



oneM2M Platform and Tools

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Motivation



- For the two days tutorial we're going to use the open source oneM2M platform implementation, Mobius, which is oneM2M certified
- From OCEAN open source community other tools for oneM2M are also supported as well as the Mobius
- In this session we're going to learn how to use them

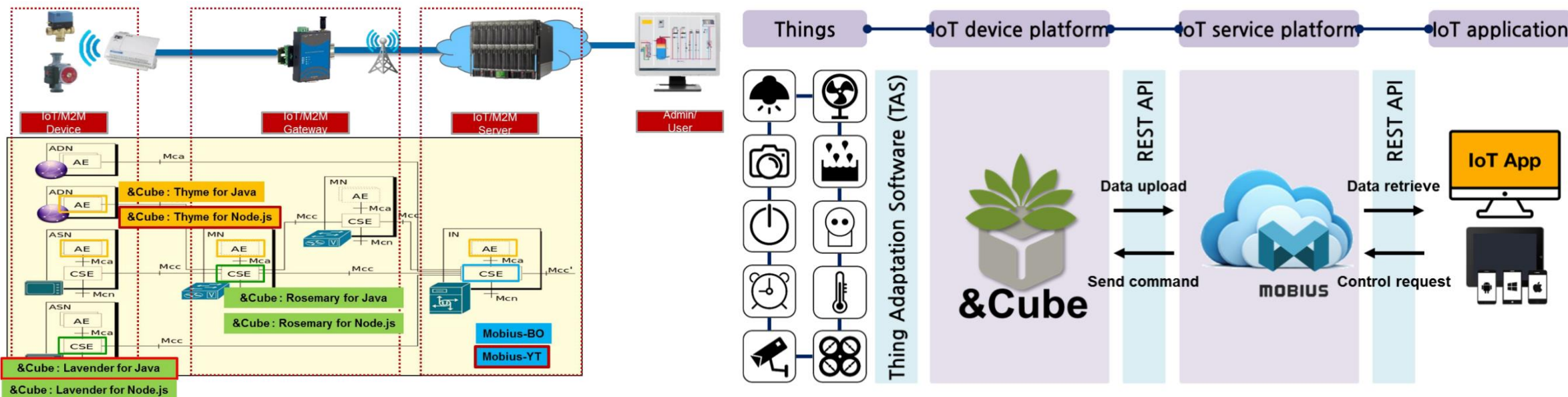
- Introduction Mobius
 - What is Mobius?
 - Mobius Platform
- Mobius Installation
 - Install process
 - Mobius Installation
 - Connect MySQL
- Running Mobius Server
 - Runtime Environment Configuration
 - Mobius Test
- Short Name Finder



Introduction Mobius

What is Mobius?

- Mobius is an IoT service opensource platform base on oneM2M standard
- Manages various IoT device information and provides functions such as access control, authentication, and management of IoT devices.
- Support REST API (HTTP, MQTT, CoAP, WebSocket) to interwork other various IoT devices



- The Mobius platform is a server software platform that manages IoT devices connected to the Internet to operate smoothly and stores data from IoT devices
- The Mobius platform works the role of the middleware connecting IoT devices and applications
- Mobius supports MySQL based on Nodejs and supports various protocols to provide high connectivity



Mobius Installation

Installation Overview

- The Mobius platform can be installed on any OS that supports
 1. MySQL (Database)
 2. MQTT broker (MQTT server)
 3. Node.js
 4. Mobius Installation
- This tutorial provides windows installation for Linux, please follow the link <https://github.com/IoTKETI/Mobius/wiki>



MySQL Installation

- Mobius operates based on MySQL DB for data storage and management.
 - <https://dev.mysql.com/downloads/mysql/>

General Availability (GA) Releases Archives

MySQL Community Server 8.0.21

Select Operating System:
Microsoft Windows

Looking for previous GA versions?

Recommended Download:

MySQL Installer for Windows

All MySQL Products. For All Windows Platforms. In One Package.

Starting with MySQL 5.6 the MySQL Installer package replaces the standalone MSI packages.

Windows (x86, 32 & 64-bit), MySQL Installer MSI

Go to Download Page >

Other Downloads:

Windows (x86, 64-bit), ZIP Archive (mysql-8.0.21-winx64.zip)	8.0.21	111.1M	Download
---	--------	--------	----------

MD5: 06d745c77b254e160807bdc2f5245352 | Signature

General Availability (GA) Releases Archives

MySQL Installer 8.0.21

Select Operating System:
Microsoft Windows

Looking for previous GA versions?

Windows (x86, 32-bit), MSI Installer (mysql-installer-web-community-8.0.21.0.msi)	8.0.21	24.5M	Download
MD5: cf2b46ba35a4443f41fb8e94a0e91d93 Signature			
Windows (x86, 32-bit), MSI Installer (mysql-installer-community-8.0.21.0.msi)	8.0.21	427.6M	Download
MD5: b52294aa854356c266e9a9aec737ba08 Signature			

MySQL Installation

- Click **No thanks, just start my download**

Login Now or Sign Up for a free account.

An Oracle Web Account provides you with the following advantages:

- Fast access to MySQL software downloads
- Download technical White Papers and Presentations
- Post messages in the MySQL Discussion Forums
- Report and track bugs in the MySQL bug system

Login »

using my Oracle Web account

Sign Up »

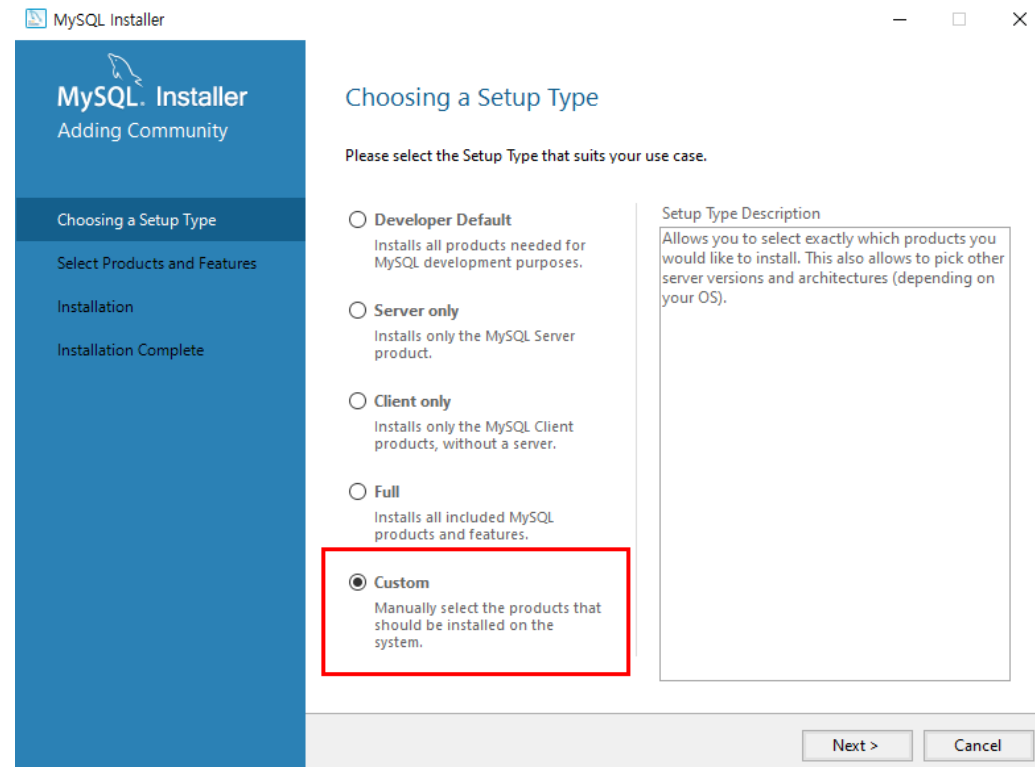
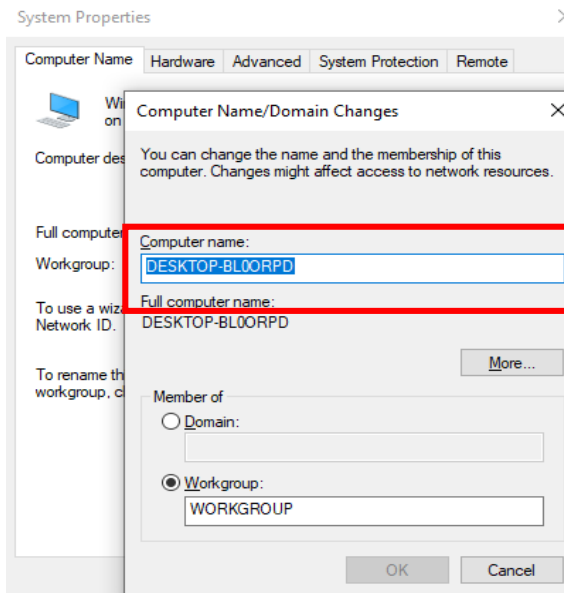
for an Oracle Web account

MySQL.com is using Oracle SSO for authentication. If you already have an Oracle Web account, click the Login link. Otherwise, you can signup for a free account by clicking the Sign Up link and following the instructions.

No thanks, just start my download.

MySQL Installation

- Before the installation, make sure to use the Windows computer name in English
 - If you use other languages, there will be DB connection error
- Run MySQL Installer
 - Install as **Custom**



MySQL Installation

- Install MySQL sever and MySQL Workbench

MySQL Installer

Adding Community

Choosing a Setup Type

Select Products and Features

Installation

Product Configuration

Installation Complete

Select Products and Features

Please select the products and features you would like to install on this machine.

Filter:

All Software,Current Bundle,Any

Edit

Available Products:

MySQL Servers

MySQL Server

MySQL Server 8.0

MySQL Server 8.0.21 - X64

Applications

MySQL Workbench

MySQL Workbench 8.0

MySQL Workbench 8.0.21

MySQL Notifier

MySQL For Excel

MySQL for Visual Studio

MySQL Shell

MySQL Router

MySQL Connectors

Products/Features To Be Installed:

MySQL Server 8.0.21 - X64

MySQL Workbench 8.0.21 - X64

Published: 2020년 7월 6일 일요일

Estimated Size: 122 MB

Release Notes: <http://dev.mysql.com/doc/relnotes/workbench/en/wb-news-8-0-21.html>

< Back

Next >

Cancel

MySQL Installer

Adding Community

Choosing a Setup Type

Select Products and Features

Installation

Product Configuration

Installation Complete

Installation

The following products will be installed.

Product	Status	Progress	Notes
MySQL Server 8.0.21	Ready to Install		
MySQL Workbench 8.0.21	Ready to Install		

Click [Execute] to install the following packages.

< Back

Execute

Cancel

MySQL Installation

- MySQL configuration

MySQL Installer

Product Configuration

We'll now walk through a configuration wizard for each of the following products.

You can cancel at any point if you wish to leave this wizard without configuring all the products.

Product	Status
MySQL Server 8.0.21	Ready to configure

MySQL Installer

MySQL Server 8.0.21

High Availability

☒ Standalone MySQL Server / Classic MySQL Replication

Choose this option to run the MySQL instance as a standalone database server with the opportunity to configure classic replication later. With this option, you can provide your own high-availability solution, if required.

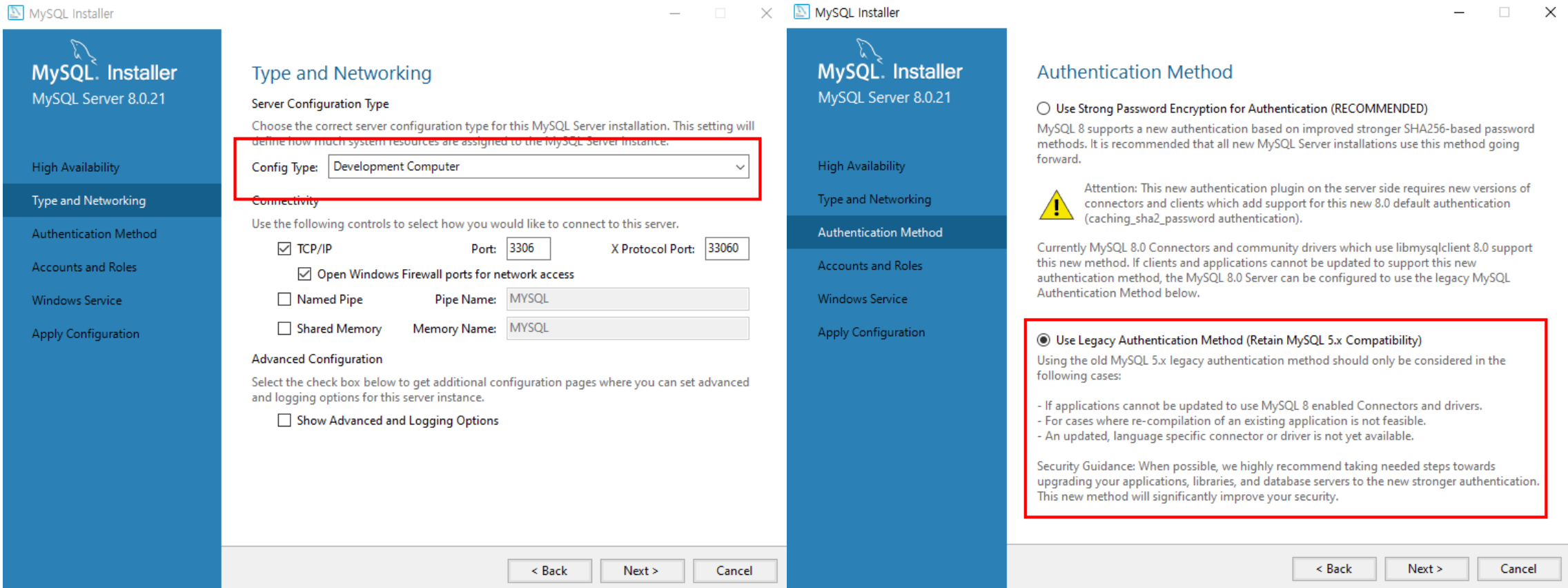
☐ InnoDB Cluster

The InnoDB cluster technology provides an out-of-the-box high availability (HA) solution for MySQL using Group Replication.

Note: [InnoDB cluster](#) requires a minimum of three MySQL server instances to provide a fully automated HA solution. Members of a cluster should be located such that network communication latency between servers is low.

MySQL Installation

- Authentication Method
 - Use Legacy Authentication Method



The image displays two screenshots of the MySQL Installer for MySQL Server 8.0.21. The left screenshot shows the 'Type and Networking' screen, where the 'Config Type' is set to 'Development Computer' (highlighted with a red box). The right screenshot shows the 'Authentication Method' screen, where the 'Use Legacy Authentication Method (Retain MySQL 5.x Compatibility)' option is selected (highlighted with a red box).

MySQL. Installer
MySQL Server 8.0.21

Type and Networking

Server Configuration Type
Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance.

Config Type: Development Computer

Connectivity

Use the following controls to select how you would like to connect to this server.

☒ TCP/IP Port: 3306 X Protocol Port: 33060

☒ Open Windows Firewall ports for network access

☐ Named Pipe Pipe Name: MYSQL

☐ Shared Memory Memory Name: MYSQL

Advanced Configuration

Select the check box below to get additional configuration pages where you can set advanced and logging options for this server instance.

☐ Show Advanced and Logging Options

Authentication Method

☐ Use Strong Password Encryption for Authentication (RECOMMENDED)

MySQL 8 supports a new authentication based on improved stronger SHA256-based password methods. It is recommended that all new MySQL Server installations use this method going forward.

Attention: This new authentication plugin on the server side requires new versions of connectors and clients which add support for this new 8.0 default authentication (caching_sha2_password authentication).

Currently MySQL 8.0 Connectors and community drivers which use libmysqlclient 8.0 support this new method. If clients and applications cannot be updated to support this new authentication method, the MySQL 8.0 Server can be configured to use the legacy MySQL Authentication Method below.

