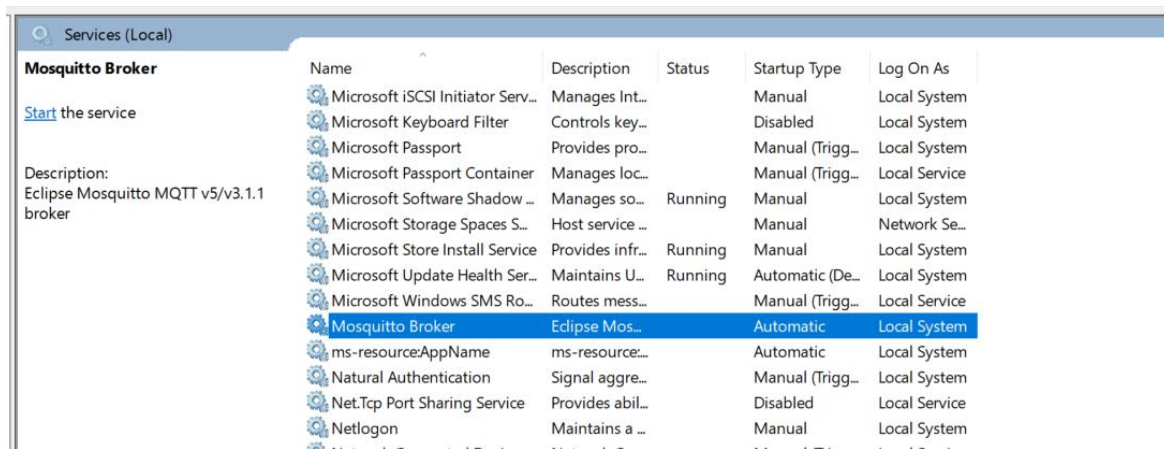
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DR SIAVASH AHMADI

First we install the mosquitto

First mosquitto isnt started so we start mosquitto by command below



First we have to run cmd with run as administator then you can see what we should do:

```
C:\WINDOWS\system32>cd "c:\Program Files\mosquitto  
c:\Program Files\mosquitto>net start mosquitto  
The Mosquitto Broker service was started successfully.
```

We can see in services brooker is running

Microsoft Windows SMS Ro...	Routes mess...	Manual (Trigg...	Local Service
Mosquitto Broker	Eclipse Mos...	Running	Automatic
ms-resource:AppName	ms-resource:...	Automatic	Local System

To verify that the investigator service is running we execute the netstat command:

```
c:\Program Files\mosquitto>netstat -a
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:135	bs:0	LISTENING
TCP	0.0.0.0:445	bs:0	LISTENING
TCP	0.0.0.0:1947	bs:0	LISTENING
TCP	0.0.0.0:2638	bs:0	LISTENING
TCP	0.0.0.0:5040	bs:0	LISTENING
TCP	0.0.0.0:5357	bs:0	LISTENING
TCP	0.0.0.0:5426	bs:0	LISTENING
TCP	0.0.0.0:7070	bs:0	LISTENING
TCP	0.0.0.0:7680	bs:0	LISTENING
TCP	0.0.0.0:49664	bs:0	LISTENING
TCP	0.0.0.0:49665	bs:0	LISTENING
TCP	0.0.0.0:49666	bs:0	LISTENING
TCP	0.0.0.0:49667	bs:0	LISTENING
TCP	0.0.0.0:49668	bs:0	LISTENING
TCP	0.0.0.0:49688	bs:0	LISTENING
TCP	0.0.0.0:54235	bs:0	LISTENING
TCP	0.0.0.0:54236	bs:0	LISTENING
TCP	127.0.0.1:1001	bs:0	LISTENING
TCP	127.0.0.1:1337	bs:0	LISTENING
TCP	127.0.0.1:1883	bs:0	LISTENING
TCP	127.0.0.1:4410	bs:0	LISTENING
TCP	127.0.0.1:7980	bs:0	LISTENING
TCP	127.0.0.1:13339	bs:0	LISTENING
TCP	127.0.0.1:13340	bs:0	LISTENING
TCP	127.0.0.1:13344	bs:0	LISTENING
TCP	127.0.0.1:64203	bs:0	LISTENING
TCP	192.168.1.109:139	bs:0	LISTENING
TCP	192.168.1.109:49406	20.250.77.142:https	ESTABLISHED
TCP	192.168.1.109:49697	a23-15-178-179:https	CLOSE_WAIT

Now we are going to start testing:

We are going to use mosquitto\_sub command ([https://mosquitto.org/man/mosquitto\\_sub-1.html](https://mosquitto.org/man/mosquitto_sub-1.html))

Command Prompt - mosquitto\_sub -t test\_sensor\_data -h localhost

```
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd "c:\Program Files\mosquitto"

c:\Program Files\mosquitto>mosquitto_sub -t test_sensor_data -h localhost
```

Command Prompt - mosquitto\_sub -t test\_sensor\_data -h localhost

```
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd "c:\Program Files\mosquitto"

c:\Program Files\mosquitto>mosquitto_sub -t test_sensor_data -h localhost
Hi this is the message
```

Command Prompt

```
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd "c:\Program Files\mosquitto"

c:\Program Files\mosquitto>mosquitto_pub -t test_sensor_data -h localhost -m "Hi this is the message"

c:\Program Files\mosquitto>
```

`[-h hostname] , [-t message-topic...] [-m message]`

Aut

```
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\Program Files\mosquitto

C:\Program Files\mosquitto>net start mosquitto

The Mosquitto Broker service was started successfully.

