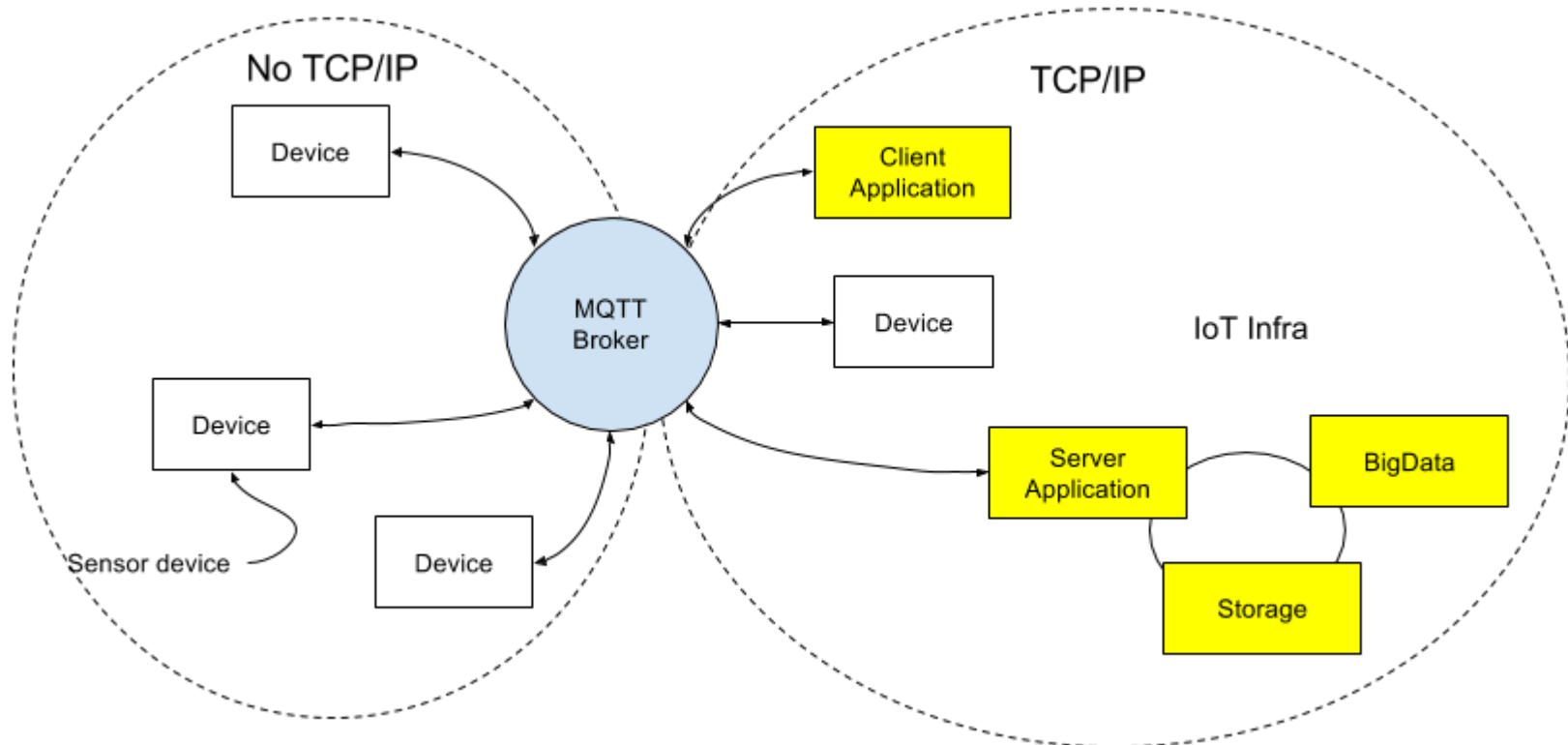


MQTT - Mosquitto

MQTT

❖ MQTT

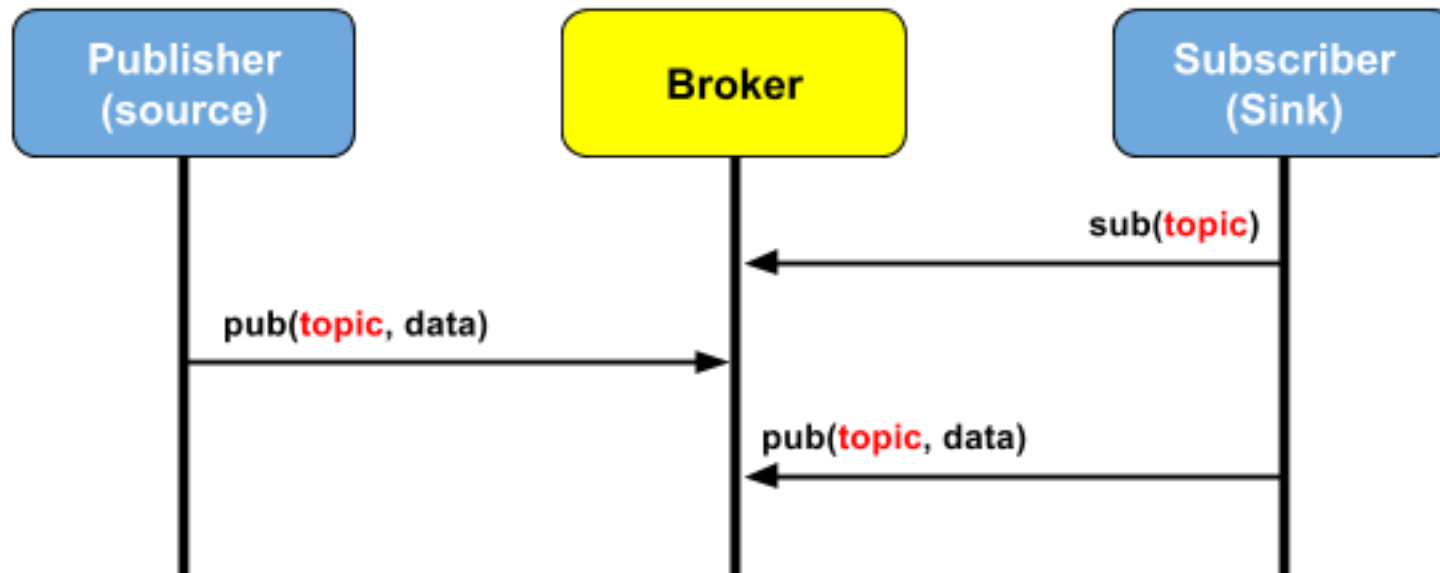
- <https://www.joinc.co.kr/w/man/12/MQTT/Tutorial>
- 경량의 Publish/Subscribe(Pub/Sub) 메시징 프로토콜
- M2M(machine-to-machine)와 IoT(Internet of things)에서 주로 사용
 - IoT에서는 주로 센서 정보 수집용으로 사용