☒ Use Legacy Authentication Method (Retain MySQL 5.x Compatibility)

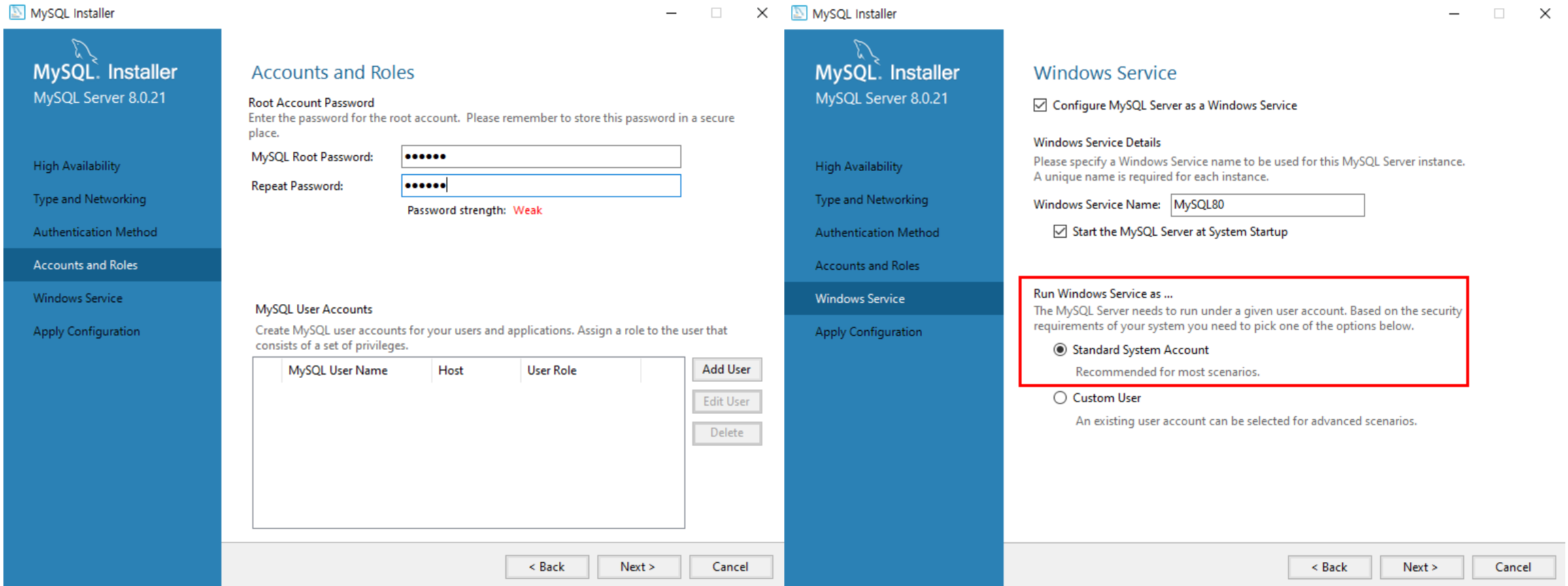
Using the old MySQL 5.x legacy authentication method should only be considered in the following cases:

- If applications cannot be updated to use MySQL 8 enabled Connectors and drivers.
- For cases where re-compilation of an existing application is not feasible.
- An updated, language specific connector or driver is not yet available.

Security Guidance: When possible, we highly recommend taking needed steps towards upgrading your applications, libraries, and database servers to the new stronger authentication. This new method will significantly improve your security.

MySQL Installation

- Set MySQL password
 - This password will be used for Mobius configuration, so please note this somewhere



MySQL Installer
MySQL Server 8.0.21

High Availability
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Apply Configuration

Accounts and Roles

Root Account Password
Enter the password for the root account. Please remember to store this password in a secure place.

MySQL Root Password:

Repeat Password:

Password strength: **Weak**

MySQL User Accounts

Create MySQL user accounts for your users and applications. Assign a role to the user that consists of a set of privileges.

MySQL User Name	Host	User Role
-----------------	------	-----------

< Back Next > Cancel

MySQL Installer
MySQL Server 8.0.21

High Availability
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Apply Configuration

Windows Service

☒ Configure MySQL Server as a Windows Service

Windows Service Details
Please specify a Windows Service name to be used for this MySQL Server instance. A unique name is required for each instance.

Windows Service Name:

☒ Start the MySQL Server at System Startup

Run Windows Service as ...
The MySQL Server needs to run under a given user account. Based on the security requirements of your system you need to pick one of the options below.

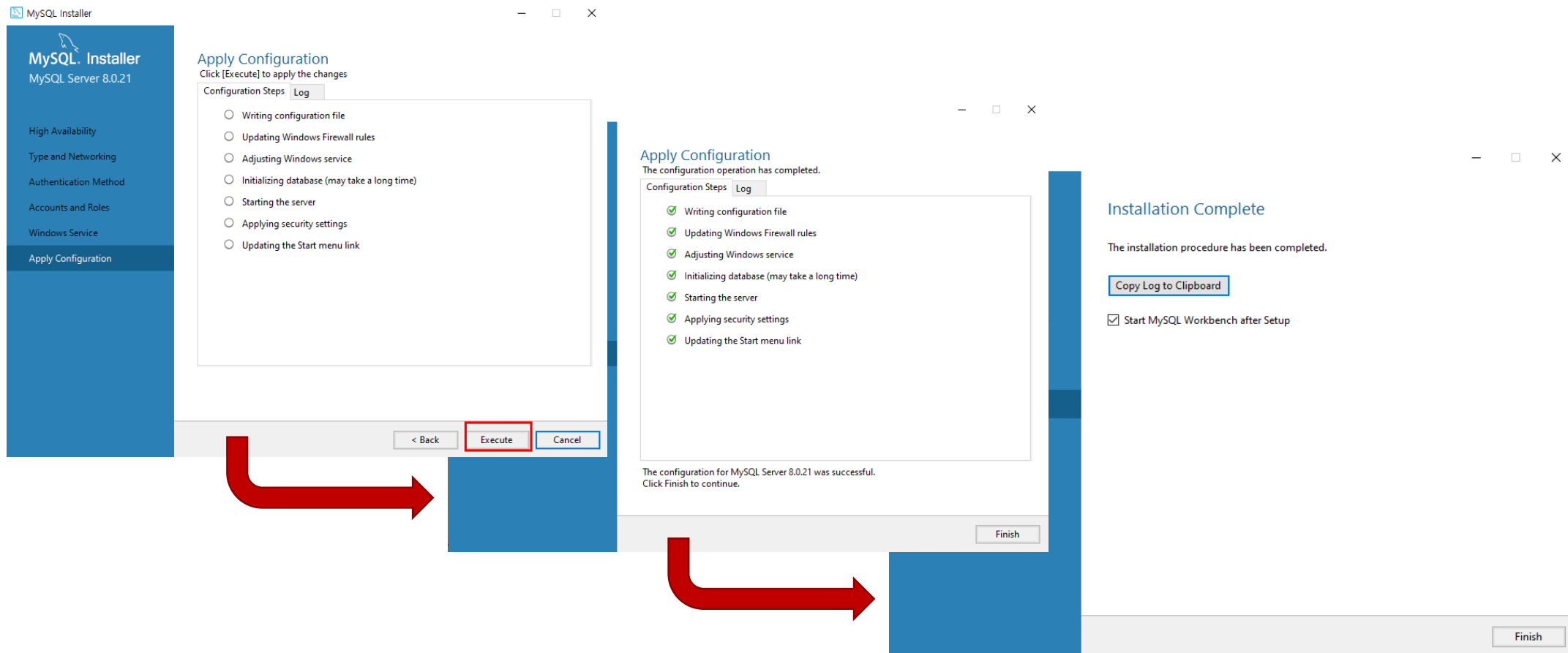
☒ Standard System Account
Recommended for most scenarios.

☐ Custom User
An existing user account can be selected for advanced scenarios.

< Back Next > Cancel

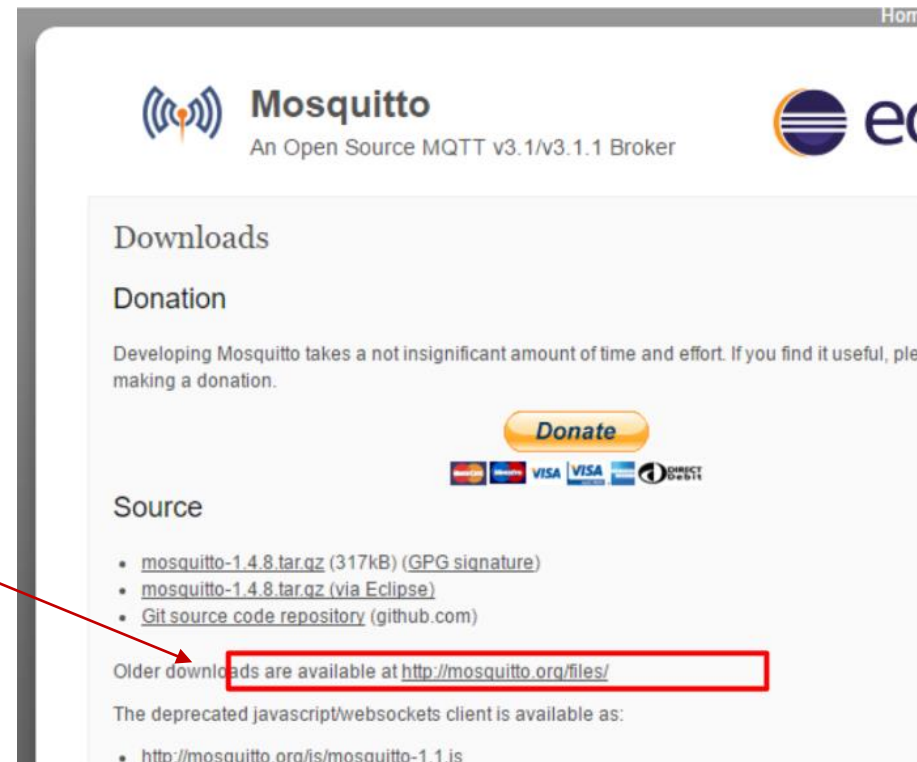
MySQL Installation

- Apply configuration and complete the installation



MQTT Broker Installation

- The Mobius Platform supports the MQTT protocol for communication with the device and install the MQTT broker
 - <http://mosquitto.org/files/>



MQTT Broker Installation

- Download mosquitto.exe file

Index of /files/

/	
binary/	02-Feb-2019 22:17
cve/	18-Sep-2019 16:19
examples/	20-Apr-2012 11:22
other/	29-Nov-2012 09:46
packets/	20-Apr-2012 11:22
perl/	20-Apr-2012 11:22
python/	21-Jun-2012 16:31
source/	19-Aug-2020 15:00
tmp/	17-Aug-2012 20:04

Index of /files/binary/

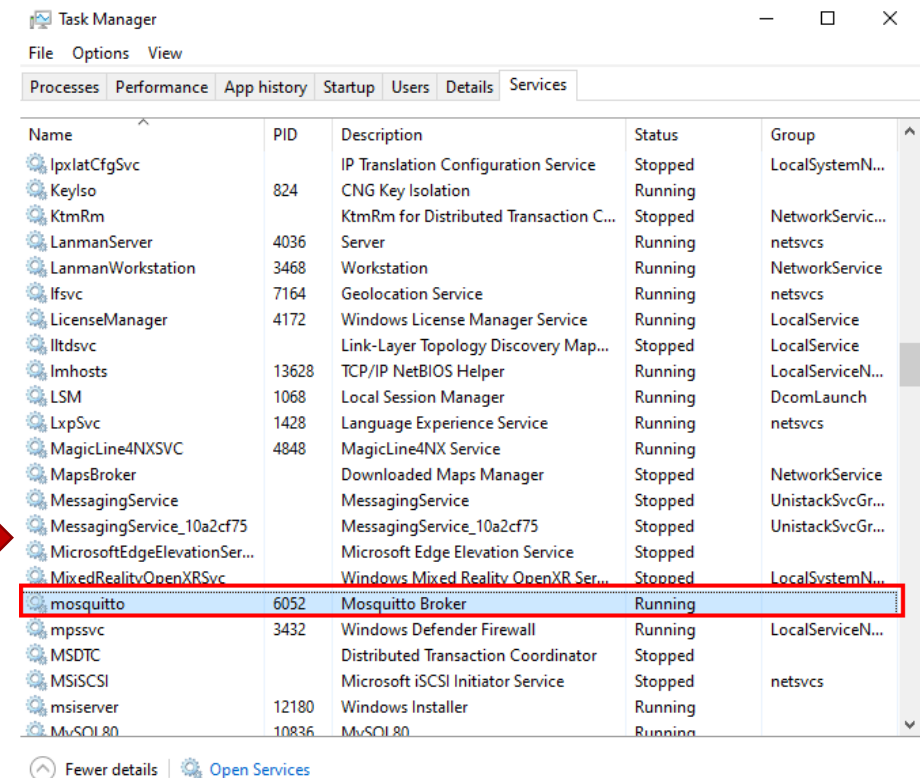
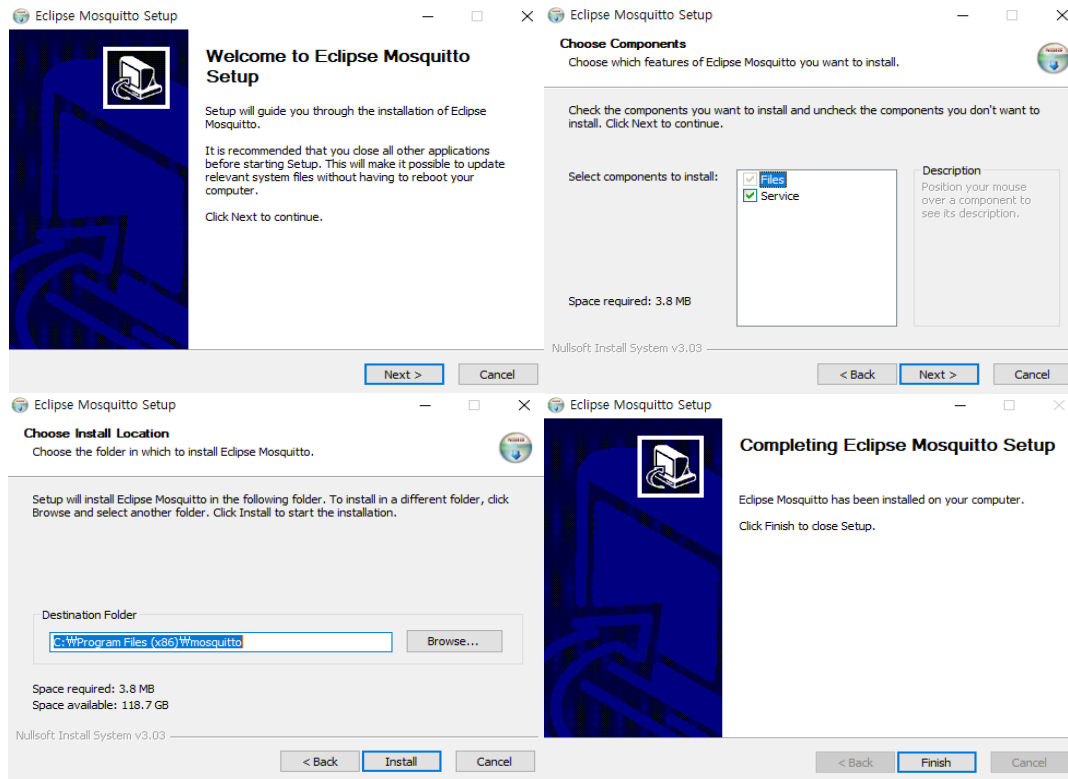
../	
cygwin/	08-Oct-2014 22:02
linux/	20-Apr-2012 11:22
src/	20-Apr-2012 11:22
win32/	19-Aug-2020 14:53
win64/	19-Aug-2020 14:53

Index of /files/binary/win32/

../	
old/	20-Apr-2012 11:22
mosquitto-0.11.3-win32-bin.zip	20-Apr-2012 11:22
mosquitto-0.12-win32-bin.zip	20-Apr-2012 11:22
mosquitto-0.13-win32-bin.zip	20-Apr-2012 11:22
mosquitto-0.14-win32-bin.zip	20-Apr-2012 11:22
mosquitto-0.14.2-install-win32.exe	20-Apr-2012 11:22
mosquitto-0.14.3-install-win32.exe	20-Apr-2012 11:22
mosquitto-0.14.4-install-win32.exe	20-Apr-2012 11:22
mosquitto-0.15-install-win32.exe	20-Apr-2012 11:22
mosquitto-1.0-install-win32.exe	14-Aug-2012 09:46
mosquitto-1.0.1-install-win32.exe	15-Aug-2012 19:44
mosquitto-1.0.2-install-win32.exe	22-Aug-2012 22:18
mosquitto-1.0.3-install-win32.exe	27-Sep-2012 13:01
mosquitto-1.0.5-install-win32.exe	03-Nov-2012 20:14
mosquitto-1.1-install-win32.exe	19-Dec-2012 16:14
mosquitto-1.1.1-install-win32.exe	17-Jan-2013 09:28
mosquitto-1.1.2-install-win32.exe	30-Jan-2013 20:48
mosquitto-1.2-install-win32.exe	28-Aug-2013 09:59
mosquitto-1.2.3-install-win32.exe	22-Dec-2013 13:56
mosquitto-1.3.2-install-win32.exe	14-Jul-2014 00:38
mosquitto-1.3.5-install-win32.exe	08-Oct-2014 22:01
mosquitto-1.5.3a-install-windows-x64.exe	07-Nov-2018 16:59
mosquitto-1.5.5-install-windows-x86.exe	02-Feb-2019 22:16
mosquitto-1.5.6-install-windows-x86.exe	08-Feb-2019 12:56
mosquitto-1.5.7-install-windows-x86.exe	14-Feb-2019 18:23
mosquitto-1.5.8-install-windows-x86.exe	28-Feb-2019 21:49
mosquitto-1.6.0-install-windows-x86.exe	17-Apr-2019 21:18
mosquitto-1.6.10-install-windows-x86.exe	27-May-2020 15:18
mosquitto-1.6.10a-install-windows-x86.exe	15-Jun-2020 07:51
mosquitto-1.6.11-install-windows-x86.exe	12-Aug-2020 20:29
mosquitto-1.6.12-install-windows-x86.exe	19-Aug-2020 14:52
mosquitto-1.6.2-install-windows-x86.exe	07-May-2019 13:30
mosquitto-1.6.3-install-windows-x86.exe	18-Jun-2019 15:54
mosquitto-1.6.4-install-windows-x86.exe	01-Aug-2019 19:57
mosquitto-1.6.6-install-windows-x86.exe	18-Sep-2019 09:17
mosquitto-1.6.7-install-windows-x86.exe	25-Sep-2019 12:23
mosquitto-1.6.8-install-windows-x86.exe	28-Nov-2019 23:07
mosquitto-1.6.9-install-windows-x86.exe	20-May-2020 16:19