C:\Program Files\mosquitto>mosquitto_passwd -c .\pass mohammad1
Password:
Enter password:

C:\Program Files\mosquitto>
```

```
Command Prompt
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd C:\Program Files\mosquitto

C:\Program Files\mosquitto>mosquitto_sub -u mohammad2 -p 12345 -t test_sensor_data -h localhost
Error: No connection could be made because the target machine actively refused it.

C:\Program Files\mosquitto>

Command Prompt
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd C:\Program Files\mosquitto

C:\Program Files\mosquitto>mosquitto_pub -u mohammad1 -p 1234 -t test_sensor_data -h localhost -m "hi this message doesn't
allow to deliver"
Error: No connection could be made because the target machine actively refused it.

C:\Program Files\mosquitto>
```

```
Command Prompt - mosquitto_sub -u mohammad1 -P 1234 -t test_sensor_data -h localhost
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd "C:\Program Files\mosquitto"

C:\Program Files\mosquitto>mosquitto_sub -u mohammad1 -P 1234 -t test_sensor_data -h localhost
hi this message allows to deliver

C:\Program Files\mosquitto>

Command Prompt
Do not use this option in a production environment.
--tls-engine : If set, enables the use of a TLS engine device.
--tls-engine-kpats-thal : SHA1 of the key password to be used with the selected SSL engine.
--tls-use-os-certs : Load and trust OS provided CA certificates.
--psk : pre-shared-key in hexadecimal (no leading 0x) to enable TLS-PSK mode.
--psk-identity : client identity string for TLS-PSK mode.
--proxy : SOCKS5 proxy URL of the form:
socks5h://[username[:password]]@hostname[:port]
Only "none" and "username" authentication is supported.
see https://mosquitto.org/ for more information.

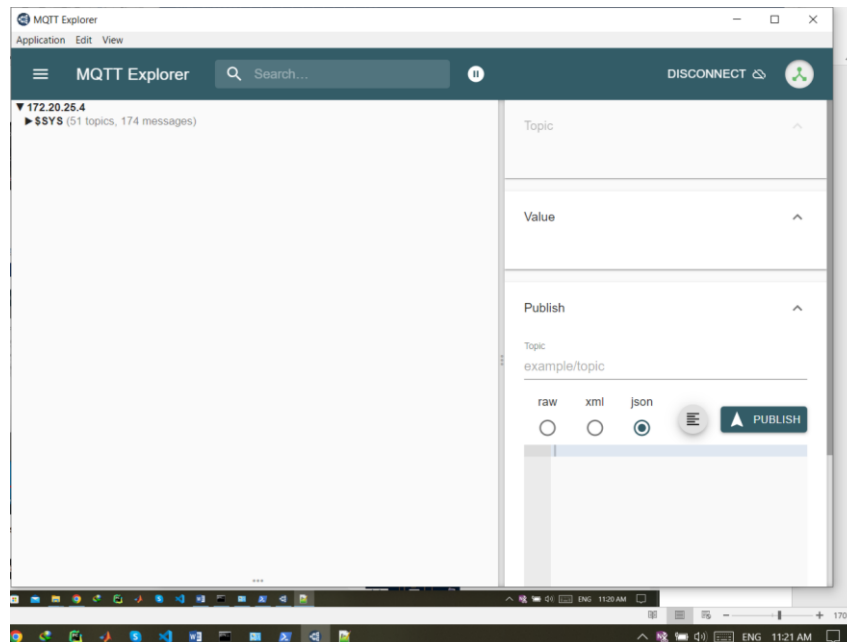
C:\Program Files\mosquitto>mosquitto_pub -u mohammad1 -P 1234 -t test_sensor_data -h localhost -m "hi this message allow
to deliver"

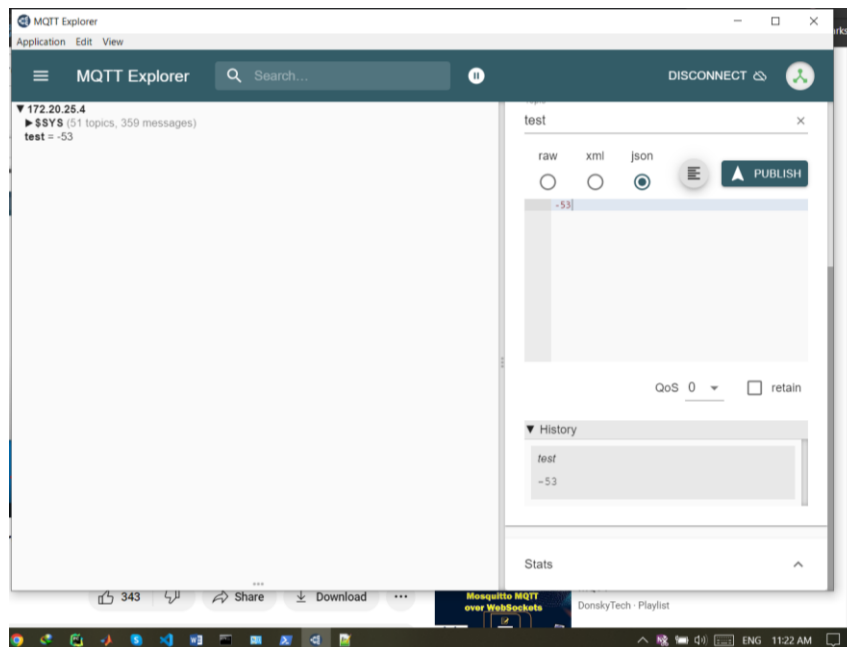
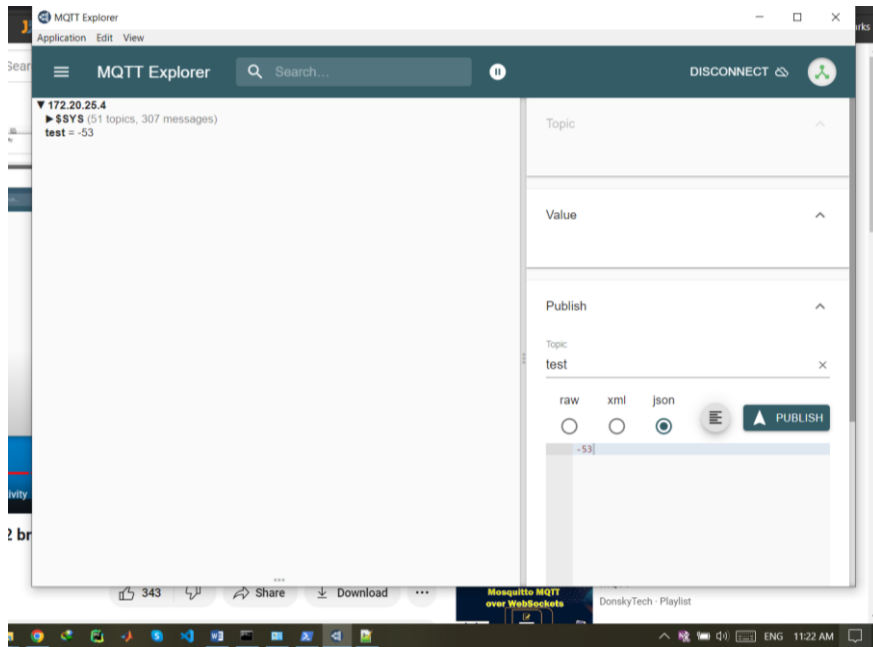
C:\Program Files\mosquitto>
```



