

Analysis Platform + DN7

AP+DN7

Getting Started

Analysis Platform is an open source web application to import, connect and visualize factory IoT data. It helps to collect, link and integrate data from multiple data sources. Visualizations include Digital Native QC7 Tools, which is designed especially suitable for data on manufacturing domain. Let's try data-driven process improvement by utilizing the data sleeping in the field.

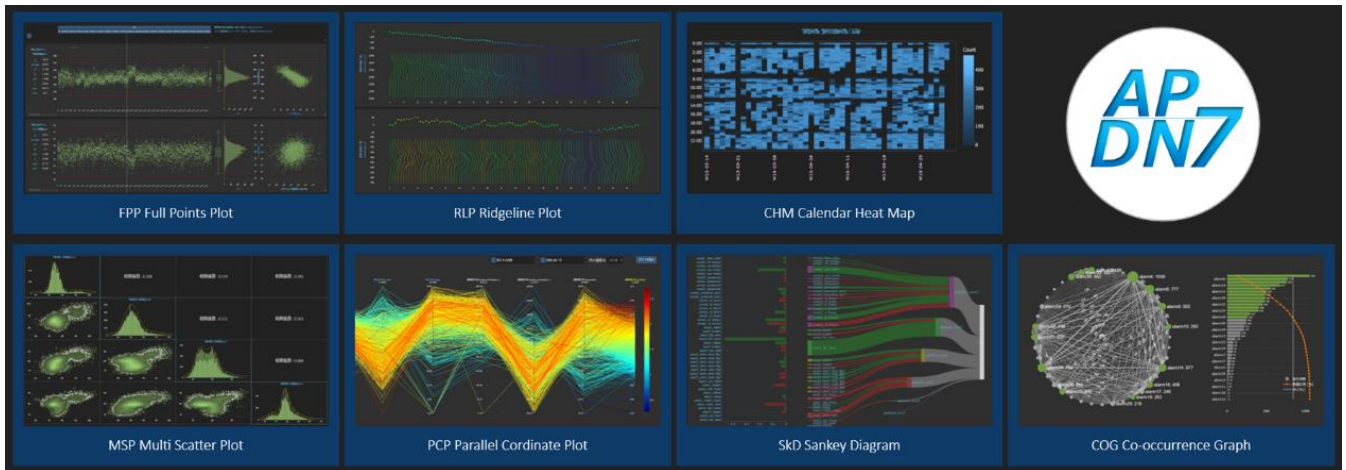


Table of Contents

| | | |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------|----|
| 1. | Introduction..... | 3 |
| 2. | Requirements..... | 4 |
| 3. | Download | 5 |
| 4. | Activate/Shut down the application | 6 |
| 4.1. | Activate | 6 |
| 4.2. | Shut down | 11 |
| 4.3. | Proxy/Port number/Language Settings (Optional)..... | 12 |
| 5. | Demo visualization..... | 14 |
| 6. | Troubleshooting | 15 |
| 6.1. | The Analysis Platforms fails to activate with an error message: ImportError: DLL load failed: The specified module could not be found..... | 15 |

1. Introduction

With the Analysis Platform, you can visualize/analyze data from multiple data sources. In most factories, the data is often stored in separate database/table/CSVs. For example, think of a case that we have to trace back to the previous process for a product which a complaint had occurred, to identify the root cause. In that case, if the data of each process is stored in separate data source, we have to spend a lot of time gathering and connecting the scattered data.

With this application, you can easily configure the data connection between processes on the browser. According to the settings, we can read / connect /visualize /analyze the data, and we hope that this accelerate on-site Kaizen activities.