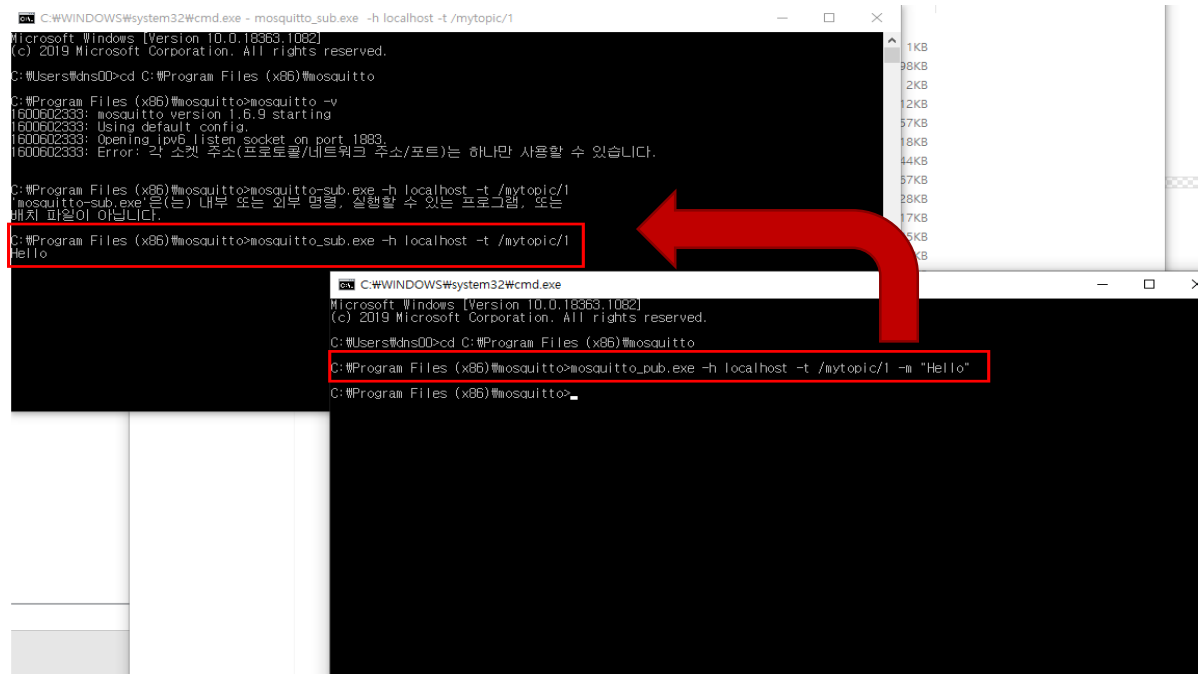
MQTT Broker Installation

- Install mosquito and check the mosquito service status
 - Go to windows task manager(ctrl+shift+esc) → Services → right click on 'mosquito' and select 'start' if it is not running



MQTT Installation

- For MQTT installation test, open two terminals and execute the following individually
 - `mosquitto_sub.exe -h localhost -t /mytopic/1`
 - `mosquitto_pub.exe -h localhost -t /mytopic/1 -m "Hello"`



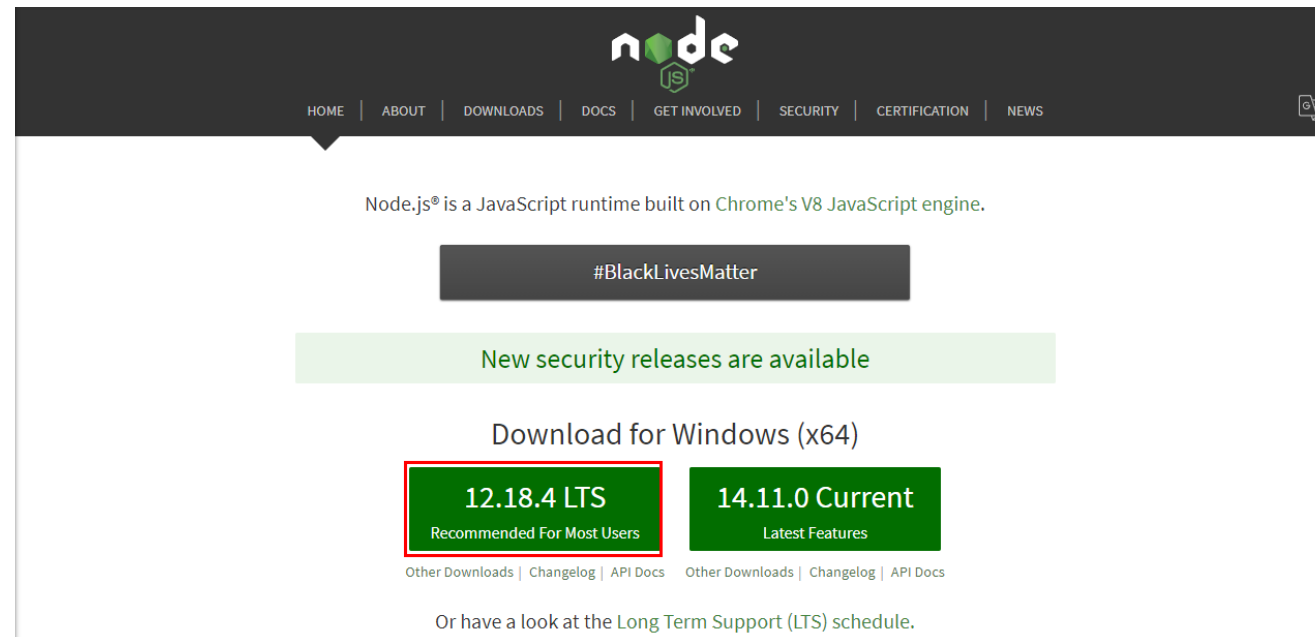
The screenshot shows two overlapping Windows command prompt windows. The top window is titled 'C:\WINDOWS\system32\cmd.exe - mosquitto_sub.exe -h localhost -t /mytopic/1'. It displays the following text: 'Microsoft Windows [Version 10.0.18363.1082] (c) 2019 Microsoft Corporation. All rights reserved. C:\Users\dns00>cd C:\Program Files (x86)\mosquitto C:\Program Files (x86)\mosquitto>mosquitto -v 1600602333: mosquitto version 1.6.9 starting 1600602333: Using default config. 1600602333: Opening ipv6 listen socket on port 1883. 1600602333: Error: 각 소켓 주소(프로토콜/네트워크 주소/포트)는 하나만 사용할 수 있습니다. C:\Program Files (x86)\mosquitto>mosquitto_sub.exe -h localhost -t /mytopic/1 'mosquitto_sub.exe'은(는) 내부 또는 외부 명령, 실행할 수 있는 프로그램, 또는 배치 파일이 아닙니다. C:\Program Files (x86)\mosquitto>mosquitto_sub.exe -h localhost -t /mytopic/1 Hello'. The bottom window is titled 'C:\WINDOWS\system32\cmd.exe' and displays: 'Microsoft Windows [Version 10.0.18363.1082] (c) 2019 Microsoft Corporation. All rights reserved. C:\Users\dns00>cd C:\Program Files (x86)\mosquitto C:\Program Files (x86)\mosquitto>mosquitto_pub.exe -h localhost -t /mytopic/1 -m "Hello" C:\Program Files (x86)\mosquitto>'. A large red arrow points from the 'Hello' output in the top window to the 'mosquitto_pub.exe' command in the bottom window.

```
C:\WINDOWS\system32\cmd.exe - mosquitto_sub.exe -h localhost -t /mytopic/1
Microsoft Windows [Version 10.0.18363.1082]
(c) 2019 Microsoft Corporation. All rights reserved.
C:\Users\dns00>cd C:\Program Files (x86)\mosquitto
C:\Program Files (x86)\mosquitto>mosquitto -v
1600602333: mosquitto version 1.6.9 starting
1600602333: Using default config.
1600602333: Opening ipv6 listen socket on port 1883.
1600602333: Error: 각 소켓 주소(프로토콜/네트워크 주소/포트)는 하나만 사용할 수 있습니다.
C:\Program Files (x86)\mosquitto>mosquitto_sub.exe -h localhost -t /mytopic/1
'mosquitto_sub.exe'은(는) 내부 또는 외부 명령, 실행할 수 있는 프로그램, 또는
배치 파일이 아닙니다.
C:\Program Files (x86)\mosquitto>mosquitto_sub.exe -h localhost -t /mytopic/1
Hello

C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.18363.1082]
(c) 2019 Microsoft Corporation. All rights reserved.
C:\Users\dns00>cd C:\Program Files (x86)\mosquitto
C:\Program Files (x86)\mosquitto>mosquitto_pub.exe -h localhost -t /mytopic/1 -m "Hello"
C:\Program Files (x86)\mosquitto>
```

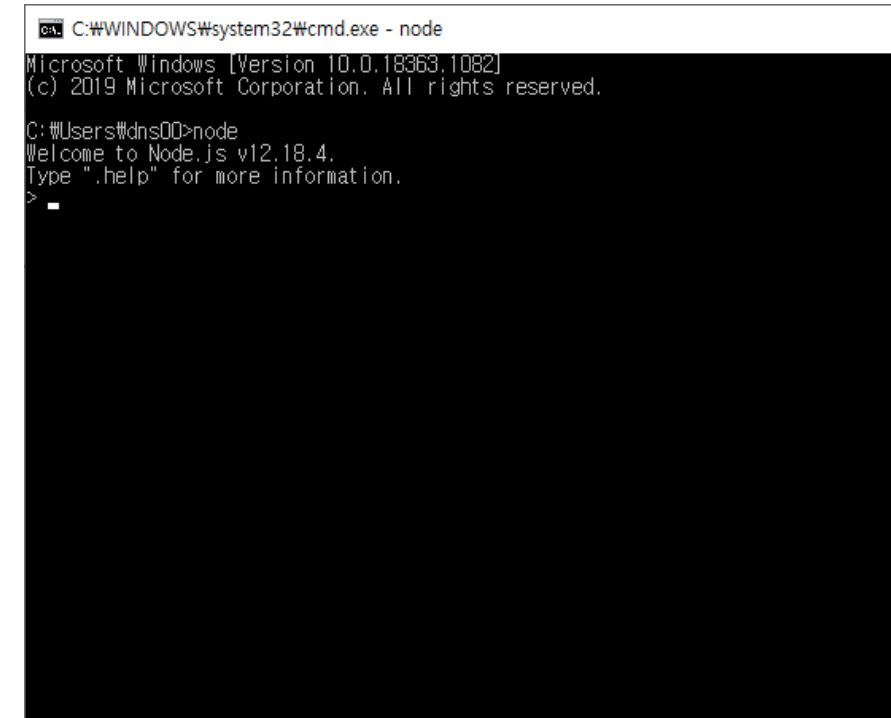
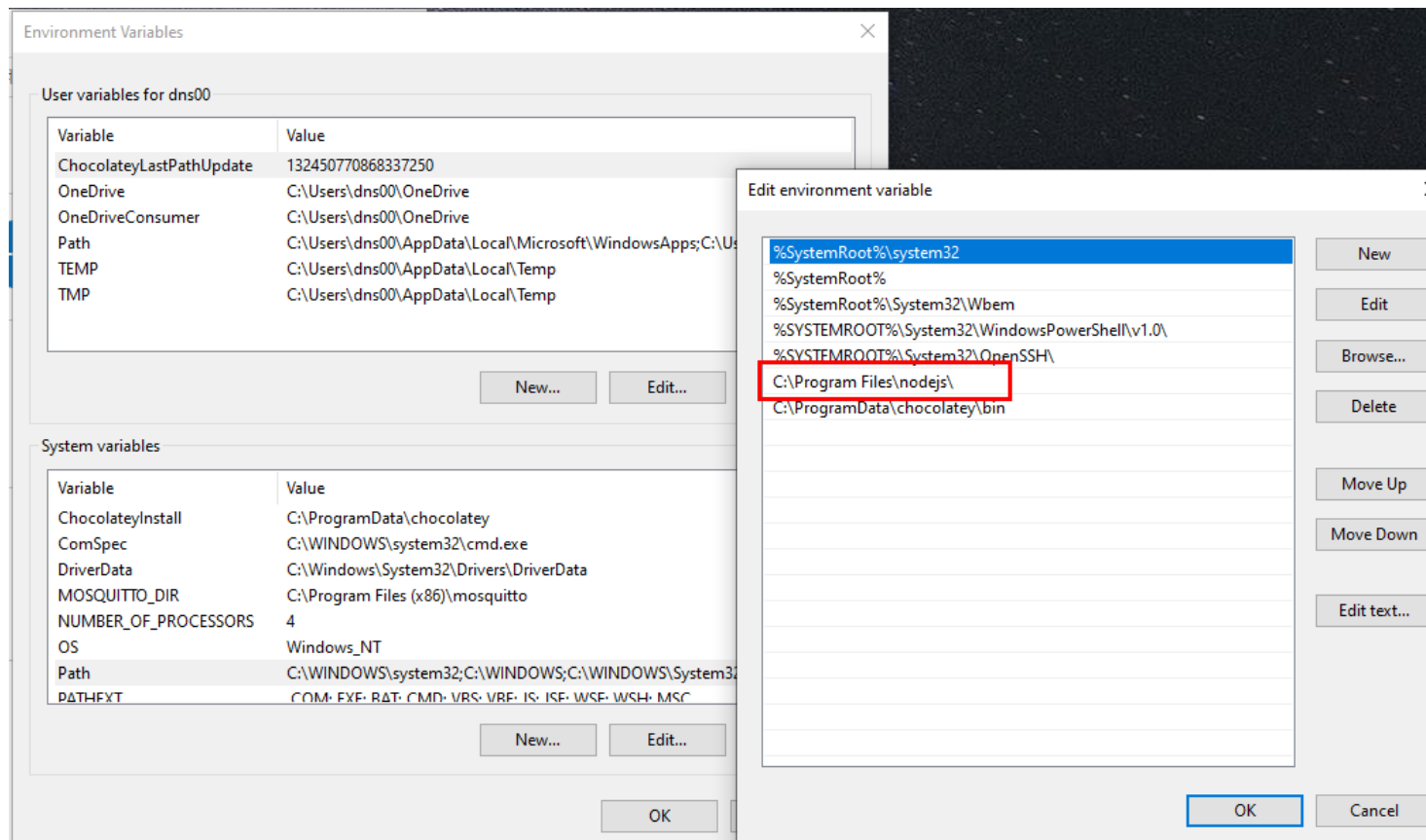

Node.js Installation

- Node.js is a JavaScript runtime built on Chrome's V8 JavaScript engine.
- In contrast to multi-thread based servers, node.js operating on a single thread using non-blocking I/O calls allows it to support tens of thousands of concurrent connections
 - <https://nodejs.org/en/>



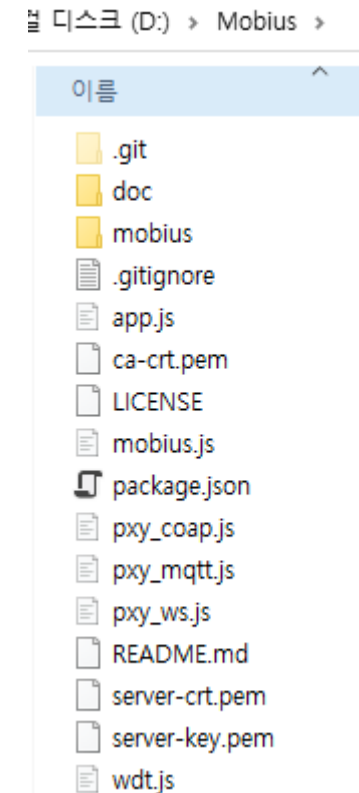
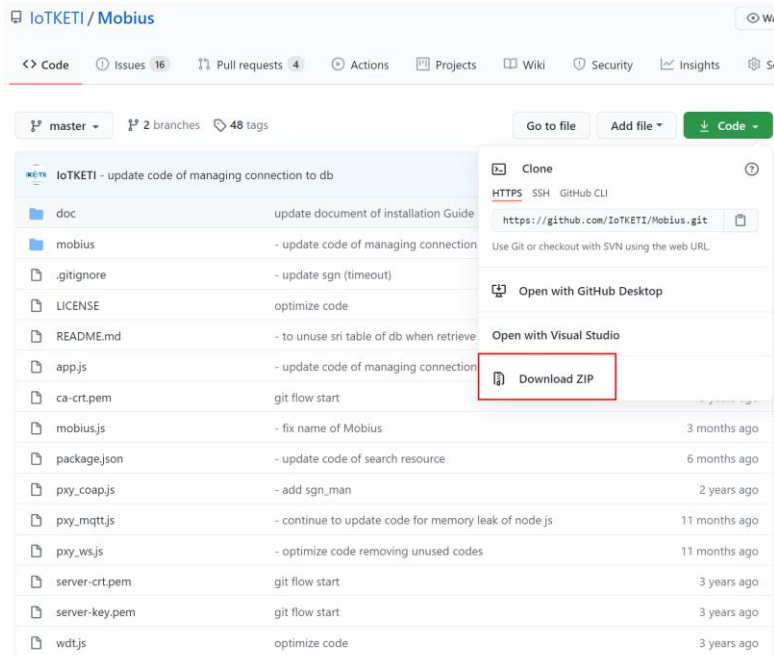
Node.js Installation