```
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
change.log mosquitto.conf
213 *****
214
215 # Listen on a port/ip address combination. By using this variable
216 # multiple times, mosquitto can listen on more than one port. If
217 # this variable is used and neither bind_address nor port given,
218 # then the default listener will not be started.
219 # The port number to listen on must be given. Optionally, an ip
220 # address or host name may be supplied as a second argument. In
221 # this case, mosquitto will attempt to bind the listener to that
222 # address and so restrict access to the associated network and
223 # interface. By default, mosquitto will listen on all interfaces.
224 # Note that for a websockets listener it is not possible to bind to a host
225 # name.
226 #
227 # On systems that support Unix Domain Sockets, it is also possible
228 # to create a # Unix socket rather than opening a TCP socket. In
229 # this case, the port number should be set to 0 and a unix socket
230 # path must be provided, e.g.
231 # listener 0 /tmp/mosquitto.sock
232 #
233 # listener port-number [ip address/host name/unix socket path]
234 listener 1883
235
236 # By default, a listener will attempt to listen on all supported IP protocol
237 # versions. If you do not have an IPv4 or IPv6 interface you may wish to
238 # disable support for either of those protocol versions. In particular, note
```

```
C:\Program Files\mosquitto\mosquitto.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
change.log mosquitto.conf
519 # all clients may connect.
520 # For example, setting "secure-" here would mean a client "secure-
521 # client" could connect but another with clientid "mqtt" couldn't.
522 #clientid_prefixes
523
524 # Boolean value that determines whether clients that connect
525 # without providing a username are allowed to connect. If set to
526 # false then a password file should be created (see the
527 # password_file option) to control authenticated client access.
528 #
529 # Defaults to false, unless there are no listeners defined in the configuration
530 # file, in which case it is set to true, but connections are only allowed from
531 # the local machine.
532 allow_anonymous true
533
534 # -----
535 # Default authentication and topic access control
536 # -----
537
538 # Control access to the broker using a password file. This file can be
539 # generated using the mosquitto_passwd utility. If TLS support is not compiled
540 # into mosquitto (it is recommended that TLS support should be included) then
541 # plain text passwords are used, in which case the file should be a text file
542 # with lines in the format:
543 # username:password
544 # The password (and colon) may be omitted if desired, although this
```





```
+ CategoryInfo          : (FullyQualifiedErrorId : PositionalParameterNotFound,Microsoft.PowerShell.Commands.SetLocationCommand)
PS C:\WINDOWS\system32> cd "C:\Program Files\mosquitto"
PS C:\Program Files\mosquitto> ls

Directory: C:\Program Files\mosquitto

Mode                LastWriteTime         Length Name
----                -
d-----          12/31/2023 11:14 AM             devcl
-a-----          9/19/2023 12:59 AM             230 aclfile.example
-a-----          9/19/2023 12:59 AM          138799 Changelog.txt
-a-----          9/19/2023 12:59 AM             1568 edl-v10
-a-----          9/19/2023 12:59 AM             14197 epl-v20
-a-----          8/2/2023 11:50 AM          6082048 libcrypto-3-x64.dll
-a-----          8/2/2023 11:50 AM          778240 libssl-3-x64.dll
-a-----          12/31/2023 11:19 AM          40451 mosquitto.conf
-a-----          9/27/2023 10:30 AM          87040 mosquitto.dll
-a-----          9/27/2023 10:32 AM          489984 mosquitto.exe
-a-----          9/27/2023 10:30 AM          18432 mosquitto.pdb
-a-----          9/27/2023 10:30 AM          77312 mosquitto_ctl.exe
-a-----          9/27/2023 10:31 AM          123392 mosquitto_dynamic_security.dll
-a-----          9/27/2023 10:30 AM          23552 mosquitto_passwd.exe
-a-----          9/27/2023 10:30 AM          51712 mosquitto_pub.exe
-a-----          9/27/2023 10:30 AM          79872 mosquitto_rr.exe
-a-----          9/27/2023 10:30 AM          81920 mosquitto_sub.exe
-a-----          9/19/2023 12:59 AM             1886 NOTICE.md
-a-----          9/19/2023 12:59 AM             355 pwfile.example
-a-----          9/19/2023 12:59 AM             939 README-letsencrypt.md
-a-----          9/19/2023 12:59 AM             2453 README-windows.txt
-a-----          9/19/2023 12:59 AM             3341 README.md
-a-----          12/31/2023 11:14 AM          68653 Uninstall.exe