Currently, we provide following functions:

- Import:** SQLite, PostgreSQL, SQL Server, Oracle Database, MySQL, CSV/TSV/SSV.
- Connection:** Trace forward, trace back, tracing with multiple keys.
- Visualization:** Full points plot / Stratified plot / Ridgeline plot / Calendar heatmap / Multiple scatter plot / Parallel coordinates plot / Sankey diagram / Cooccurrence Graph / Aggregation Plot
- Analyze:** Principal Component Analysis (PCA)
- Table viewer:** Read and view some data from the databases.
- Filtering:** You can set filters of Lines, Machines, Product No, etc.
- Master setting:** Graph thresholds, in-process threshold, ymin/ymax of graphs.
- Job list:** List up the progress of data import / data connecting processes.

Note:

- Depending on the settings of the database to connect to, it may take some time to read the data, and the database may be overloaded.
- The Analysis Platform is designed to generate an internal database for buffers to enable high-speed access. Internal database of the application can reach several tens of GB when a large amount of process data is loaded.
You don't have to worry about reading a single CSV, but for example when reading all manufacturing data of whole year, etc., please use a PC with enough free space.
- The Analysis Platform will give you a warning message if the free disk space is below a certain amount. Eventually, the Analysis Platform automatically stops importing the data according to the spaces left. In that situation, be careful that it will be difficult to transfer the application to another location.

2. Requirements

Analysis Platform is tested under the following condition:

OS: Windows10 Enterprise (64bit)

CPU: Intel Core i5-8250U 1.60GHz

RAM: 8GB

Disc capacity: 235GB SSD

(More than 10% free space is necessary. If not, AP+DN7 will stop importing data to avoid full disk capacity)

Browser: Google Chrome 120.0.6099.130 (Official Build) (64bit)
(Also available on Microsoft Edge, which use Chromium)

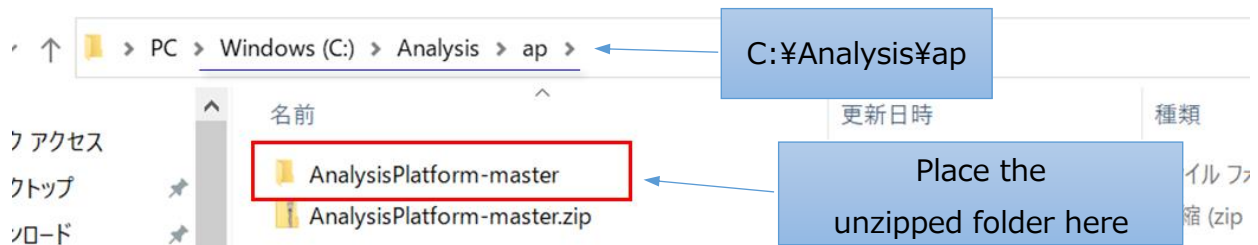
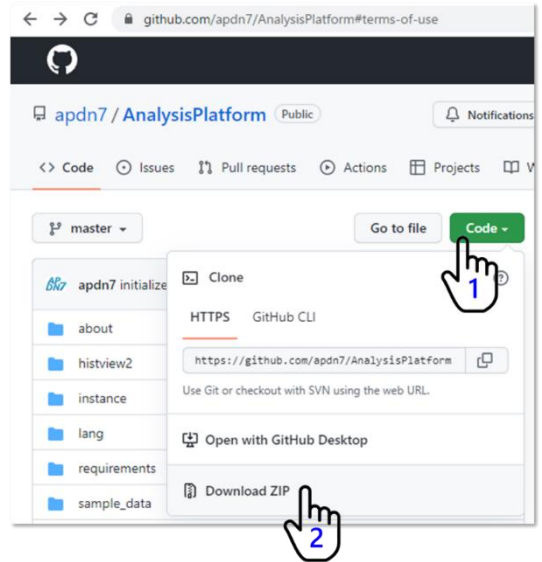
3. Download

You can get the ZIP file of the Analysis Platform from GitHub. This ZIP file contains source code of the Analysis Platform. After you had downloaded the ZIP file, unzip it.