- Set environment variable path and check nodejs version



Mobius Installation

- Mobius server platform is distributed on the Mobius GitHub
 - <https://github.com/IoTKETI/Mobius>
 - You can Download Zip
 - Alternatively, you can use the git clone command.
 - `git clone https://github.com/IoTKETI/Mobius.git`



Mobius Installation

- Open cmd and move to the Mobius folder
 - > npm install
 - > node mobius.js
 - However, an error occurs because Mobius and MySQL are not connected.

```
C:\Users\dns00\Desktop\Mobius (Mobius@2.4.36)
λ npm install

> bufferutil@4.0.1 install C:\Users\dns00\Desktop\Mobius\node_modules\bufferutil
> node-gyp-build

> utf-8-validate@5.0.2 install C:\Users\dns00\Desktop\Mobius\node_modules\utf-8-validate
> node-gyp-build

npm WARN Mobius@2.4.36 No repository field.
added 400 packages from 342 contributors and audited 401 packages in 4.595s

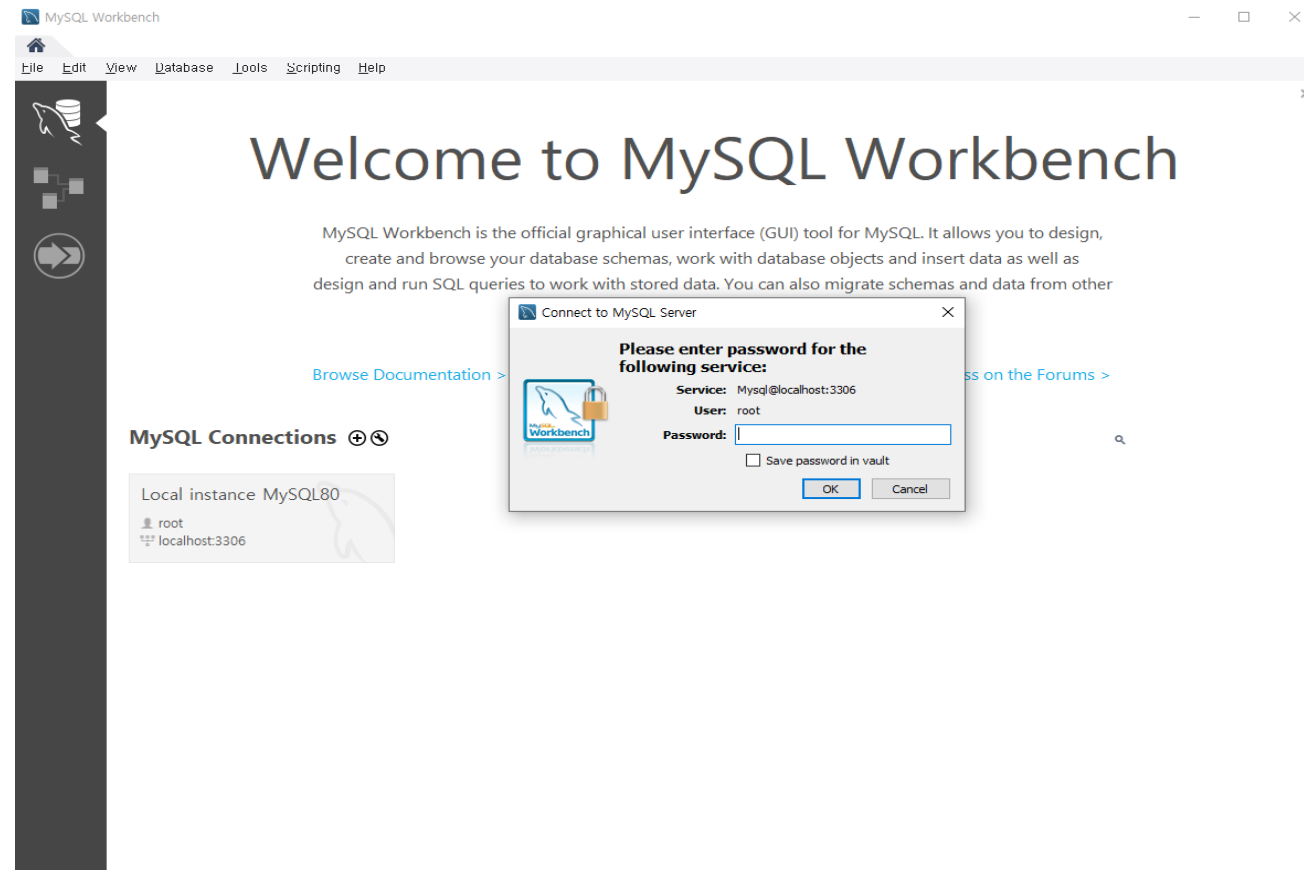
3 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
```

```
C:\Users\dns00\Desktop\Mobius (Mobius@2.4.36)
λ node mobius.js
Production Mode
Garbage collection is not exposed
sgn_mqtt_client is connected
[db.connect] No Connection
```

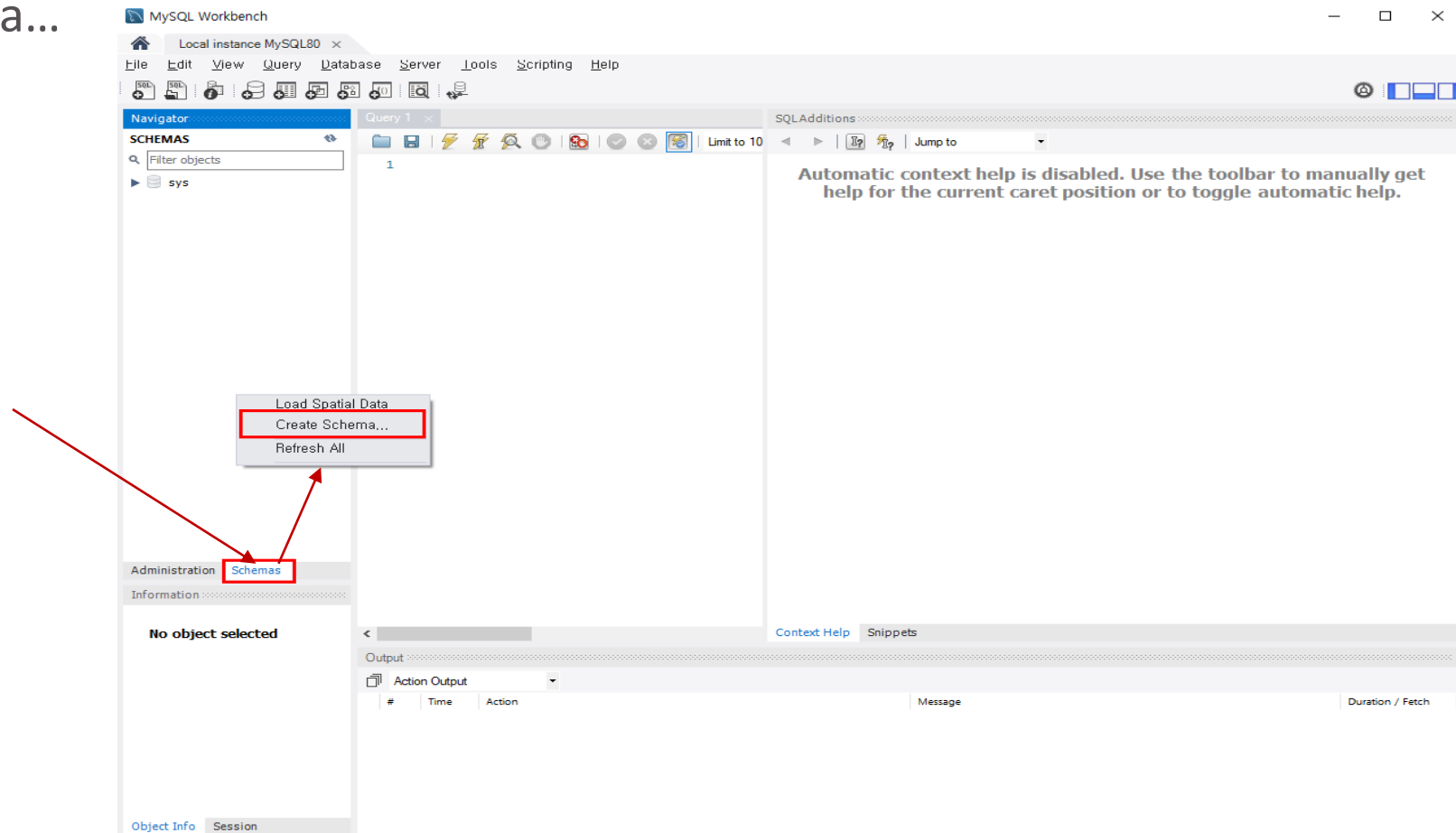

MySQL Setup

- Run MySQL Workbench
 - Enter your password



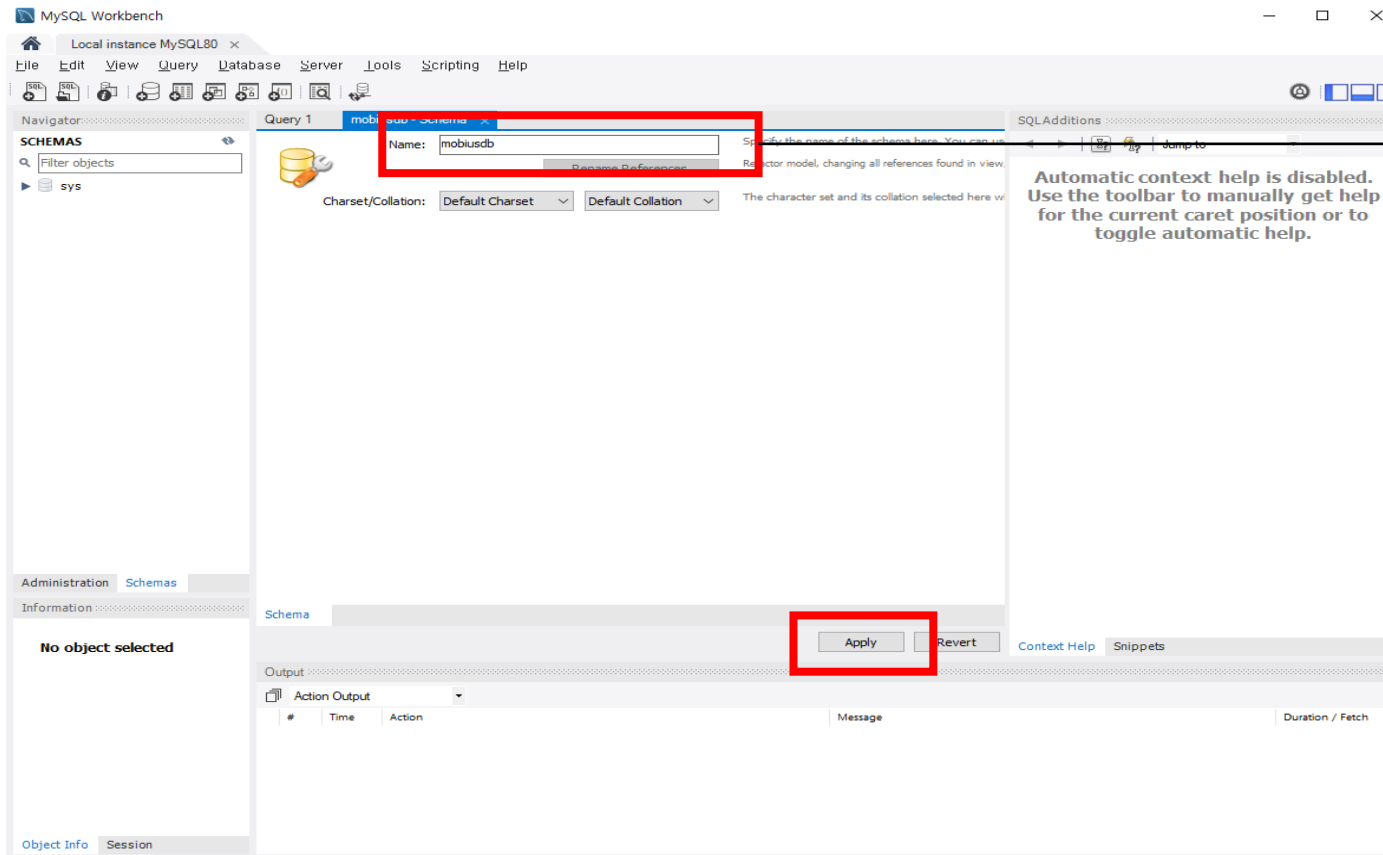
MySQL Setup

- Clicking the right mouse button on Schemas window
 - Create Schema...



MySQL Setup

- Enter **mobiusdb** and click **Apply** button



mobiusdb

MySQL Setup

- Click **Apply** and Finish button

Apply SQL Script to Database

Review SQL Script
Apply SQL Script

Review the SQL Script to be Applied on the Database

Online DDL
Algorithm: Default Lock Type: Default

1 CREATE SCHEMA `mobiusdb` ;
2

< >

Back Apply Cancel

Apply SQL Script to Database

Review SQL Script
Apply SQL Script

Applying SQL script to the database

The following tasks will now be executed. Please monitor the execution.
Press Show Logs to see the execution logs.

☒ Execute SQL Statements

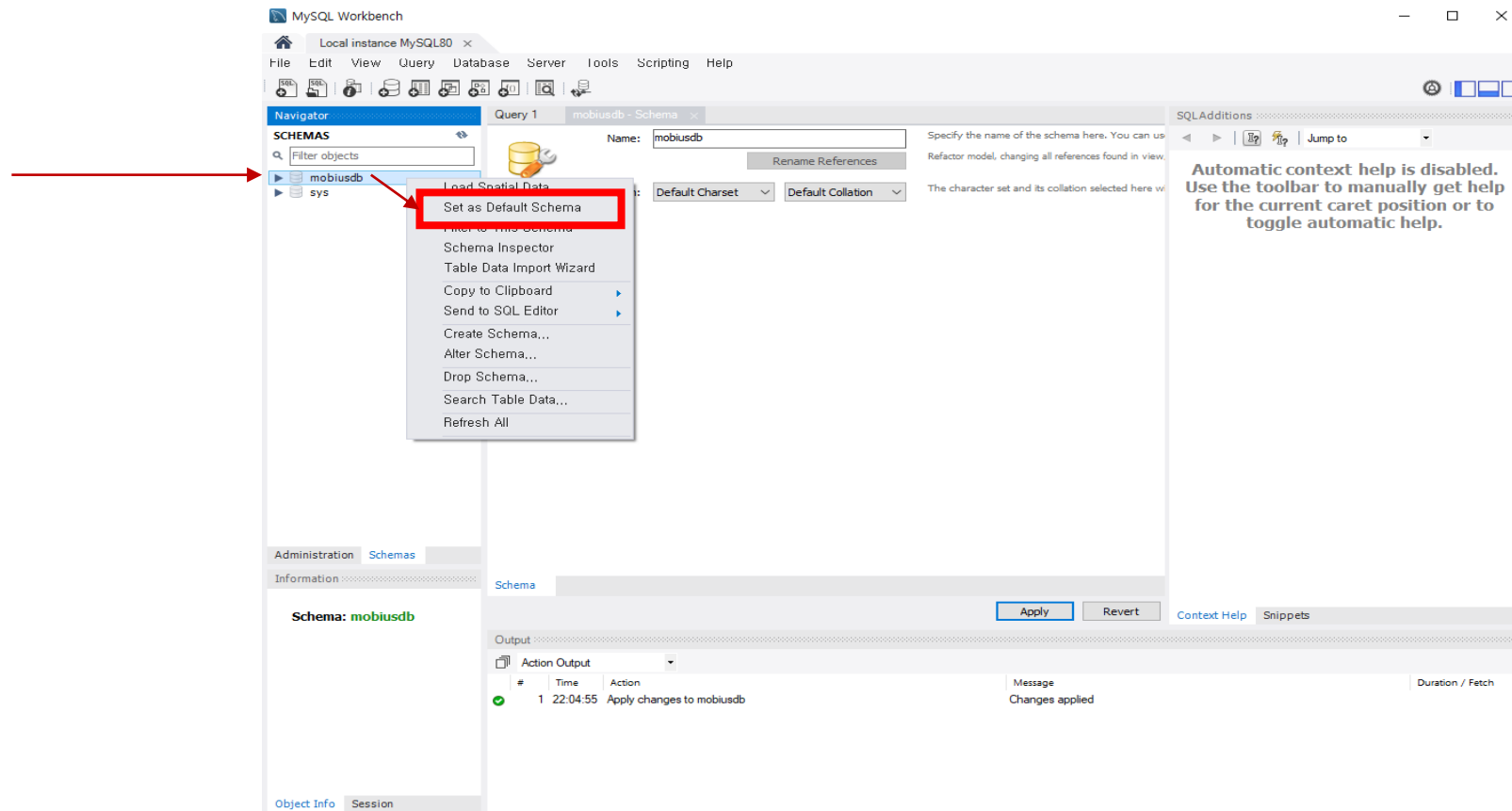
SQL script was successfully applied to the database.