PS C:\Program Files\mosquitto> .\mosquitto_passwd.exe -c .\passwd
Error: -c argument given but password file or username missing.
PS C:\Program Files\mosquitto> .\mosquitto_passwd.exe -c .\passwd mamad
Password:
Reenter password:
PS C:\Program Files\mosquitto>
```

```
C:\Program Files\mosquitto\passwd - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
1 mamad:$7910185o/1GpYCNFJ4AAJ8s8kpQ9AbDb0cJ/vKCGWqTTrarDLt9L8EJmbwk7mSf3mgkQaAIC6ixEVYj
2
```





```
Command Prompt - mosquitto_sub -h localhost -p 1883 -u mammad -P 1234 -t temperature
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd C:\Program Files\mosquitto

C:\Program Files\mosquitto>mosquitto_sub -h localhost -p 1883 -u mammad -P 1234 -t temperature
45

Command Prompt
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>cd C:\Program Files\mosquitto

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -u admin -P 123 -t temperature -m 45
connection error: Connection Refused: not authorised.
error: The connection was refused.

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -u admin -P 123 -t temperature -m 45
connection error: Connection Refused: not authorised.
error: The connection was refused.

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -u admin -P 123 -t temperature -m 45
connection error: Connection Refused: not authorised.
error: The connection was refused.

C:\Program Files\mosquitto>mosquitto_pub -h localhost -p 1883 -u mammad -P 1234 -t temperature -m 45
C:\Program Files\mosquitto>
```

## TSL:

First we install open ssl

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19045.3803]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\Program Files\OpenSSL-Win64

C:\Program Files\OpenSSL-Win64>cd bin

C:\Program Files\OpenSSL-Win64\bin>openssl genrsa -des3 -out ca.key 2048
Enter PEM pass phrase:
Verifying - Enter PEM pass phrase:

C:\Program Files\OpenSSL-Win64\bin>openssl genrsa -des3 -out ca.key 2048
Enter PEM pass phrase:
Verifying - Enter PEM pass phrase:

C:\Program Files\OpenSSL-Win64\bin>
```

machine you are operating, watch out for the unit\_name (this must be unique)

```
Administrator: Command Prompt

C:\Program Files\OpenSSL-Win64\bin>openssl genrsa -out server.key 2048

C:\Program Files\OpenSSL-Win64\bin>openssl req -new -x509 -days 1826 -key ca.key -out ca.crt
Enter pass phrase for ca.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]:IR
State or Province Name (full name) [Some-State]:TEHRAN
Locality Name (eg, city) []:TEHRAN
Organization Name (eg, company) [Internet Widgits Pty Ltd]:iot_sharif
Organizational Unit Name (eg, section) []:iot_unit
Common Name (e.g. server FQDN or YOUR name) []:DESKTOP-M42EGS1
Email Address []:dragha73@gmail.com

C:\Program Files\OpenSSL-Win64\bin>openssl genrsa -out server.key 2048

C:\Program Files\OpenSSL-Win64\bin>openssl req -new -out server.csr -key server.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]:IR
State or Province Name (full name) [Some-State]:TEHRAN
Locality Name (eg, city) []:TEHRAN
Organization Name (eg, company) [Internet Widgits Pty Ltd]:iot_sharif
Organizational Unit Name (eg, section) []:iot_server_unit
Common Name (e.g. server FQDN or YOUR name) []:DESKTOP-M42EGS1
Email Address []:dragha73@gmail.com

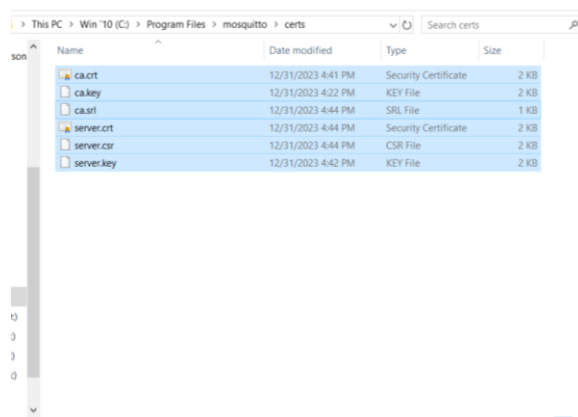
Please enter the following 'extra' attributes
to be sent with your certificate request
A challenge password []:1234
An optional company name []:1234

C:\Program Files\OpenSSL-Win64\bin>openssl x509 -req -in server.csr -CA ca.crt -CAkey ca.key -CAcreateserial -out server.crt -days 360
Certificate request self-signature ok
subject=C=IR, ST=TEHRAN, L=TEHRAN, O=iot_sharif, OU=iot_server_unit, CN=DESKTOP-M42EGS1, emailAddress=dragha73@gmail.com
Enter pass phrase for ca.key:

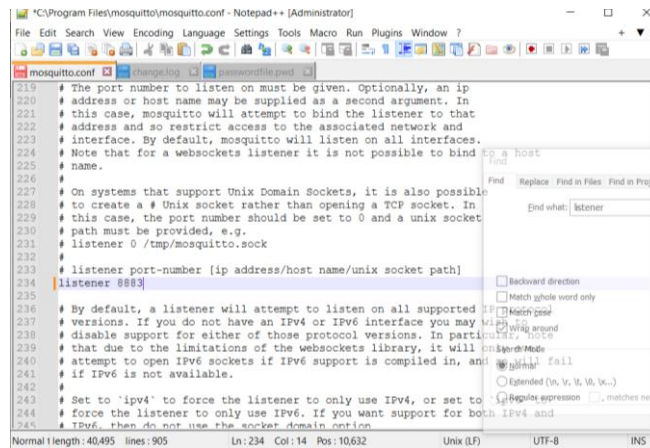
C:\Program Files\OpenSSL-Win64\bin>
```