MQTT

❖ Publish/Subscribe

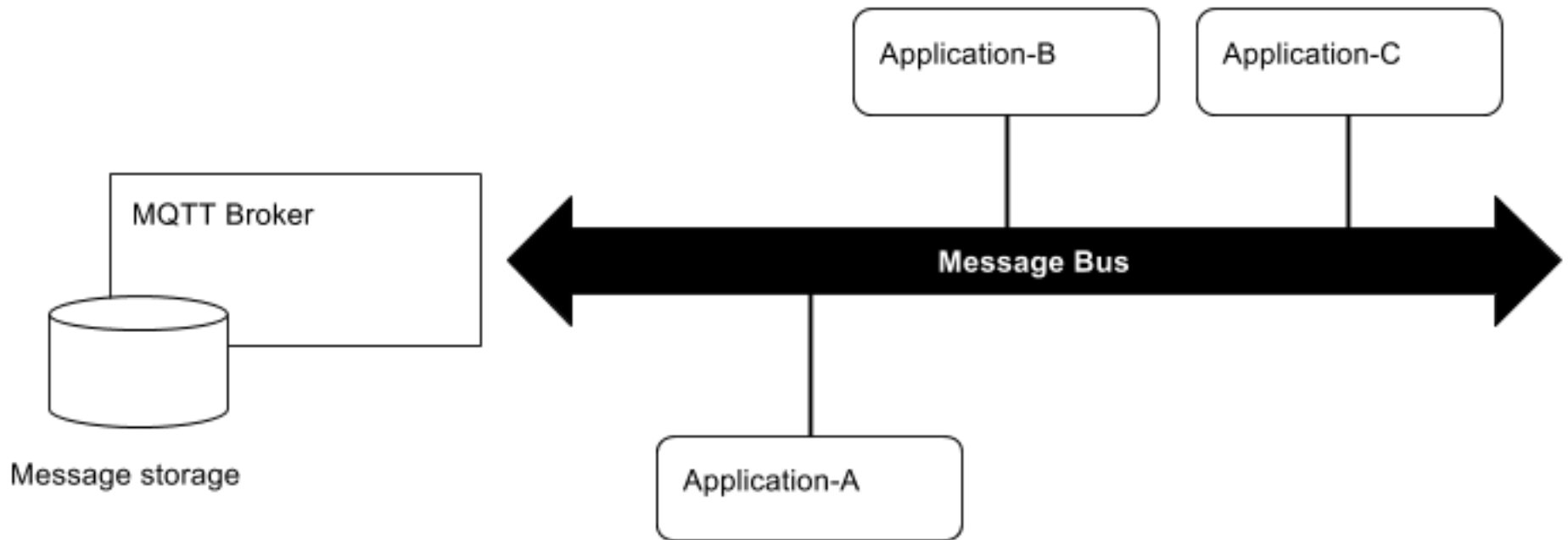
- MQTT 프로토콜
 - 메시지를 발행(publishing) 하고, 관심 있는 주제를 구독(subscribe) 함
 - Publisher과 Subscriber은 모두 Broker에 대한 클라이언트로 작동
 - Publisher
 - 토픽을 발행하기 위한 목적으로 Broker 서버에 연결
 - Subscriber
 - 토픽을 구독하기 위한 목적으로 Broker 서버에 연결



MQTT

❖ 메시지 버스

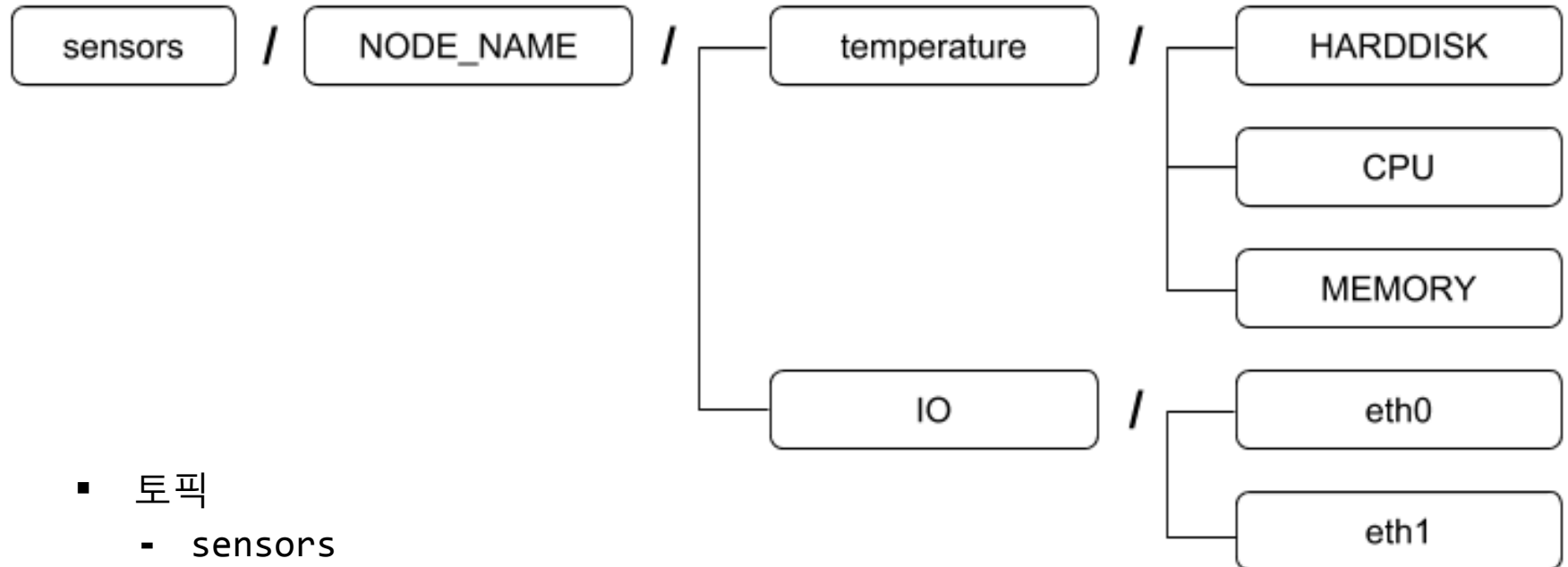
- MQTT Broker가 메시지 버스를 생성
- 여기에 메시지 전송
 - 버스에 붙은 애플리케이션들이 메시지를 읽어감
 - 다양한 주제의 메시지들이 전송 가능
- Topic으로 메시지를 구분 → 메시지 채널 형성