Show Logs

Back Finish Cancel

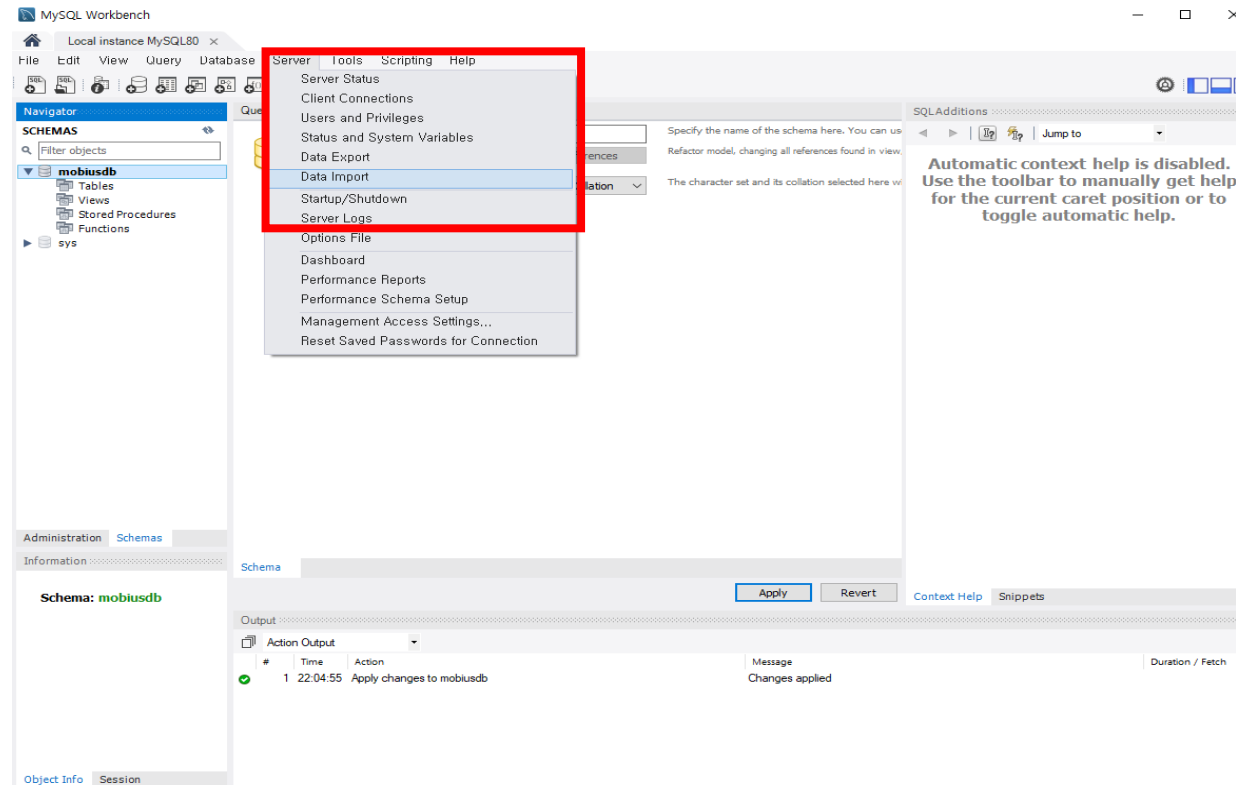
MySQL Setup

- Right click on **mobiusdb**
 - Choose the **Set as Default Schema**



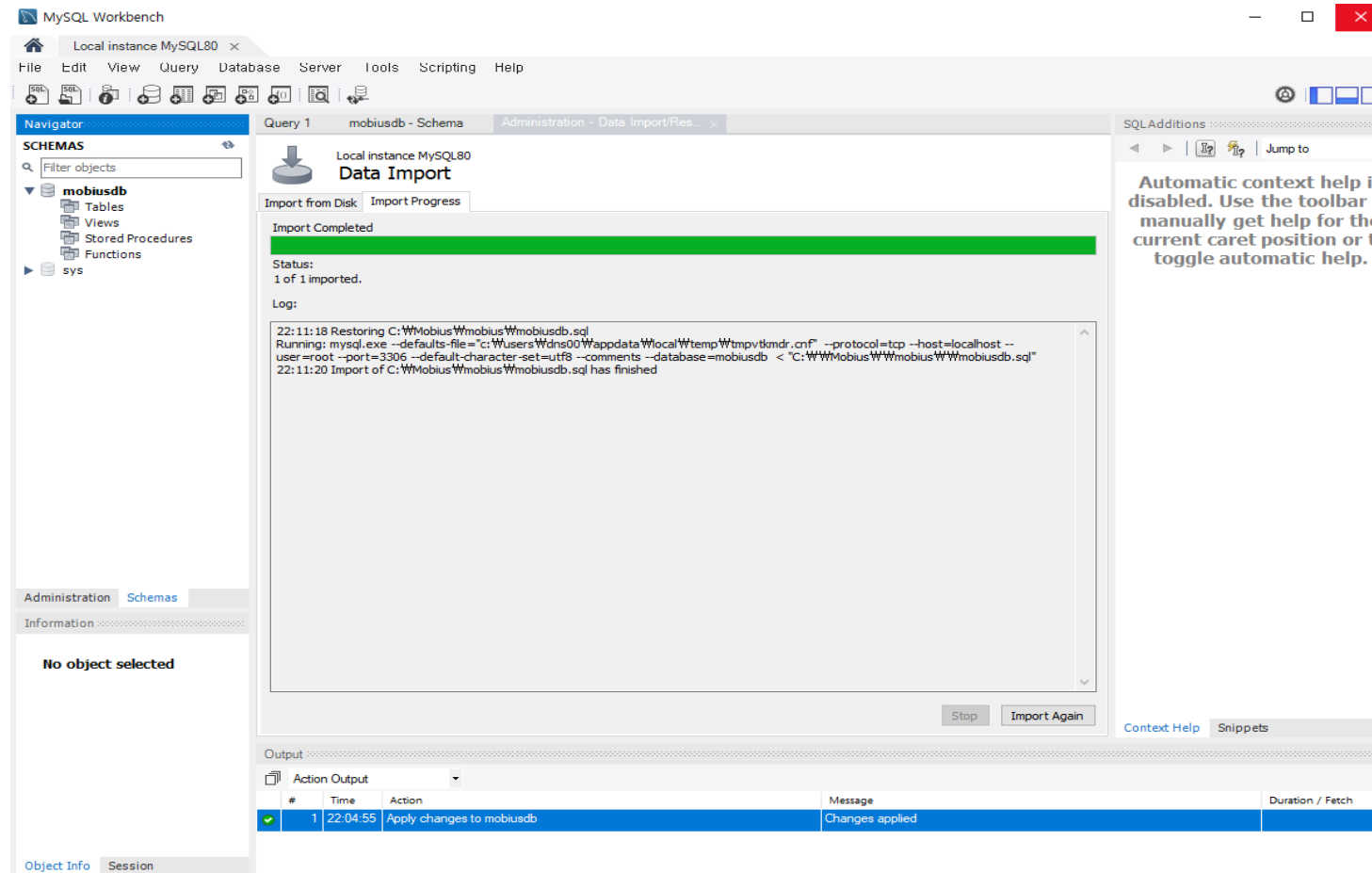
MySQL Setup

- Click **Server** tap
 - Click **Data Import**



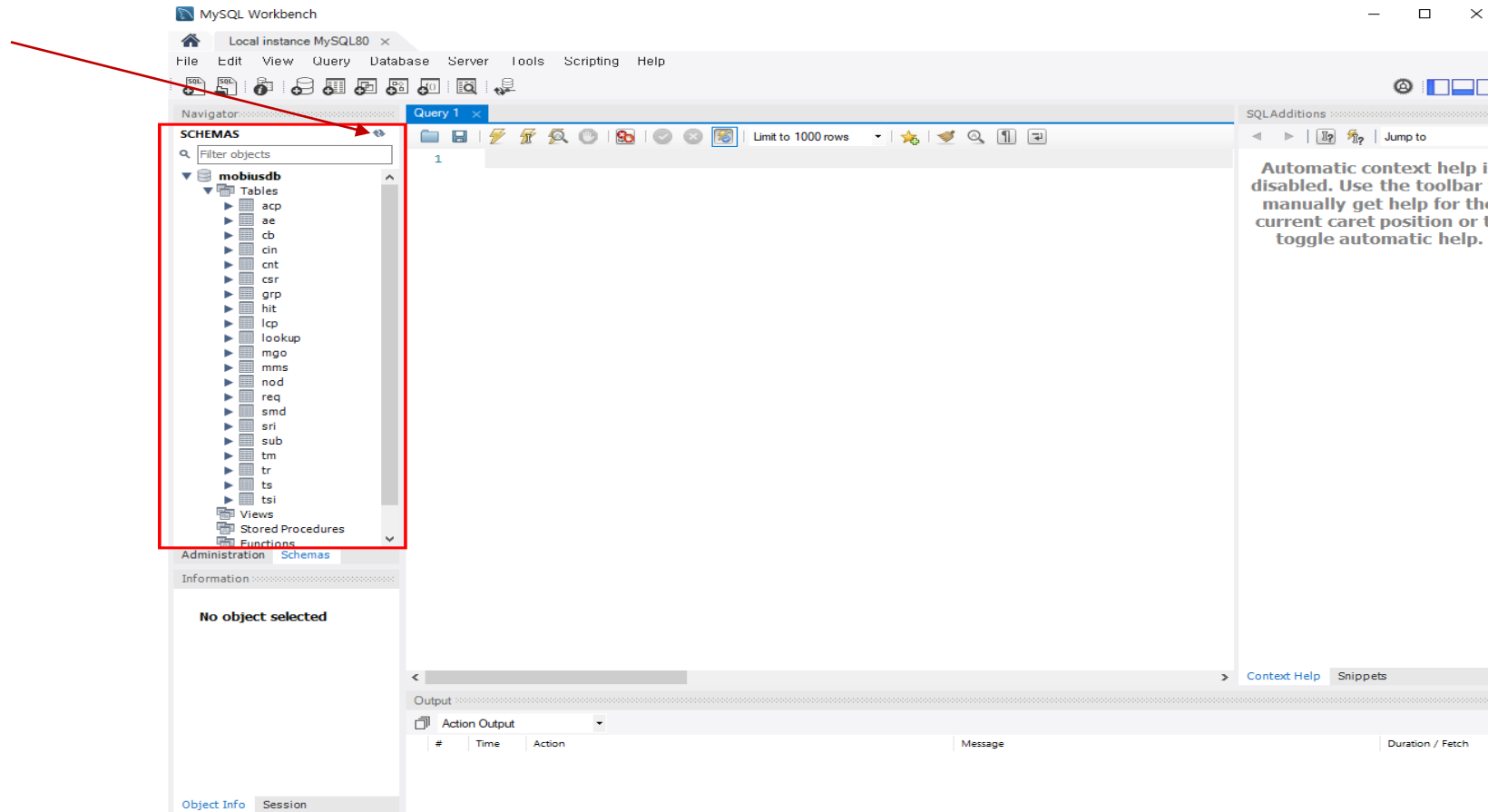
MySQL Setup

- Data import



MySQL Setup

- When you refresh the schema, you can see the added list

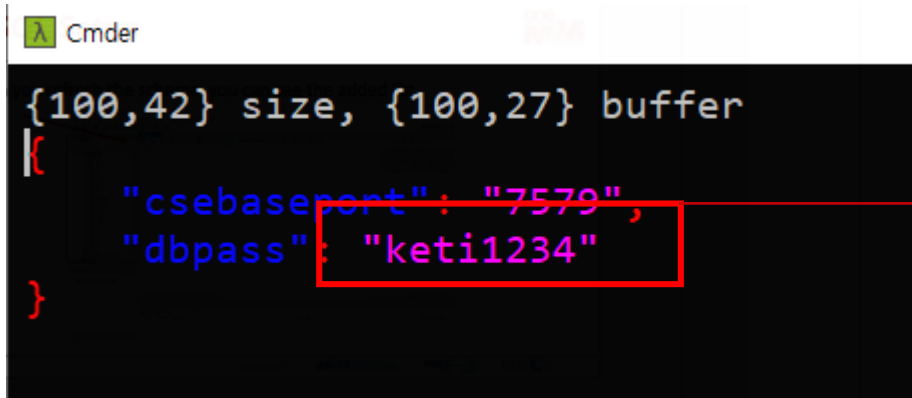




Running Mobius Server

Runtime Environment Configuration

- In the **conf.json** , set the port number that Mobius opens and the MySQL database access password that was installed during the environment construction
 - > nano conf.json



```
Cmdr
{100,42} size, {100,27} buffer
{
  "csebaseport": "7579",
  "dbpass": "keti1234"
}
```