## Transfer

We transfer certificates file to mosquito\certs and give this address to config

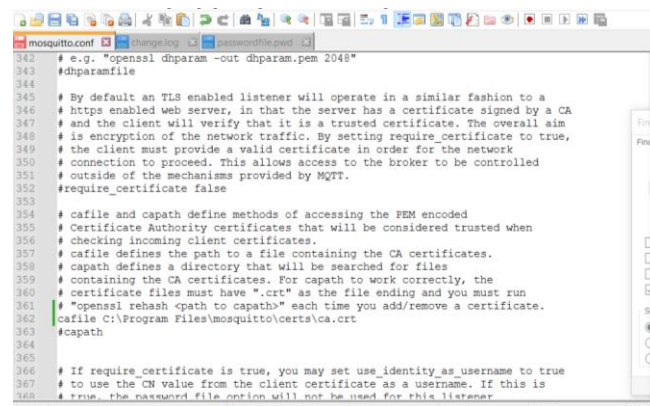


We change port to 8883 to test this in different port(other than 1883)

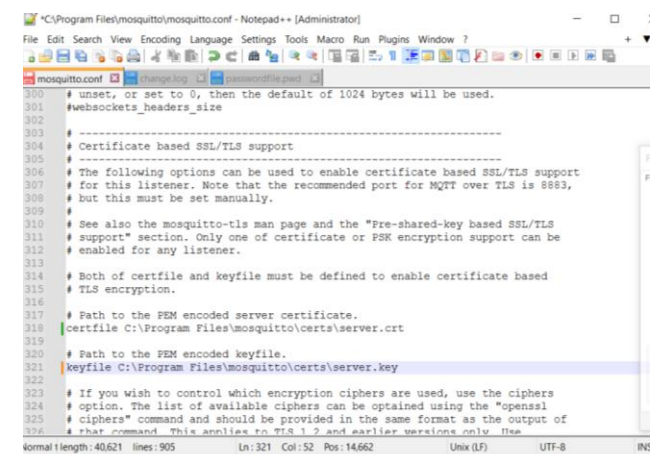


```
219 # The port number to listen on must be given. Optionally, an ip
220 # address or host name may be supplied as a second argument. In
221 # this case, mosquitto will attempt to bind the listener to that
222 # address and so restrict access to the associated network and
223 # interface. By default, mosquitto will listen on all interfaces.
224 # Note that for a websockets listener it is not possible to bind
225 # name.
226 #
227 # On systems that support Unix Domain Sockets, it is also possible
228 # to create a # Unix socket rather than opening a TCP socket. In
229 # this case, the port number should be set to 0 and a unix socket
230 # path must be provided, e.g.
231 # listener 0 /tmp/mosquitto.sock
232 #
233 # listener port-number [ip address/host name/unix socket path]
234 listener 8883
235
236 # By default, a listener will attempt to listen on all supported
237 # versions. If you do not have an IPv4 or IPv6 interface you may wish
238 # to disable support for either of those protocol versions. In particular, note
239 # that due to the limitations of the websockets library, it will only
240 # attempt to open IPv6 sockets if IPv6 support is compiled in, and
241 # if IPv6 is not available.
242 #
243 # Set to 'ipv4' to force the listener to only use IPv4, or set to
244 # 'ipv6' to force the listener to only use IPv6. If you want support for both
245 # IPv4 and IPv6 then do not use the socket_address option.
```

We define cafile C:\Program Files\mosquitto\certs\ca.crt, certfile C:\Program Files\mosquitto\certs\server.crt, keyfile C:\Program Files\mosquitto\certs\server.key in mosquitto.conf



```
342 # e.g. "openssl dhparam -out dhparam.pem 2048"
343 #dhparamfile
344
345 # By default an TLS enabled listener will operate in a similar fashion to a
346 # https enabled web server, in that the server has a certificate signed by a CA
347 # and the client will verify that it is a trusted certificate. The overall aim
348 # is encryption of the network traffic. By setting require_certificate to true,
349 # the client must provide a valid certificate in order for the network
350 # connection to proceed. This allows access to the broker to be controlled
351 # outside of the mechanisms provided by MQTT.
352 #require_certificate false
353
354 # cafile and capath define methods of accessing the PEM encoded
355 # Certificate Authority certificates that will be considered trusted when
356 # checking incoming client certificates.
357 # cafile defines the path to a file containing the CA certificates.
358 # capath defines a directory that will be searched for files
359 # containing the CA certificates. For capath to work correctly, the
360 # certificate files must have ".crt" as the file ending and you must run
361 # "openssl rehash <path to capath>" each time you add/remove a certificate.
362 cafile C:\Program Files\mosquitto\certs\ca.crt
363 #capath
364
365 # If require_certificate is true, you may set use_identity_as_username to true
366 # to use the CN value from the client certificate as a username. If this is
367 # true, the password file option will not be used for this listener
```