MQTT

❖ MQTT Topic

- ‘/’을 이용하여 계층적으로 구성



- 토픽
 - sensors
 - sensors/NODE_NAME
 - sensors/NODE_NAME/temperature
 - sensors/NODE_NAME/temperature/CPU
 - sensors/NODE_NAME/IO
 - sensors/NODE_NAME/IO/eth0

❖ MQTT Topic

- 와일드 카드 문자
 - + : 지정한 1 level 계층 모두 구독
 - /home/sensor/+
 - /home/sensor/t1 → 구독 가능
 - /home/sensor/t2 → 구독 가능
 - /home/sensor → 구독 불가능
 - /home/sensor/temp/t1 → 구독 불가능
 - # : 현재 계층을 포함한 모든 하위 계층
 - /home/sensor/#
 - /home/sensor/t1 → 구독 가능
 - /home/sensor/t2 → 구독 가능
 - /home/sensor → 구독 가능
 - /home/sensor/temp/t1 → 구독 가능

MQTT

❖ MQTT 브로커 및 라이브러리

Name	Developed by	Language	Type
Adafruit IO	Adafruit	Ruby on Rails , Node.js ^[29]	Client
M2Mqtt	eclipse	C#	Client
Machine Head	ClojureWerkz Team	Clojure	Client
moquette	Selva, Andrea	Java	Broker
Mosquitto	eclipse	C , Python	Broker
Paho MQTT	eclipse	C , C++ , Java , Javascript , Python , Go	Client
wolfMQTT	wolfSSL	C	Client

Mosquitto

❖ mosquitto

- <https://mosquitto.org/download/>

Binary Installation

Windows

- [mosquitto-1.4.14-install-win32.exe](#) (~200 kB) (Native build, Windows Vista and up, built with Visual Studio Community 2015)
- [mosquitto-1.4.14-install-cygwin.exe](#) (~200 kB) (Cygwin build, Windows XP and up)

See the readme-windows.txt after installing for Windows specific details and dependencies.

Mac

Mosquitto can be installed from the homebrew project. See <http://brew.sh/> and then use "brew install mosquitto"

Arch Linux

- <https://aur.archlinux.org/packages/mosquitto/>

CentOS

Download the repository config file for your CentOS version from below and copy it to /etc/yum.repos.d/ You'll now be able to install and keep mosquitto up to date using the normal package management tools.