Enter your MySQL password

Runtime Environment Configuration



- Running Mobius
 - > node mobius.js
 - If you see a phrase like init_TS-4004, mobius works successfully

```
c:\Mobius (Mobius@2.4.36)
λ node mobius.js
Production Mode
Garbage collection is not exposed
sgn_mqtt_client is connected
CPU Count: 8
select_ri_lookup /Mobius: 24.570ms
update_cb_poa_csi /Mobius: 7.843ms
""
Production Mode
Production Mode
Garbage collection is not exposed
Garbage collection is not exposed
sgn_mqtt_client is connected
sgn_mqtt_client is connected
Production Mode
Garbage collection is not exposed
sgn_mqtt_client is connected
Production Mode
Production Mode
mobius server (192.168.0.213) running at 7579 port
Garbage collection is not exposed
Garbage collection is not exposed
mobius server (192.168.0.213) running at 7579 port
Garbage collection is not exposed
Production Mode
sgn_mqtt_client is connected
Garbage collection is not exposed
select_ri_lookup /Mobius: 1.319ms
mobius server (192.168.0.213) running at 7579 port
sgn_mqtt_client is connected
update_cb_poa_csi /Mobius: 0.717ms
""
Production Mode
select_ri_lookup /Mobius: 1.664ms
Garbage collection is not exposed
sgn_mqtt_client is connected
update_cb_poa_csi /Mobius: 0.671ms
""
sgn_mqtt_client is connected
sgn_mqtt_client is connected
select_ri_lookup /Mobius: 1.302ms
update_cb_poa_csi /Mobius: 0.572ms
""
mobius server (192.168.0.213) running at 7579 port

mobius server (192.168.0.213) running at 7579 port
mobius server (192.168.0.213) running at 7579 port
mobius server (192.168.0.213) running at 7579 port
mobius server (192.168.0.213) running at 7579 port
select_ri_lookup /Mobius: 1.182ms
update_cb_poa_csi /Mobius: 0.579ms
""
select_ri_lookup /Mobius: 1.216ms
update_cb_poa_csi /Mobius: 0.683ms
""
select_ri_lookup /Mobius: 1.179ms
update_cb_poa_csi /Mobius: 0.445ms
""
select_ri_lookup /Mobius: 1.245ms
update_cb_poa_csi /Mobius: 0.476ms
""
select_ri_lookup /Mobius: 1.291ms
update_cb_poa_csi /Mobius: 0.439ms
""
pxyws server (192.168.0.213) running at 7577 port

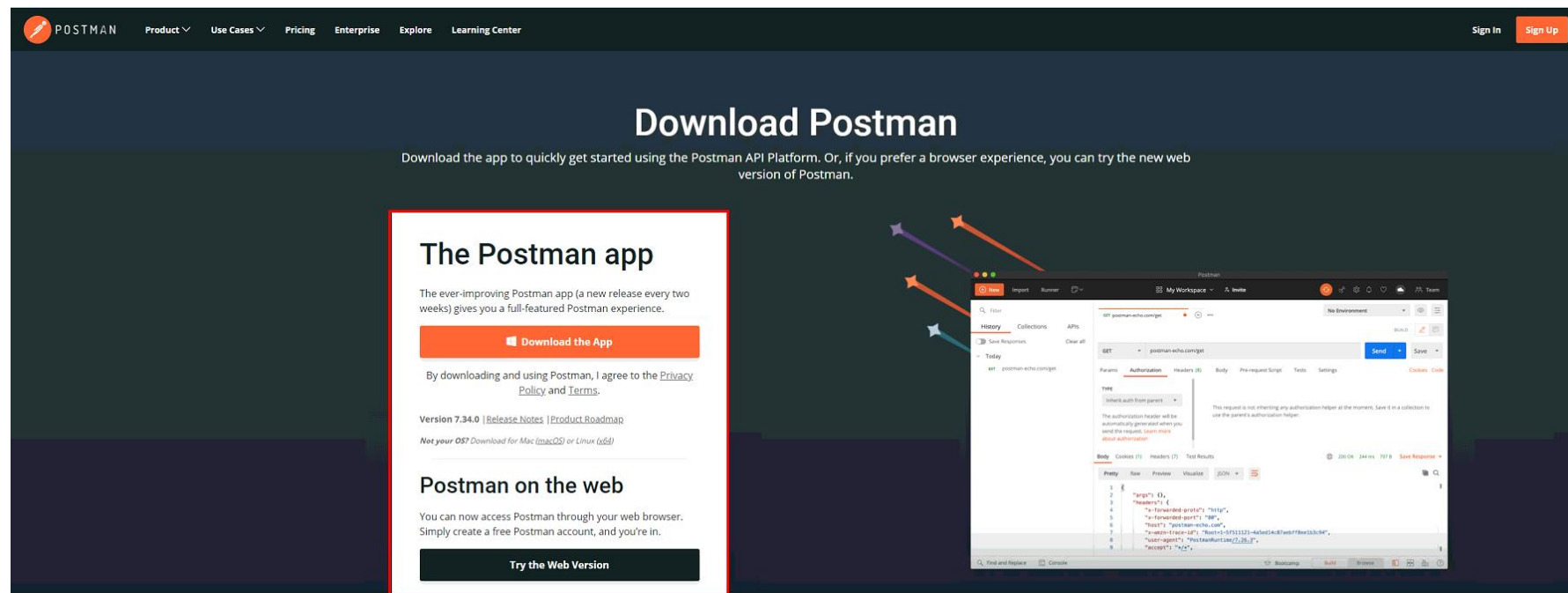
GET : /Mobius

GET : /Mobius
get_resource_from_url (Zgu0-wFpa) - /Mobius: 12.245ms
get_resource_from_url (rdPVduuFL) - /Mobius: 12.049ms
{"m2m:cb":{"pi":null,"ri":"5-20200923122237390","ty":5,"ct":"20200923T122237","rn":"Mobius","lt":"20200923T122237","lb1":["Mobius"],"cst":1,"csi":"/Mobius2","srt":[1,2,3,4,5,9,10,13,14,16,17,23],"poa":["http://192.168.0.213:7579"],"srv":["1","2","2a"]}}
{"m2m:cb":{"pi":null,"ri":"5-20200923122237390","ty":5,"ct":"20200923T122237","rn":"Mobius","lt":"20200923T122237","lb1":["Mobius"],"cst":1,"csi":"/Mobius2","srt":[1,2,3,4,5,9,10,13,14,16,17,23],"poa":["http://192.168.0.213:7579"],"srv":["1","2","2a"]}}
""
""
subscribe req_topic as /oneM2M/req/+ /Mobius2/+
subscribe req_req_topic as /oneM2M/reg_req/+ /Mobius2/+
ts_missing agent server (192.168.0.213) running at 7582 port

GET : /Mobius?fu=1&ty=29
get_resource_from_url (25fi3qkMh) - /Mobius?fu=1&ty=29: 2.489ms
search_parents_lookup /Mobius: 0.911ms
search_lookup (D9Q-gu-8vh): 0.831ms
""
init TS - 4004
```


Mobius Test

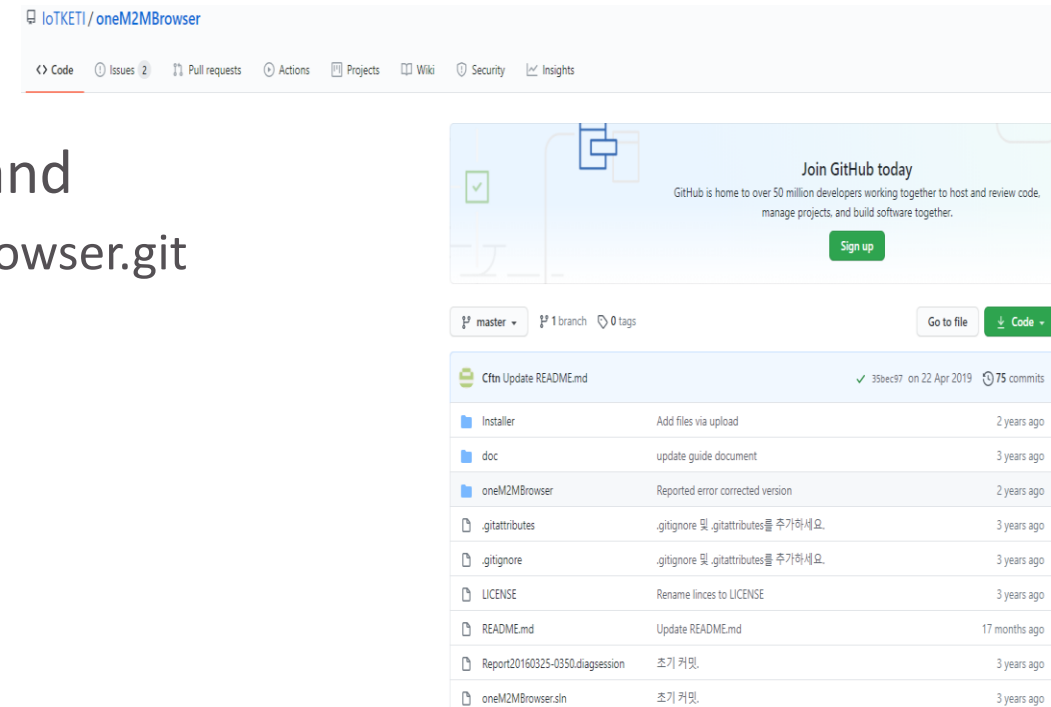
- Install the Postman for API test
 - <https://www.postman.com/downloads/>
 - You can install the postman either app version or web version.



Mobius Browser Test

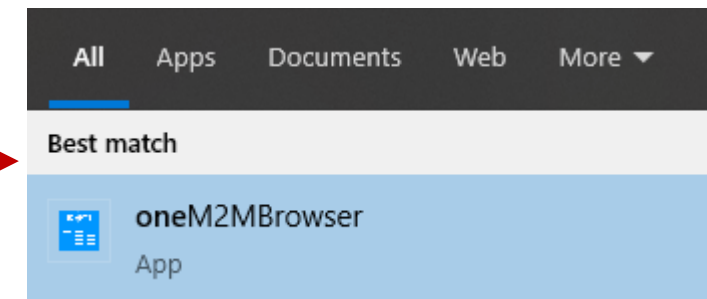
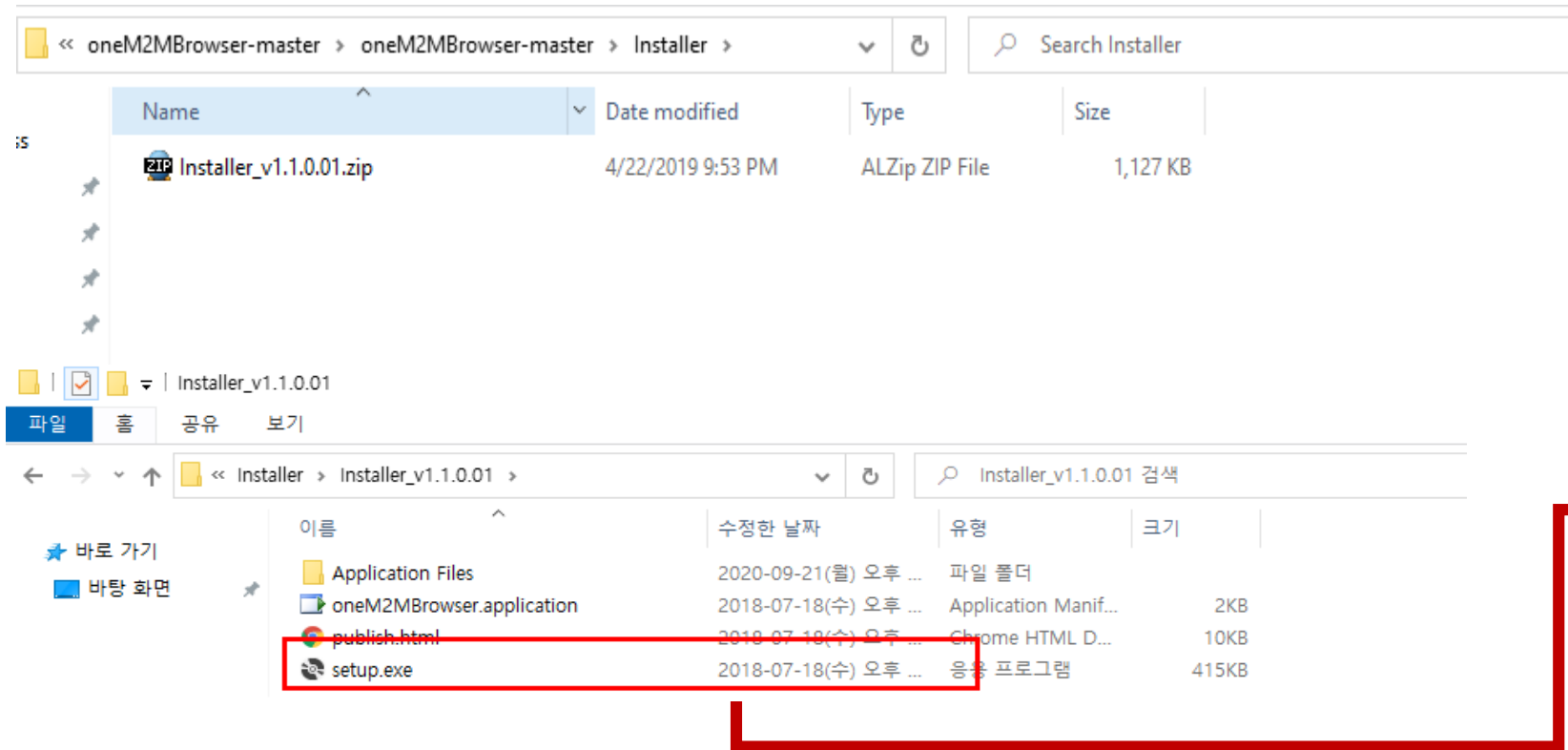


- oneM2M Browser is a tool for monitoring the oneM2M resources in the Mobius
- The browser uses oneM2M protocols in HTTP and MQTT binding
 - <https://github.com/loTKETI/oneM2MBrowser>
 - You can Download Zip
 - Alternatively, you can use the git clone command
 - > git clone https://github.com/loTKETI/oneM2MBrowser.git



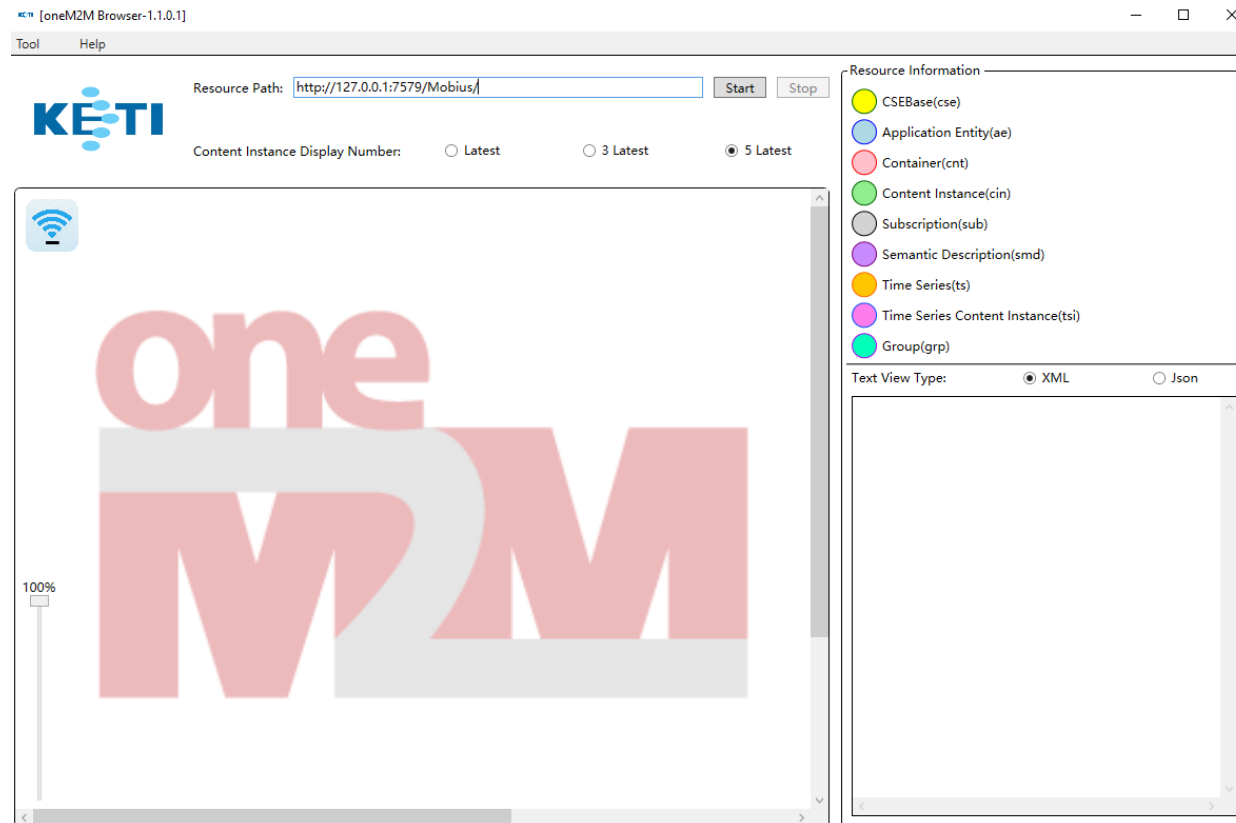
Mobius Browser Test

- After executing the setup file, run the “oneM2MBrowser” from Windows start menu



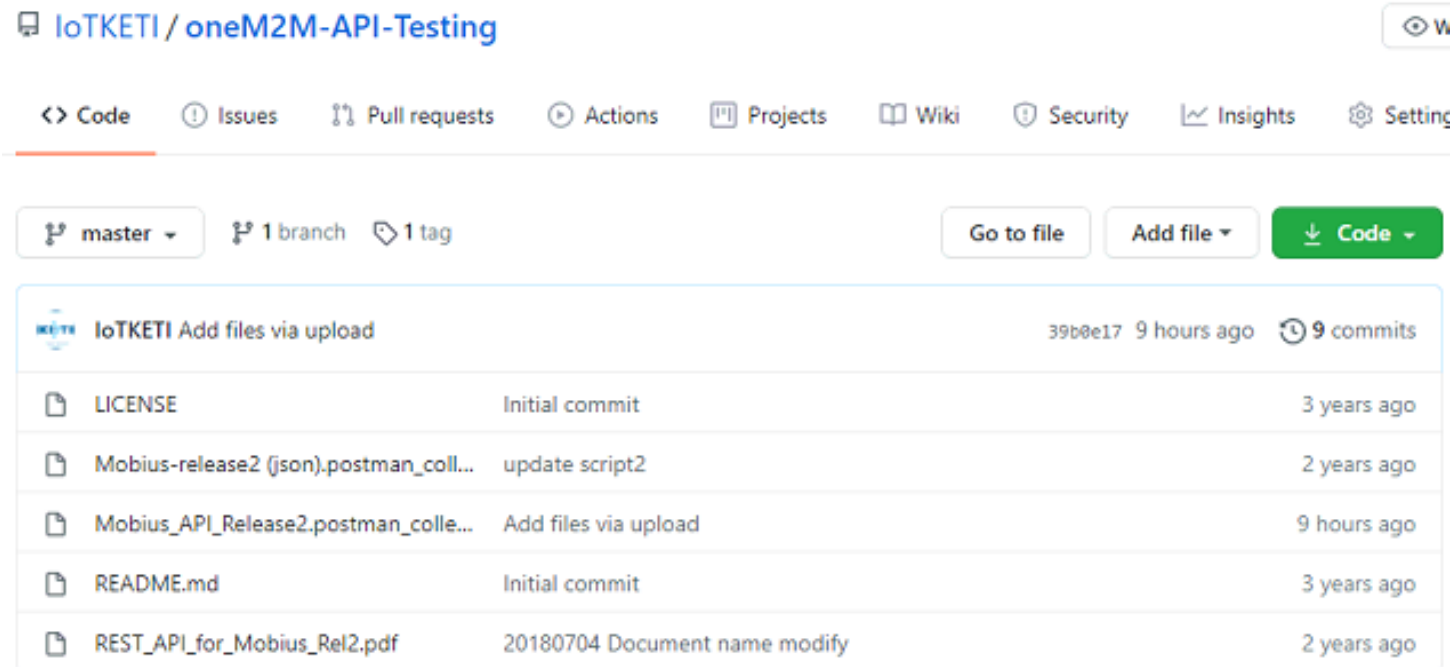
Mobius Browser Test

- Running oneM2M Browser
 - Enter your mobius URL



Mobius Resource Test

- Download oneM2M API test scripts
 - You can Download Zip
 - Alternatively, you can use the git clone command
 - > git clone https://github.com/loTKETI/oneM2M-API-Testing.git