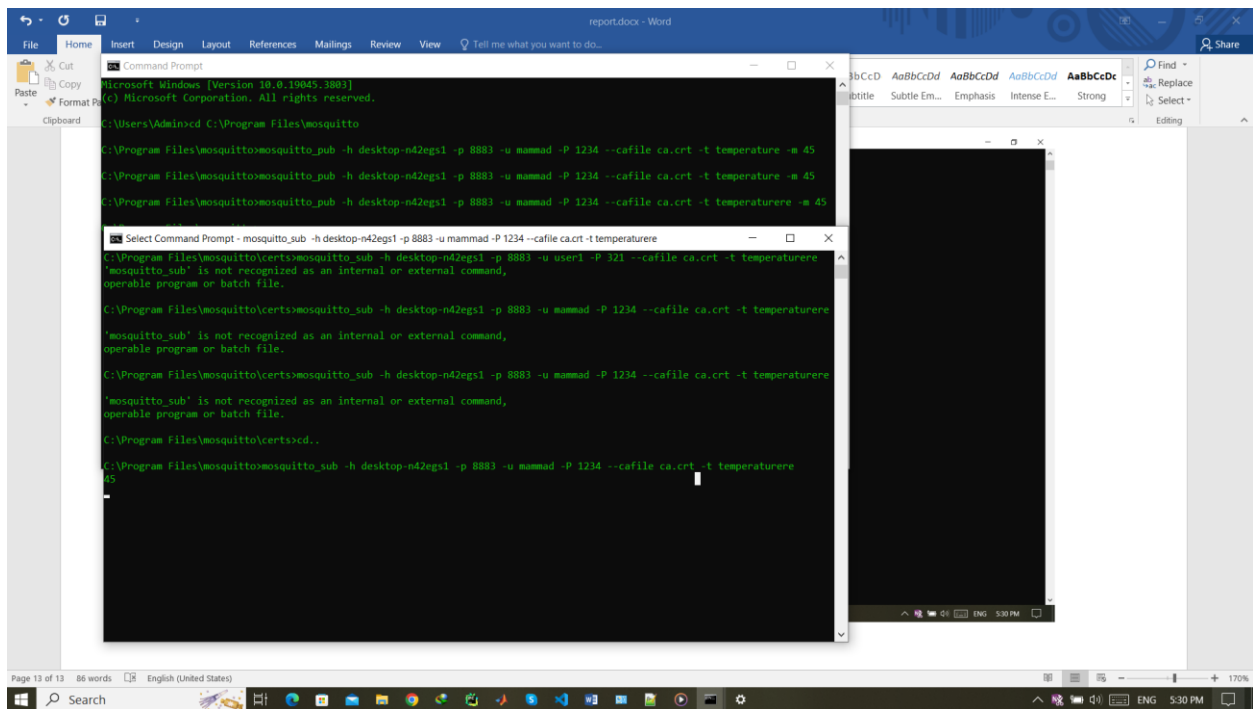
```
300 # unset, or set to 0, then the default of 1024 bytes will be used.
301 #websockets_headers_size
302
303 #-----
304 # Certificate based SSL/TLS support
305 #-----
306 # The following options can be used to enable certificate based SSL/TLS support
307 # for this listener. Note that the recommended port for MQTT over TLS is 8883,
308 # but this must be set manually.
309 #
310 # See also the mosquitto-tls man page and the "Pre-shared-key based SSL/TLS
311 # support" section. Only one of certificate or PSK encryption support can be
312 # enabled for any listener.
313 #
314 # Both of certfile and keyfile must be defined to enable certificate based
315 # TLS encryption.
316 #
317 # Path to the PEM encoded server certificate.
318 certfile C:\Program Files\mosquitto\certs\server.crt
319
320 # Path to the PEM encoded keyfile.
321 keyfile C:\Program Files\mosquitto\certs\server.key
322
323 # If you wish to control which encryption ciphers are used, use the ciphers
324 # option. The list of available ciphers can be obtained using the "openssl
325 # ciphers" command and should be provided in the same format as the output of
326 # that command. This applies to TLS 1.2 and earlier versions only. Use
```

And due to this fact our mosquitto\_sub command is in mosquitto file we have to have a copy of certificate in mosquitto file (especially ca.crt others are ptional)