The available packages are: mosquitto, mosquitto-clients, libmosquitto1, libmosquitto-devel, libmosquittopp1, libmosquittopp-devel, python-mosquitto.

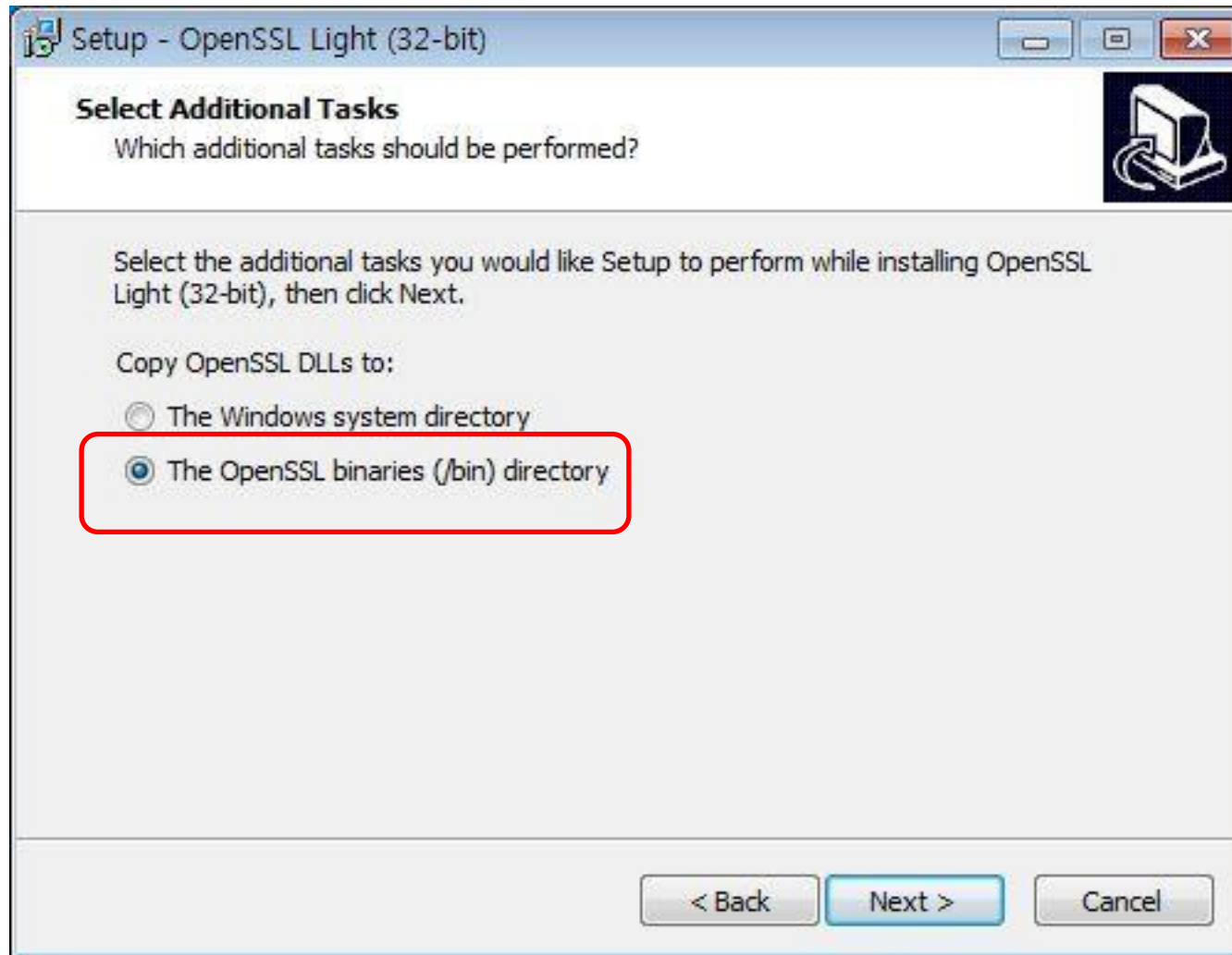
- [CentOS 7](#)
- [CentOS 6](#)