<https://github.com/apdn7/AnalysisPlatform>

After the unzipping is finished, you will see a folder:
AnalysisPlatform-master

Place the "AnalysisPlatform-master" folder where OneDrive is not synchronized. We strongly recommend creating C:¥Analysis¥ap folder.



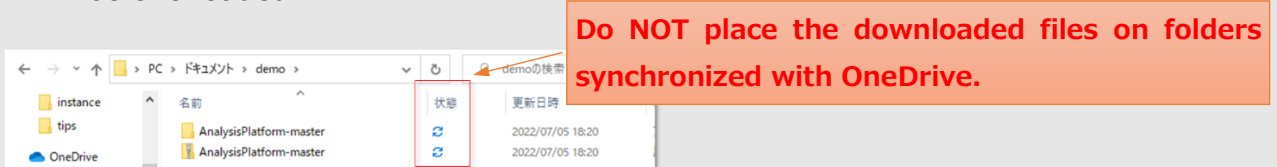
Note:

Please place the extracted files in a place where **OneDrive is not synchronized**.

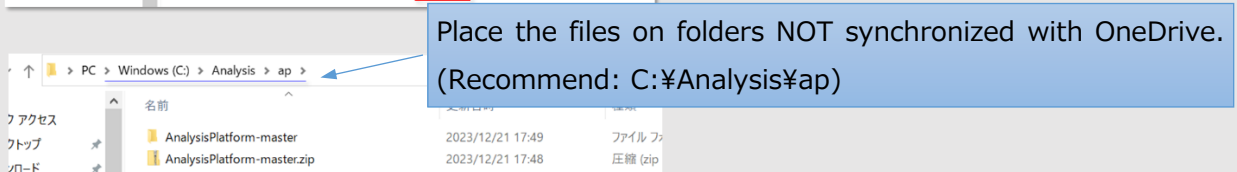
Do not synchronize with OneDrive, as it may cause problems (Please avoid places where One Drive is synchronized, such as My Documents and the desktop, and set it in a place outside of synchronization)

Since the Analysis Platform generates a buffer database internally and accesses it at high frequency, if you place it in a synchronized folder of OneDrive, the operation will be extremely slow or the network will be overloaded.