Name	Date modified	Type	Size
certs	12/31/2023 4:47 PM	File folder	
devel	12/31/2023 11:14 AM	File folder	
adfile.example	9/19/2023 12:59 AM	EXAMPLE File	1 KB
ca.crt	12/31/2023 4:41 PM	Security Certificate	2 KB
ca.key	12/31/2023 4:22 PM	KEY File	2 KB
ca.srl	12/31/2023 4:44 PM	SRL File	1 KB
ChangeLog.txt	9/19/2023 12:59 AM	Text Document	136 KB
edi-v10	9/19/2023 12:59 AM	File	2 KB
epi-v20	9/19/2023 12:59 AM	File	14 KB
libcrypto-3-x64.dll	8/2/2023 11:50 AM	Application extens...	5,940 KB
libssl-3-x64.dll	8/2/2023 11:50 AM	Application extens...	760 KB
mosquitto.conf	12/31/2023 5:22 PM	CONF File	40 KB
mosquitto.dll	9/27/2023 10:30 AM	Application extens...	85 KB
mosquitto.exe	9/27/2023 10:32 AM	Application	479 KB
mosquitto_ctrl.exe	9/27/2023 10:30 AM	Application	76 KB
mosquitto_dynamic_security.dll	9/27/2023 10:31 AM	Application extens...	121 KB
mosquitto_passwd.exe	9/27/2023 10:30 AM	Application	23 KB
mosquitto_pub.exe	9/27/2023 10:30 AM	Application	51 KB
mosquitto_rr.exe	9/27/2023 10:30 AM	Application	78 KB
mosquitto_sub.exe	9/27/2023 10:30 AM	Application	80 KB
mosquitto_top.dll	9/27/2023 10:30 AM	Application extens...	18 KB
NOTICE.md	9/19/2023 12:59 AM	Markdown Source ...	2 KB
passwd	12/31/2023 11:27 AM	File	1 KB
passwordfile.pwd	12/31/2023 11:51 AM	PWD File	1 KB
pwfile.example	9/19/2023 12:59 AM	EXAMPLE File	1 KB
README.md	9/19/2023 12:59 AM	Markdown Source ...	4 KB
README-letsencrypt.md	9/19/2023 12:59 AM	Markdown Source ...	1 KB
README-windows.txt	9/19/2023 12:59 AM	Text Document	3 KB
server.crt	12/31/2023 4:44 PM	Security Certificate	2 KB
server.csr	12/31/2023 4:44 PM	CSR File	2 KB
server.key	12/31/2023 4:42 PM	KEY File	2 KB
Uninstall.exe	12/31/2023 11:14 AM	Application	68 KB

```
Administrator: Command Prompt - mosquitto -c mosquitto.conf -v
C:\Program Files\mosquitto>mosquitto -c mosquitto.conf -v
1704030823: mosquitto version 2.0.18 starting
1704030823: Config loaded from mosquitto.conf.
1704030823: Opening ipv6 listen socket on port 8883.
1704030823: Opening ipv4 listen socket on port 8883.
1704030823: mosquitto version 2.0.18 running
1704030836: New connection from fe80::1699:1d02:429f:5d26:61788 on port 8883.
1704030836: New client connected from fe80::1699:1d02:429f:5d26:61788 as auto-70ED278C-0164-A396-EAA9-BC47013FACEB (p2, c1, k00, u'mammad').
1704030836: No will message specified.
1704030836: Sending CONNACK to auto-70ED278C-0164-A396-EAA9-BC47013FACEB (0, 0)
1704030836: Received SUBSCRIBE from auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704030836:   temperaturere (QoS 0)
1704030836: auto-70ED278C-0164-A396-EAA9-BC47013FACEB 0 temperaturere
1704030836: Sending SUBACK to auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704030836: Received PINGREQ from auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704030836: Sending PINGRESP to auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704030839: New connection from fe80::1699:1d02:429f:5d26:61814 on port 8883.
1704030839: New client connected from fe80::1699:1d02:429f:5d26:61814 as auto-02F7F80C-5817-E71B-40CA-779354A8F3EA (p2, c1, k00, u'mammad').
1704030839: No will message specified.
1704030839: Sending CONNACK to auto-02F7F80C-5817-E71B-40CA-779354A8F3EA (0, 0)
1704030839: Received PUBLISH from auto-02F7F80C-5817-E71B-40CA-779354A8F3EA (d0, q0, r0, m0, "temperature", ... (2 bytes))
1704030839: Received DISCONNECT from auto-02F7F80C-5817-E71B-40CA-779354A8F3EA
1704030839: Client auto-02F7F80C-5817-E71B-40CA-779354A8F3EA disconnected.
1704030855: Received PINGREQ from auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704030855: Sending PINGRESP to auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704031016: Received PINGREQ from auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704031016: Sending PINGRESP to auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704031044: New connection from fe80::1699:1d02:429f:5d26:61823 on port 8883.
1704031044: New client connected from fe80::1699:1d02:429f:5d26:61823 as auto-959E4AAB-9CAD-93F3-D42A-9B27C72E745E (p2, c1, k00, u'mammad').
1704031044: No will message specified.
1704031044: Sending CONNACK to auto-959E4AAB-9CAD-93F3-D42A-9B27C72E745E (0, 0)
1704031044: Received PUBLISH from auto-959E4AAB-9CAD-93F3-D42A-9B27C72E745E (d0, q0, r0, m0, "temperature", ... (2 bytes))
1704031044: Received DISCONNECT from auto-959E4AAB-9CAD-93F3-D42A-9B27C72E745E
1704031070: Client auto-959E4AAB-9CAD-93F3-D42A-9B27C72E745E disconnected.
1704031070: Received PINGREQ from auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704031070: Sending PINGRESP to auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704031135: Received PINGREQ from auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704031135: Sending PINGRESP to auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704031188: New connection from fe80::1699:1d02:429f:5d26:61845 on port 8883.
1704031188: New client connected from fe80::1699:1d02:429f:5d26:61845 as auto-C12DCEAB-7EB0-F742-EF56-DF5CA308FD59 (p2, c1, k00, u'mammad').
1704031188: No will message specified.
1704031188: Sending CONNACK to auto-C12DCEAB-7EB0-F742-EF56-DF5CA308FD59 (0, 0)
1704031188: Received PUBLISH from auto-C12DCEAB-7EB0-F742-EF56-DF5CA308FD59 (d0, q0, r0, m0, "temperature", ... (2 bytes))
1704031188: Sending PUBLISH to auto-70ED278C-0164-A396-EAA9-BC47013FACEB (d0, q0, r0, m0, "temperature", ... (2 bytes))
1704031188: Received DISCONNECT from auto-C12DCEAB-7EB0-F742-EF56-DF5CA308FD59
1704031196: Client auto-C12DCEAB-7EB0-F742-EF56-DF5CA308FD59 disconnected.
1704031196: Received PINGREQ from auto-70ED278C-0164-A396-EAA9-BC47013FACEB
1704031196: Sending PINGRESP to auto-70ED278C-0164-A396-EAA9-BC47013FACEB
```