❖ OpenSSL

- <http://slproweb.com/products/Win32OpenSSL.html>

Download Win32 OpenSSL		
Download Win32 OpenSSL today using the links below!		
File	Type	Description
Win32 OpenSSL v1.1.0g Light	3MB Installer	Installs the most commonly used essentials of Win32 OpenSSL v1.1.0g (Recommended for users by the creators of OpenSSL). Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win32 OpenSSL v1.1.0g	30MB Installer	Installs Win32 OpenSSL v1.1.0g (Recommended for software developers by the creators of OpenSSL). Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win64 OpenSSL v1.1.0g Light	3MB Installer	Installs the most commonly used essentials of Win64 OpenSSL v1.1.0g (Only install this if you need 64-bit OpenSSL for Windows. Only installs on 64-bit versions of Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win64 OpenSSL v1.1.0g	33MB Installer	Installs Win64 OpenSSL v1.1.0g (Only install this if you are a software developer needing 64-bit OpenSSL for Windows. Only installs on 64-bit versions of Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win32 OpenSSL v1.0.2n Light	2MB Installer	Installs the most commonly used essentials of Win32 OpenSSL v1.0.2n (Recommended for users by the creators of OpenSSL). Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win32 OpenSSL v1.0.2n	20MB Installer	Installs Win32 OpenSSL v1.0.2n (Recommended for software developers by the creators of OpenSSL). Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.
Win64 OpenSSL v1.0.2n Light	3MB Installer	Installs the most commonly used essentials of Win64 OpenSSL v1.0.2n (Only install this if you need 64-bit OpenSSL for Windows. Only installs on 64-bit versions of Windows. Note that this is a default build of OpenSSL and is subject to local and state laws. More information can be found in the legal agreement of the installation.

❖ OpenSSL 설치



Mosquitto

❖ OpenSSL의 bin 폴더에서

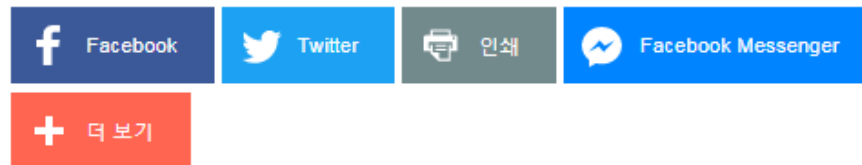
- libeay32.dll, ssleay32.dll 두 개의 DLL 파일을 mosquitto 설치 폴더에 복사

Mosquitto

❖ pthreadVC2.dll

- https://www.dllme.com/dll/files/pthreadvc2_dll.html
- pthreadVC2.dll 파일을 mosquitto 설치 디렉토리에 복사

pthreadvc2.dll Download



Download and install **pthreadvc2.dll** to fix missing or corrupted dll errors.

Developer: Open Source Software community project

Description: POSIX Threads for Windows32 Library

Filename: **pthreadvc2.dll**

Version: 2 8 0

Size: 84.1KB

Copyright (C) Project contributors 19982004

[Download Now](#)

[Comments \(0\)](#)

Mosquitto

❖ Mosquitto 브로커 실행

- 명령창에서 (Mosquitto 설치디렉토리에서) 다음 명령어 실행

```
> mosquitto -v
```

- 브로커의 모든 메시지 출력

Mosquitto

❖ Subscribe 실행

- 실행 형식

```
mosquitto_sub -h 호스트 -t 토픽명
```

- 명령창에서 (Mosquitto 설치디렉토리에서) 다음 명령어 실행

```
mosquitto_sub -h localhost -t /greet
```

Mosquitto

❖ Publisher 실행

- 실행 형식

```
mosquitto_pub -h 호스트 -t 토픽명 -m 메시지
```

- 명령창에서 (Mosquitto 설치디렉토리에서) 다음 명령어 실행

```
mosquitto_pub -h localhost -t /greet -m 'Hello'
```