NG



OK



4. Activate/Shut down the application

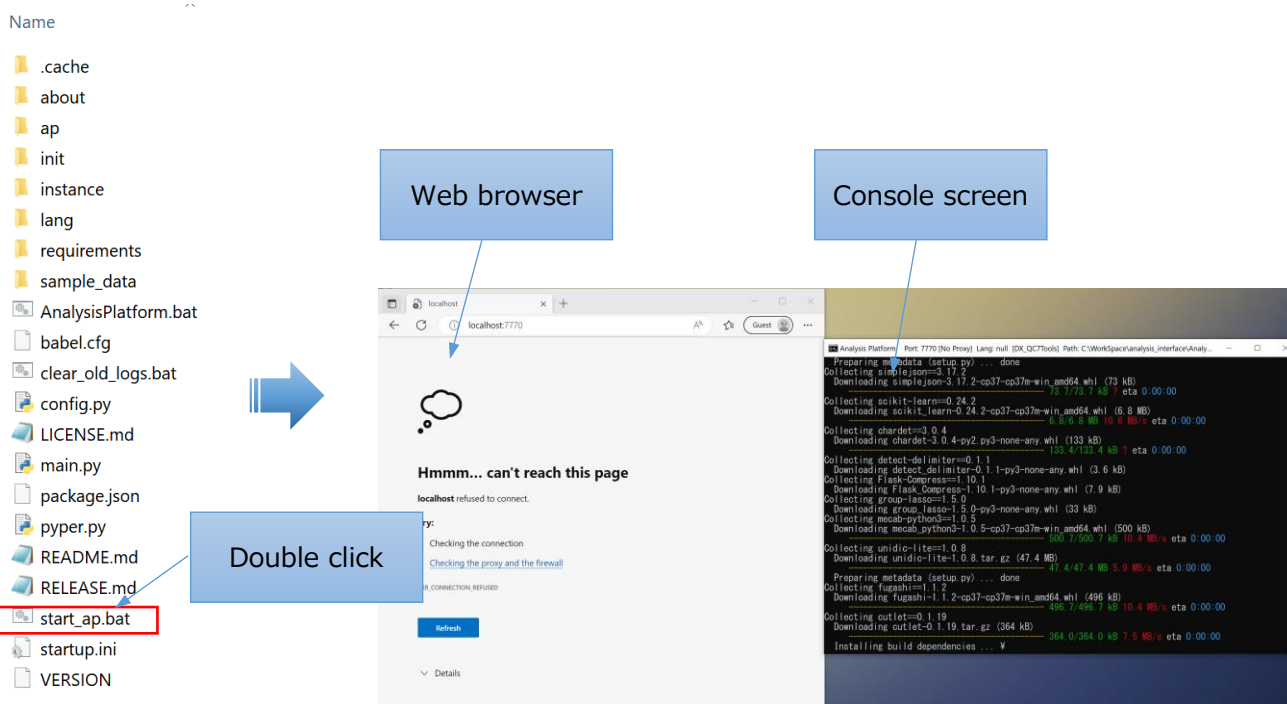
4.1. Activate

Note:

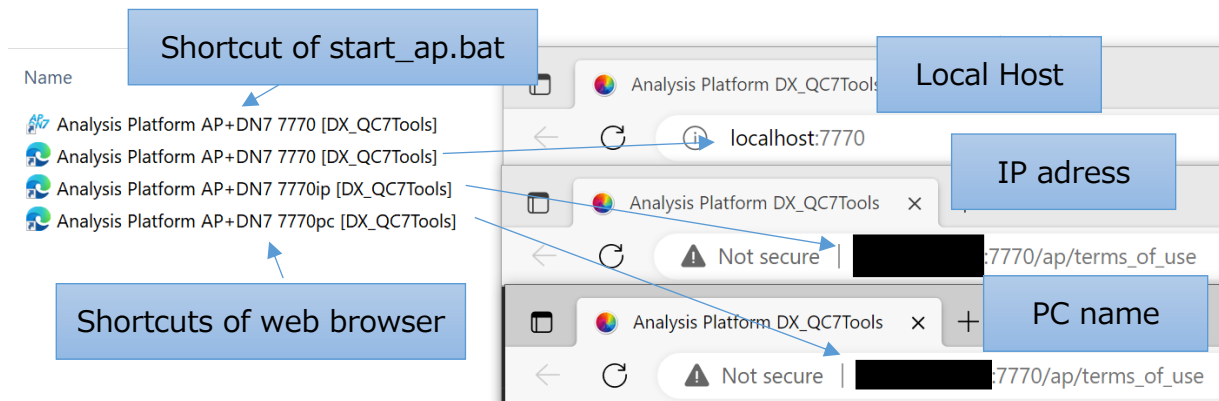
You must configure the proxy settings in advance if you use a proxy server.
See section: "Proxy/Port Number/Language Settings (Optional)" for details

Inside the "AnalysisPlatform-master" folder that you had unzipped, you will see a file "start_ap.bat". To activate the Analysis Platform, you only have to double-click the "start_ap.bat" file.

After you had double-clicked the "start_ap.bat" file, a black window (console screen) and web browser will appear. The program will start downloading the necessary software (if it does not exist) and after that, the Analysis Platform will start automatically. (When starting up for the first time, it will take some time to download the software). While using the Analysis Platform, do not close this black window (minimizing the window is OK).