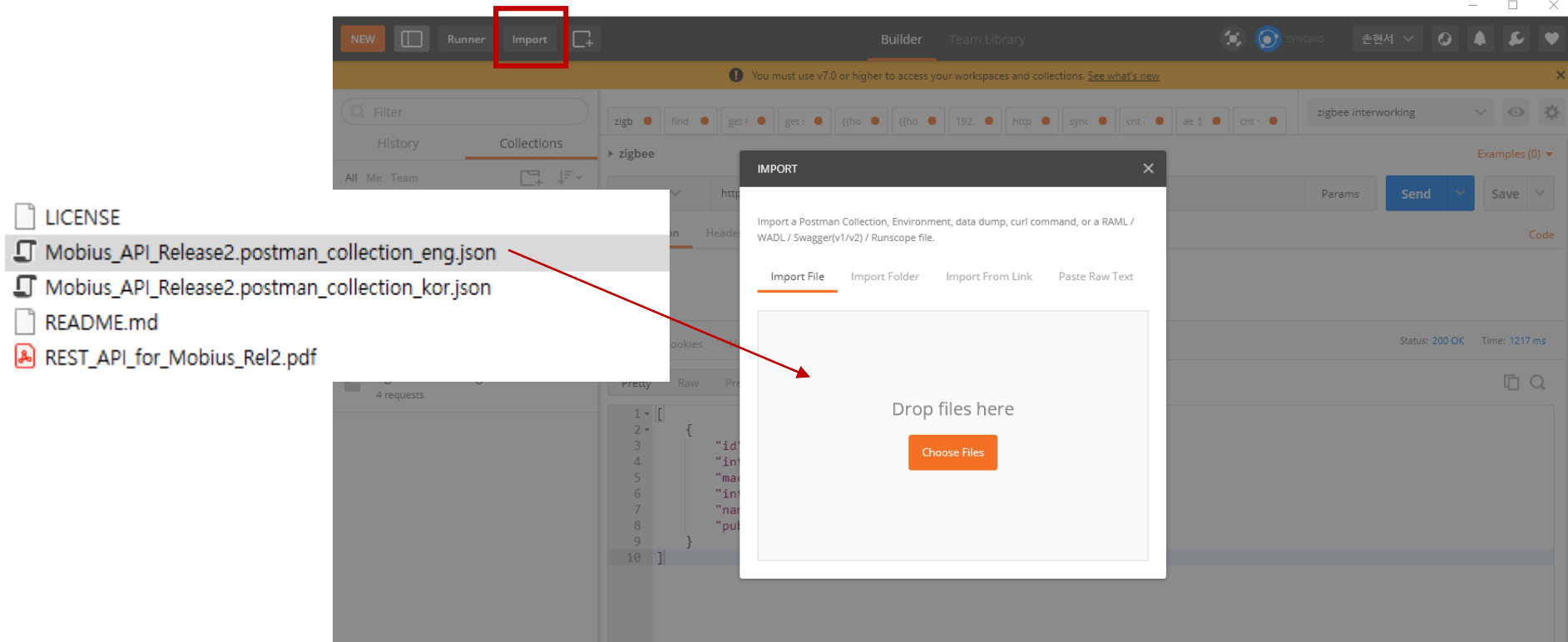


The screenshot shows the GitHub repository page for `loTKETI/oneM2M-API-Testing`. The repository is on the `master` branch, has 1 branch and 1 tag. The commit history shows the following files and their commit details:

File	Commit Message	Commit Hash	Time Ago	Commits
LICENSE	Initial commit	39b0e17	3 years ago	9
Mobius-release2 (json).postman_coll...	update script2		2 years ago	
Mobius_API_Release2.postman_colle...	Add files via upload		9 hours ago	
README.md	Initial commit		3 years ago	
REST_API_for_Mobius_Rel2.pdf	20180704 Document name modify		2 years ago	

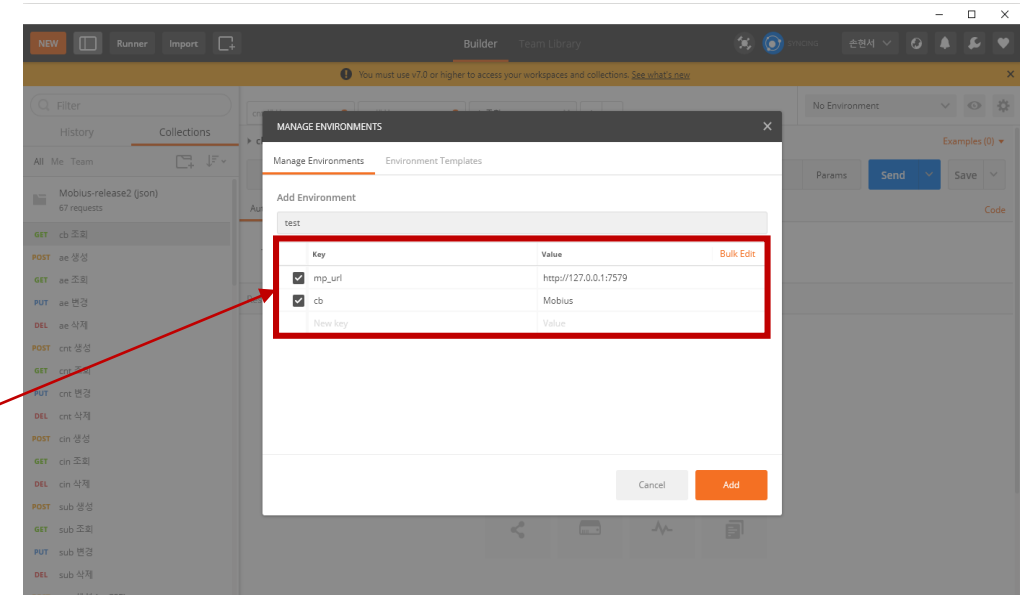
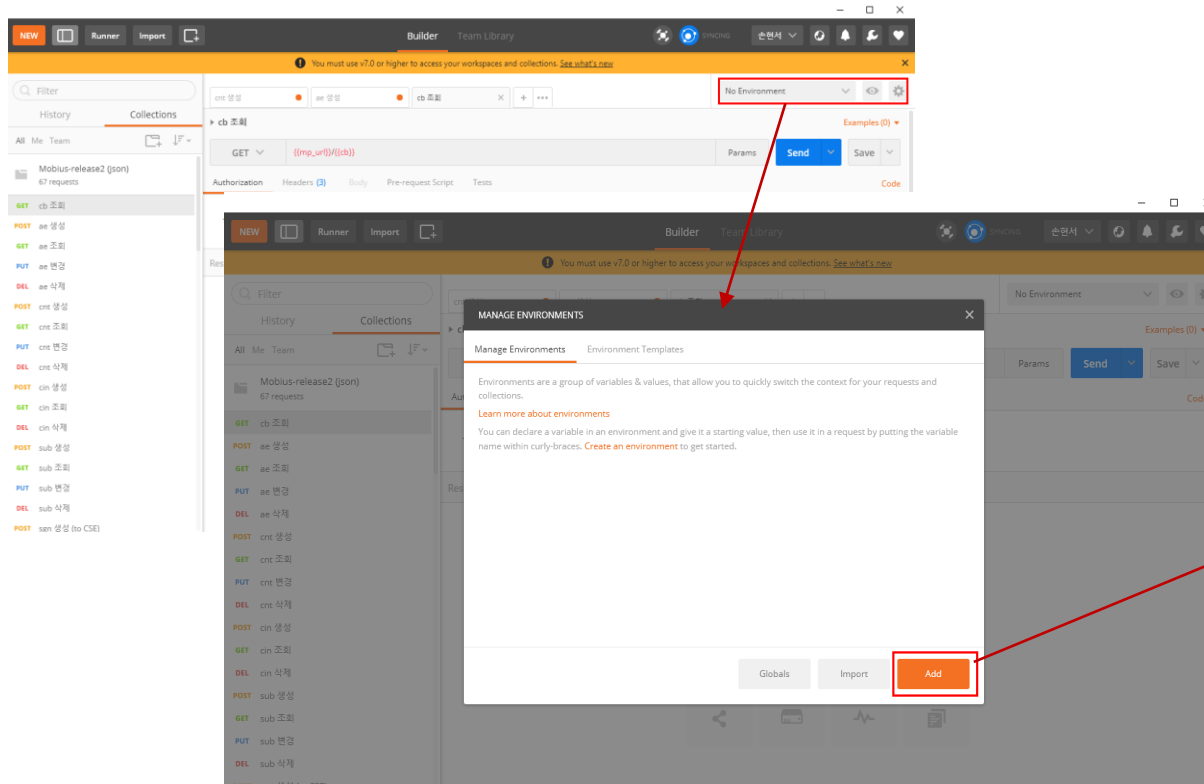
Mobius Resource Test

- Run Postman and import the script file
 - Drag and drop json file here



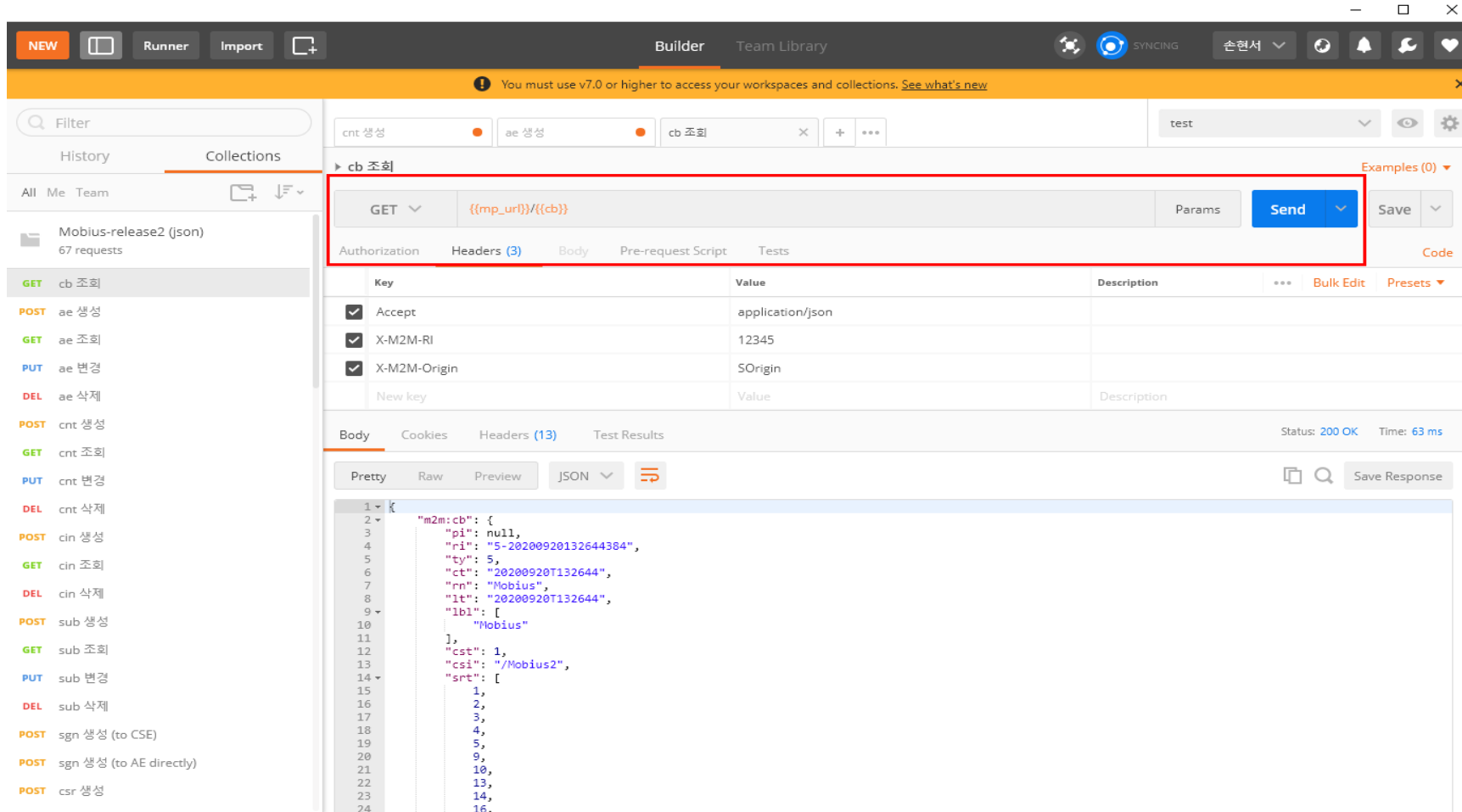
Mobius Resource Test

- Set Environment
 - mp_url http://[Mobius host IP]:7579
 - cb Mobius



Mobius Resource Test

- <CSEBase> resource retrieval



The screenshot displays the oneM2M Builder interface for configuring a GET request. The left sidebar shows a collection of requests under 'Mobius-release2 (json)'. The main panel is titled 'cb 조회' and shows a GET request with the URL template `{{mp_url}}/{{cb}}`. The 'Headers' tab is active, showing a table with the following headers:

Key	Value	Description
Accept	application/json	
X-M2M-RI	12345	
X-M2M-Origin	SOrigin	

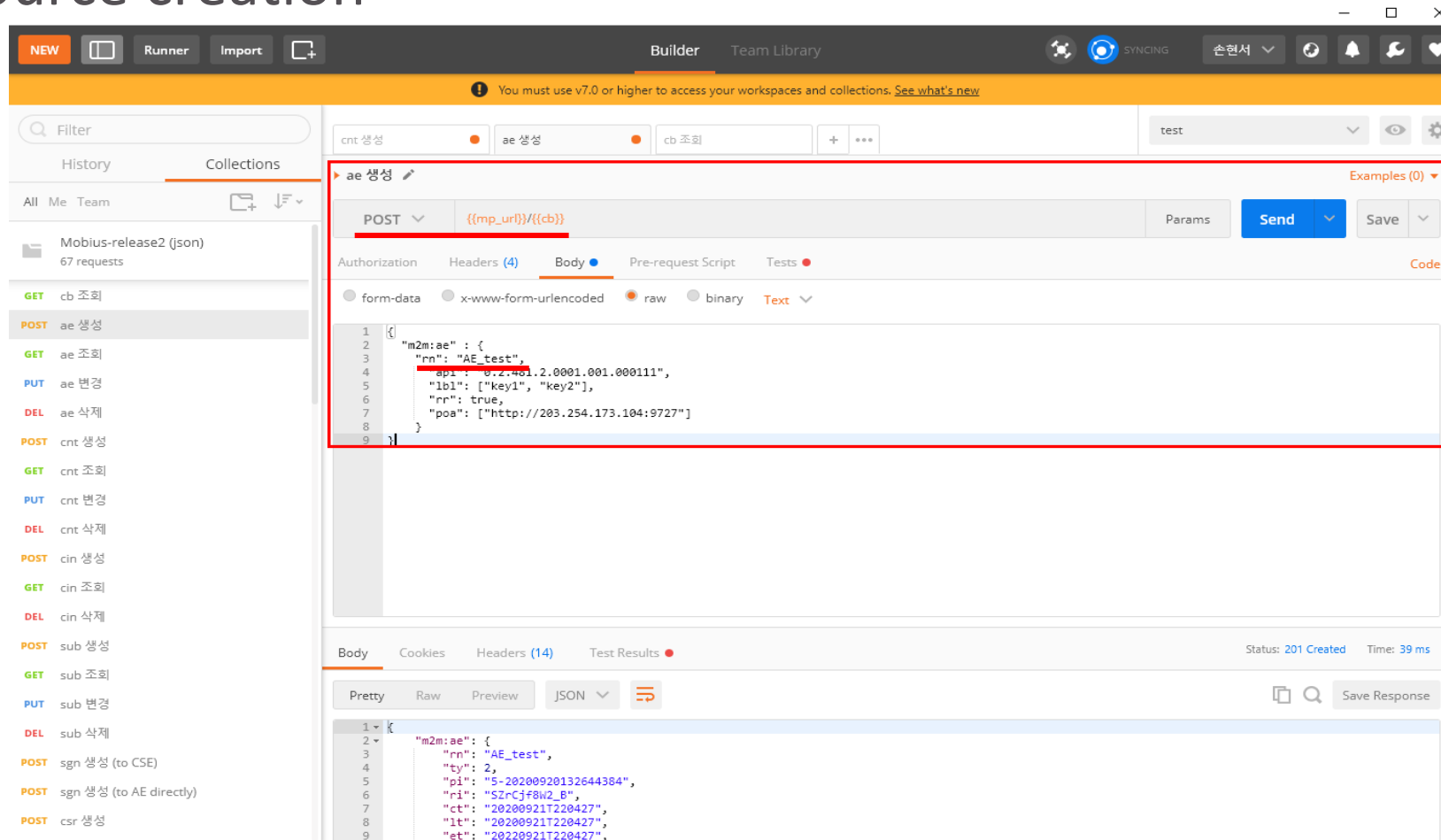
Below the headers, the 'Body' tab is active, showing a JSON response in 'Pretty' format. The response is a JSON object with the following structure:

```
{
  "m2m:cb": {
    "pi": null,
    "ri": "5-20200920132644384",
    "ty": 5,
    "ct": "20200920T132644",
    "rn": "Mobius",
    "it": "20200920T132644",
    "l1": [
      "Mobius"
    ],
    "cst": 1,
    "csi": "/Mobius2",
    "srt": [
      1,
      2,
      3,
      4,
      5,
      9,
      10,
      13,
      14,
      16
    ]
  }
}
```

The status bar at the bottom indicates a successful response with status 200 OK and a time of 63 ms.