Two first commands because the topic is different

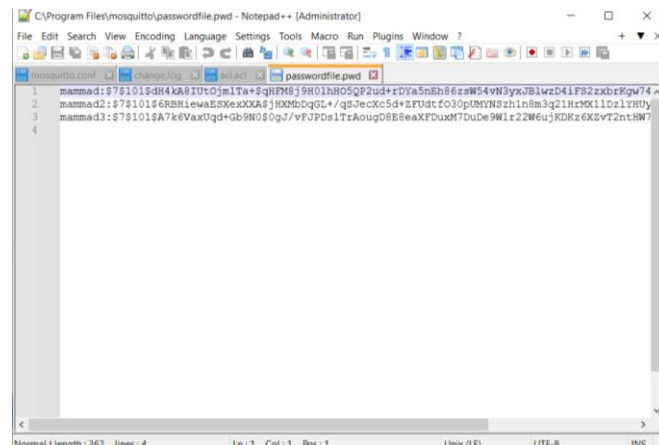


AcI:

Mammad ->1234

Mammad2->12345

Mammad3->1234





```
C:\Program Files\mosquitto\mosquitto.conf - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
mosquitto.conf change.log aclacl passwordfile.pwd
599 # been given.
600 #
601 # If using bridges with usernames and ACLs, connection messages can be allowed
602 # with the following pattern:
603 # pattern write $SYS/broker/connection/%c/state
604 #
605 # pattern [read|write|readwrite] <topic>
606 #
607 # Example:
608 #
609 # pattern write sensor/%u/data
610 #
611 # If an plugin is used as well as acl_file, the plugin check will be
612 # made first.
613 acl_file C:\Program Files\mosquitto\acl.acl
614
615 -----
616 # External authentication and topic access plugin options
617 -----
618 #
619 # External authentication and access control can be supported with the
620 # plugin option. This is a path to a loadable plugin. See also the
621 # plugin_opt_* options described below.
622 #
623 # The plugin option can be specified multiple times to load multiple
624 # plugins. The plugins will be processed in the order that they are specified
625 # here. If the plugin option is specified alongside either of
Normal text length: 40,658 lines: 905 Ln: 613 Col: 44 Pos: 27,208 Unix (LF) UTF-8 INS
```

```
C:\Program Files\mosquitto\acl.acl - Notepad++ [Administrator]
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
mosquitto.conf change.log aclacl passwordfile.pwd
1 user mammad
2 topic readwrite employee1room
3 topic readwrite publicroom
4
5 user mammad2
6 topic readwrite employee2room
7 topic readwrite publicroom
8
9 user mammad3
10 topic readwrite employee3room
11 topic readwrite publicroom
12
Normal text length: 222 lines: 12 Ln: 11 Col: 16 Pos: 210 Windows (CR LF) UTF-8 INS
```

For first message (45) I didn't save the config file so in the second pub we get the answer then I published with "mammad2" and I didn't receive so I expected then I tried to publish in publicroom then I recognized I defined "topic read public room" then I changed that to "readwrite" after that I published in publicroom and I received the message in public room

```
Command Prompt - mosquitto_sub -h localhost -u mammad -P 1234 -p 1883 -t publicroom
C:\Program Files\mosquitto>mosquitto_sub -h localhost -u mammad -P 12345 -p 1883 -t employee1room
C:\Program Files\mosquitto>mosquitto_sub -h localhost -u mammad -P 12345 -p 1883 -t employee1room
C:\Program Files\mosquitto>mosquitto_sub -h localhost -u mammad -P 1234 -p 1883 -t employee1room
hello
C:\Program Files\mosquitto>employee1room
'employee1room' is not recognized as an internal or external command,
operable program or batch file.
C:\Program Files\mosquitto>mosquitto_sub -h localhost -u mammad -P 1234 -p 1883 -t employee1room
45
C:\Program Files\mosquitto>mosquitto_sub -h localhost -u mammad -P 1234 -p 1883 -t publicroom
C:\Program Files\mosquitto>mosquitto_sub -h localhost -u mammad -P 1234 -p 1883 -t publicroom
hihi public

Command Prompt
C:\Program Files\mosquitto>mosquitto_pub -h localhost -u mammad -P 1234 -p 1883 -t employee1room -m 45
C:\Program Files\mosquitto>mosquitto_pub -h localhost -u mammad -P 1234 -p 1883 -t employee1room -m 45
C:\Program Files\mosquitto>mosquitto_pub -h localhost -u mammad2 -P 12345 -p 1883 -t employee1room -m 45
C:\Program Files\mosquitto>mosquitto_pub -h localhost -u mammad2 -P 12345 -p 1883 -t employee1room -m "hihi"
C:\Program Files\mosquitto>mosquitto_pub -h localhost -u mammad2 -P 12345 -p 1883 -t room -m "hihi public"
C:\Program Files\mosquitto>mosquitto_pub -h localhost -u mammad2 -P 12345 -p 1883 -t room -m "hihi public"
C:\Program Files\mosquitto>mosquitto_pub -h localhost -u mammad2 -P 12345 -p 1883 -t publicroom -m "hihi public"
C:\Program Files\mosquitto>
```