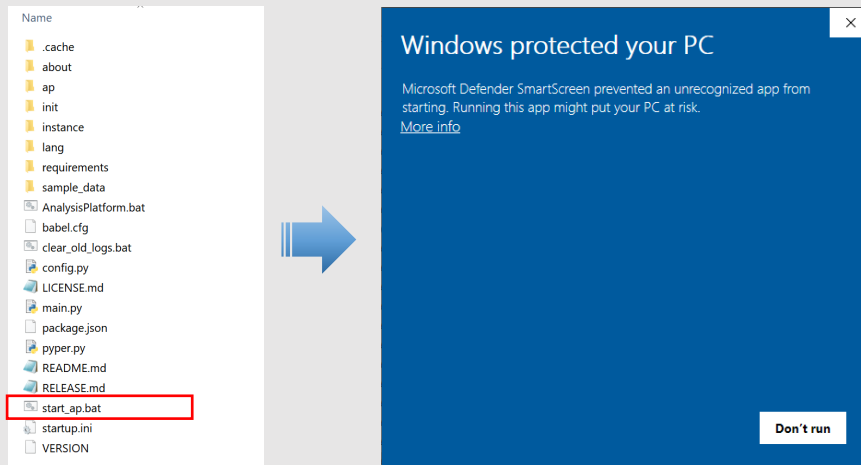


While the activation, the Analysis Platform automatically generates shortcuts of "start_ap.bat" and web browser on the desktop. There are three shortcuts of the web browser, each to access the application by localhost/IP address/PC name. From the next time, you can activate/access the application without opening the "AnalysisPlatform-master" folder.



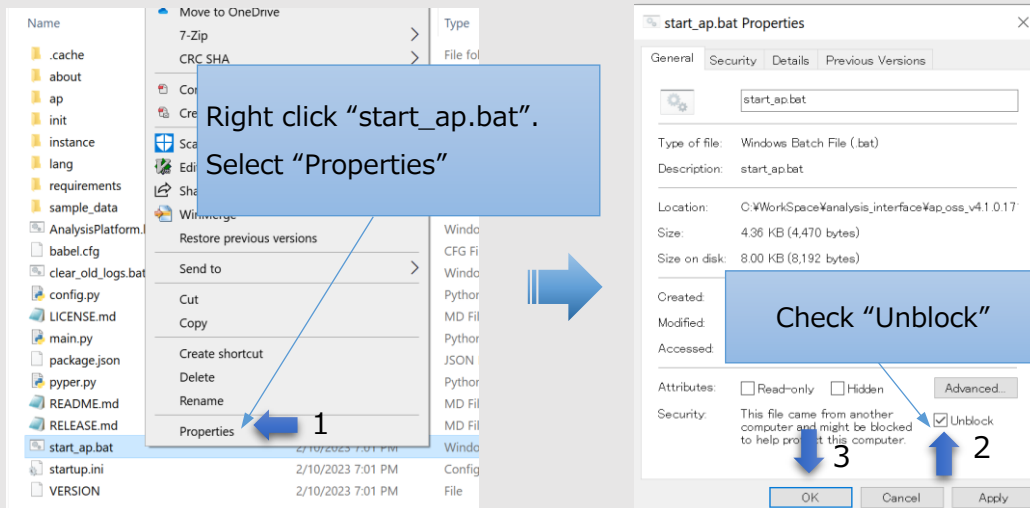
Note:

When you double-click "start_ap.bat" file, due to the Windows security function, the following blue window may appear.