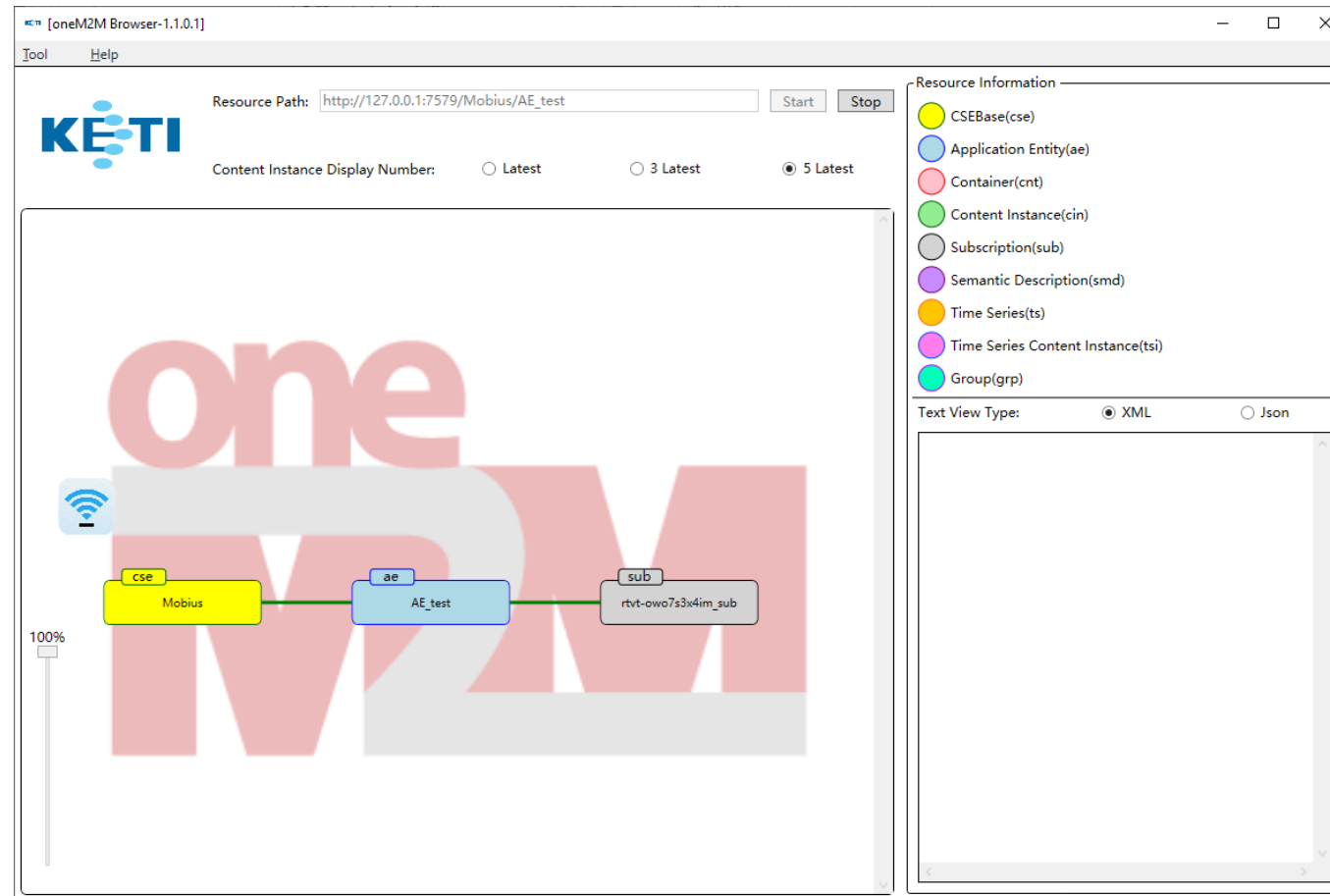
Mobius Resource Test

- <AE> resource creation



Mobius Resource Test

- Put the <AE> resource identifier with Mobius server address in oneM2M resource browser



Mobius Resource Test

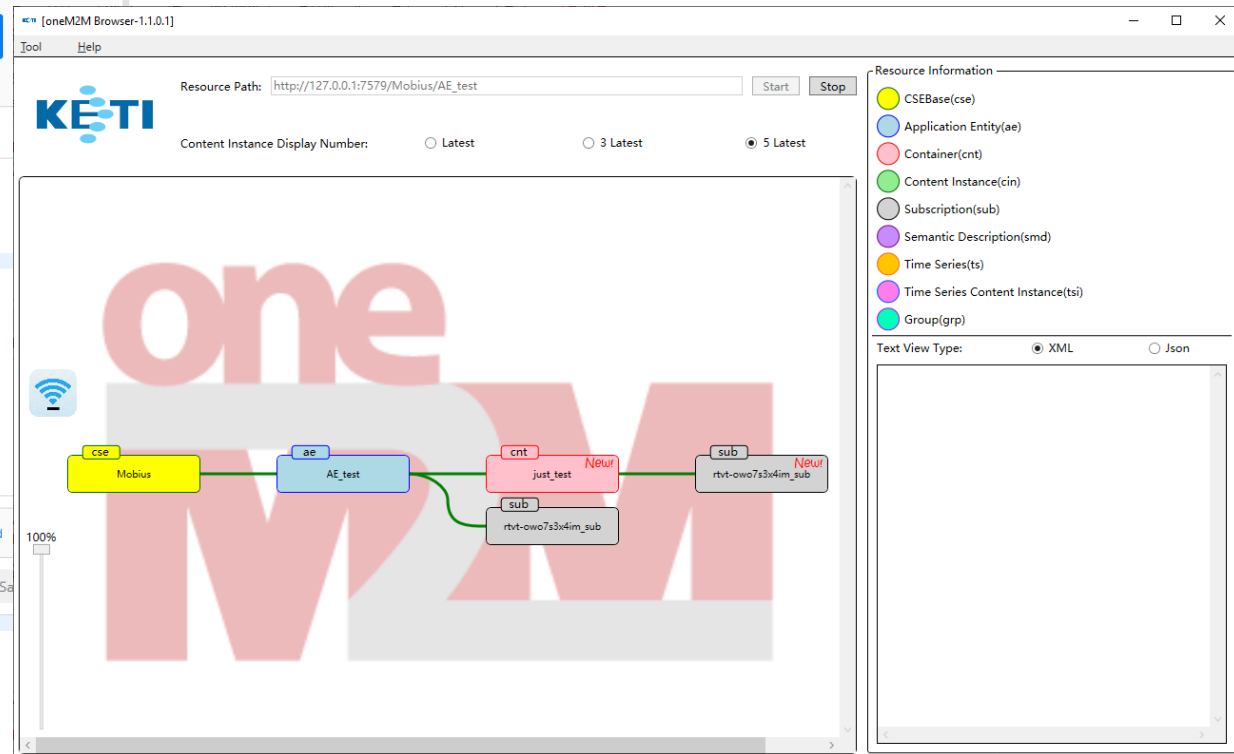
- <container> resource creation

The screenshot shows the oneM2M Builder interface. The top bar includes tabs for NEW, Runner, Import, and Builder. A notification banner states: "You must use v7.0 or higher to access your workspaces and collections. See what's new". The left sidebar shows a list of collections, with "Mobius-release2 (json)" selected, containing 67 requests. The main area displays a POST request configuration for the endpoint `{{mp_uri}}/({cb})/AE_test`. The request body is a JSON object:

```
{
  "m2m:cnt": {
    "rn": "just_test",
    "ty": "3",
    "p1": "SZrCjf8W2_B",
    "r1": "3-20200921221009047",
    "ct": "20200921T221009",
    "it": "20200921T221009",
    "st": 0
  }
}
```

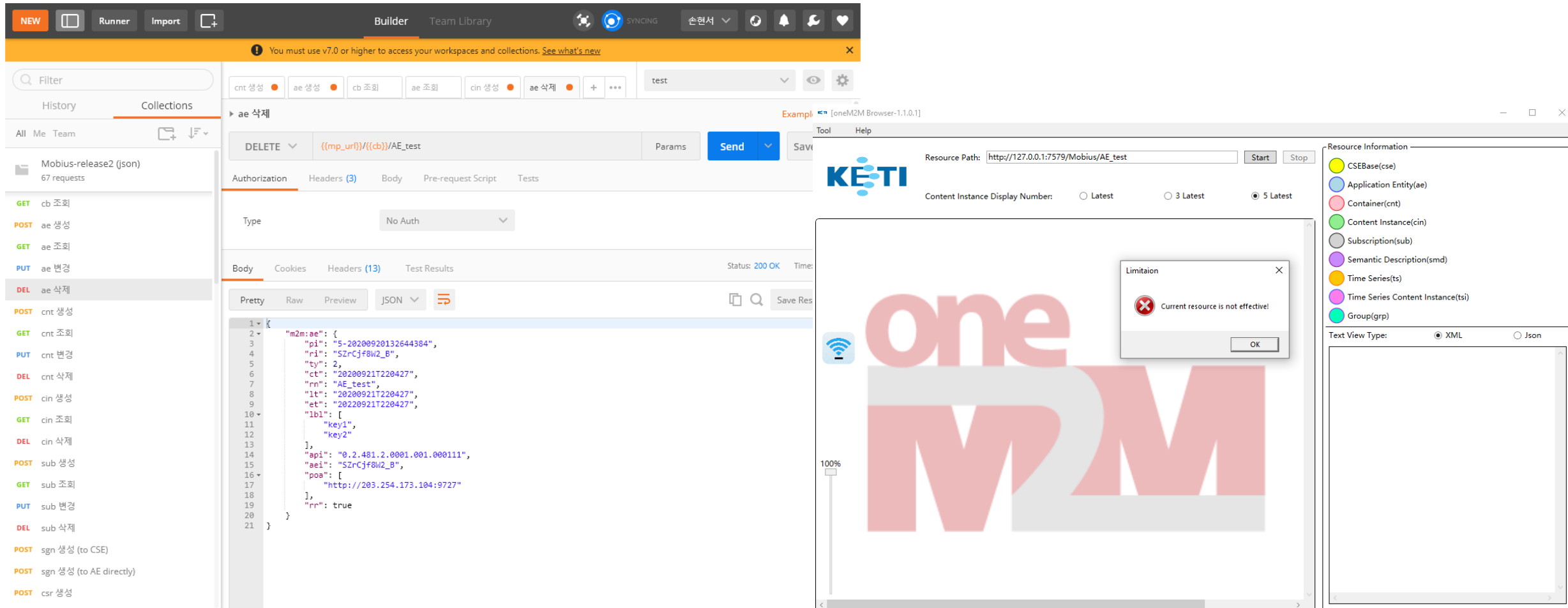
The bottom section shows the response body in JSON format:

```
{
  "m2m:cnt": {
    "rn": "just_test",
    "ty": 3,
    "p1": "SZrCjf8W2_B",
    "r1": "3-20200921221009047",
    "ct": "20200921T221009",
    "it": "20200921T221009",
    "st": 0
  }
}
```



Mobius Resource Test

- <AE> resource delete



The screenshot displays the oneM2M Builder application interface. The top bar shows the 'Builder' tab and a notification about version requirements. The left sidebar lists various request types, including 'DEL ae 삭제' (Delete AE). The central workspace shows a DELETE request configuration for the resource path `{{mp_url}}/{{cb}}/AE_test`. The 'Body' tab is active, displaying a JSON payload for the AE resource. The right sidebar shows the 'Resource Information' panel with a list of resource types and a 'Text View Type' selector set to XML. A 'Limitation' dialog box is open, indicating that the current resource is not effective.

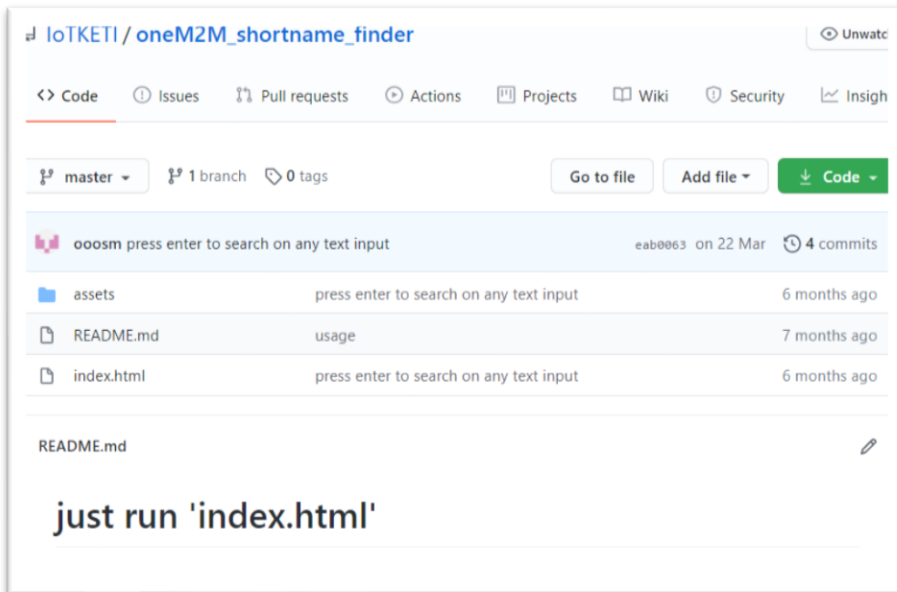
```
1 {
2   "m2m:ae": {
3     "pi": "5-20200920132644384",
4     "ri": "SZrCjf8W2_B",
5     "ty": 2,
6     "ct": "20200921T220427",
7     "rn": "AE_test",
8     "it": "20200921T220427",
9     "et": "20200921T220427",
10    "l1": [
11      "key1",
12      "key2"
13    ],
14    "api": "0.2.481.2.0001.001.000111",
15    "aei": "SZrCjf8W2_B",
16    "poa": [
17      "http://203.254.173.104:9727"
18    ],
19    "rr": true
20  }
21 }
```




Short Name Finder

Short Name Finder

- oneM2M protocol defines short names to save bytes over the air, but memorizing them is not so easy
- So you can find short name with Short Name Finder
 - https://github.com/loTKETI/oneM2M_shortname_finder
 - Unzip oneM2M_shortname_finder and just open the index.html



Short Name Finder
(compatible with TS-0004 v4.0.0)

Search by short name (exact match)	Search by long name (partial match)	Search by occurs in (partial match)	Search by category (partial match)
acor			

Search

short name	long name	occurs in	category
acor	accessControlOriginators	privileges, selfPrivileges	Complex data types members

Short Name Finder

- You can search for short names specified in TS-0004
 - If you know the exact short name, use 1
 - If you want to search by long name, use 2 (partial match)
 - 1, 2, 3 and 4 can be combined
 - Short names are also defined in other Technical Specification (TS) so they'll also be supported

Short Name Finder
(compatible with TS-0004 v4.0.0)

Search by short name (exact match) 1	Search by long name (partial match) 2	Search by occurs in (partial match) 3	Search by category (partial match) 4	Search
<input type="text" value="ae"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

short name	long name	occurs in	category
aei	AE-ID	AE	Resource attributes
ail	AE-IDList	AEContactListPerCSE	Resource attributes
hael	hostedAELinks	node	Resource attributes
aae	allowedAEs	serviceSubscribedAppRule	Resource attributes
tiae	triggerInfoAE-ID	triggerRequest	Resource attributes
ae	AE	(n/a)	Resource types
aeA	AEAnnc	(n/a)	Resource types
alst	AEContactList	(n/a)	Resource types
alpc	AEContactListPerCSE	(n/a)	Resource types
aerp	AERegistrationPointChange	notification	Complex data types members
aerid	AEReferenceIDChange	notification	Complex data types members
encn	eventNotificationCriteriaEntry	eventNotificationCriteriaSet	Complex data types members
tiae	triggerInfoAE-ID	(n/a)	Trigger payload fields