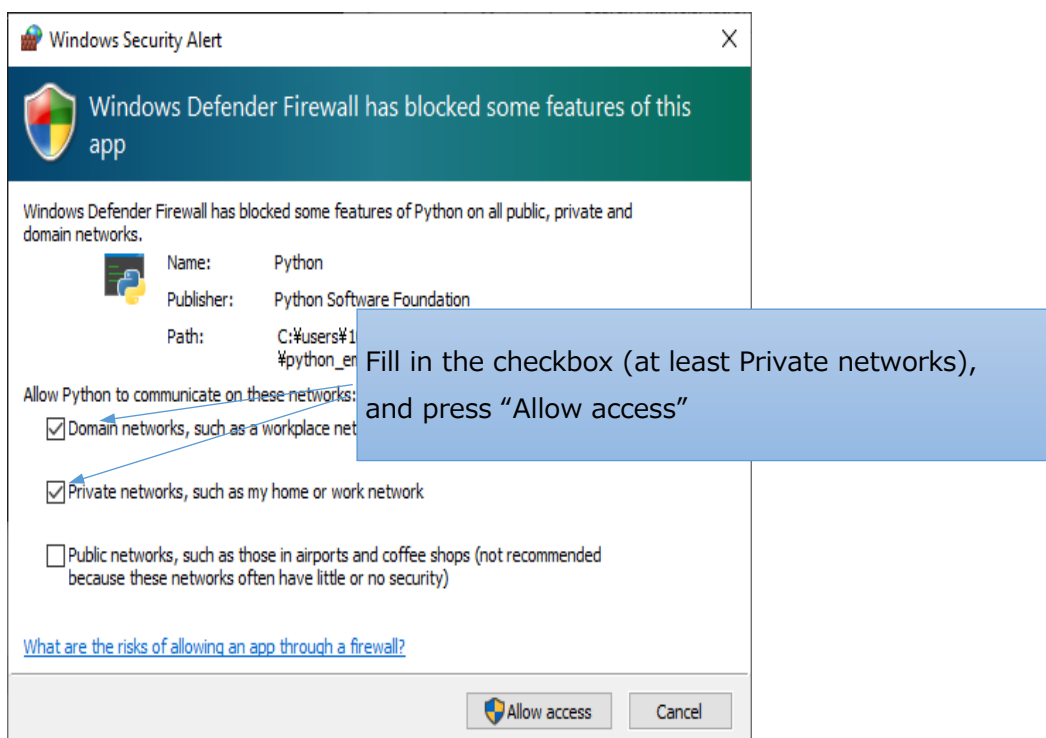
In that case, do either one of the two:

- Click "More info" in the displayed blue window and press the "Run anyway" button displayed.
- Before double-clicking the "start_ap.bat" file, change the security setting from the file properties as follows. First right click the "start_ap.bat" file and select "Properties". Then, check "Unblock" and press "OK". Finally, double-click the "start_ap.bat" file again to start the application.

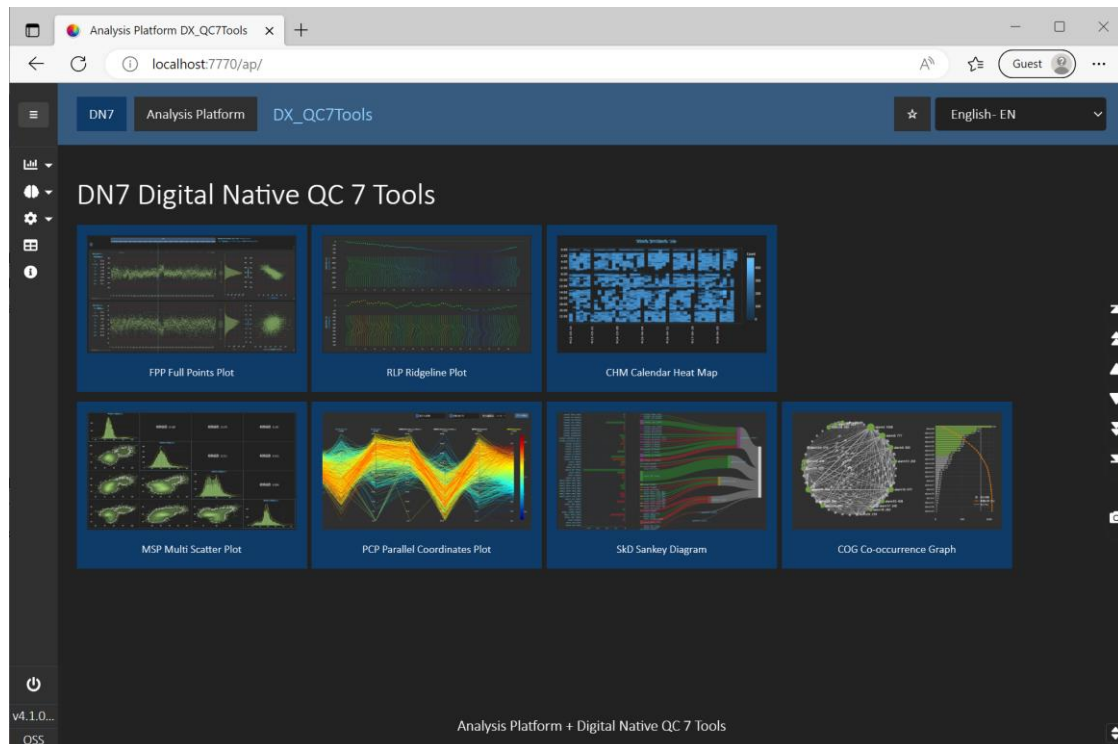
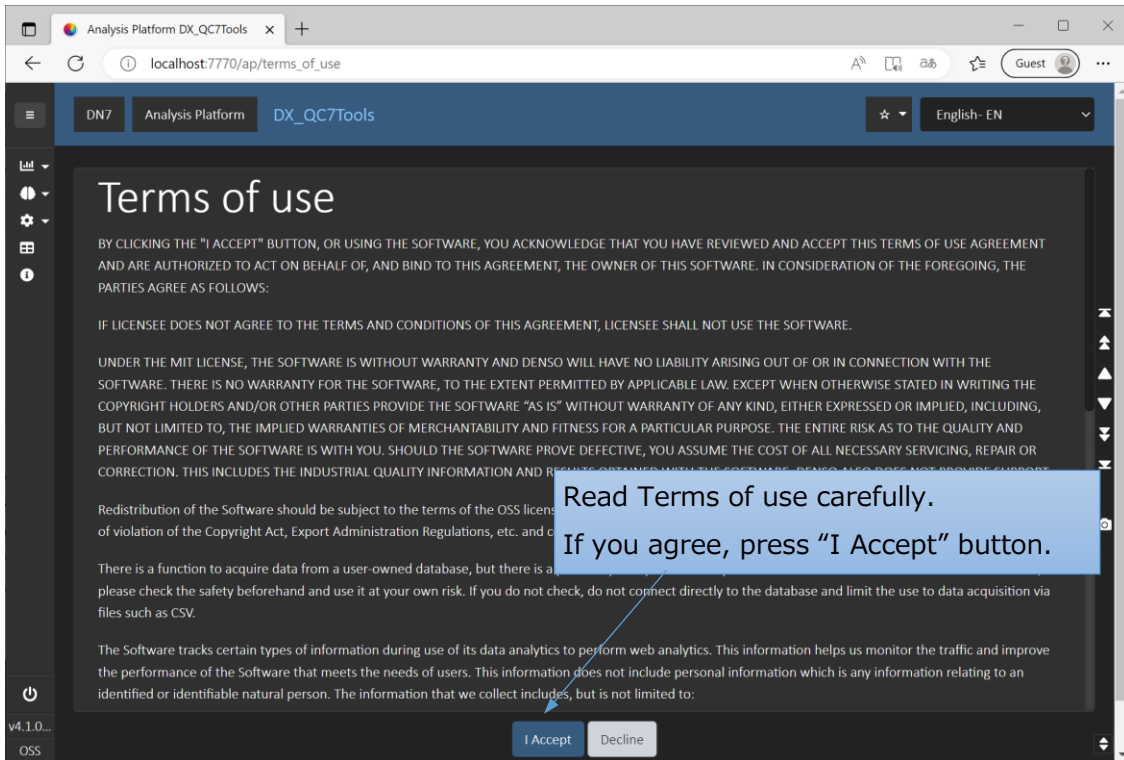


After waiting for a while, the activated web browser will switch to the application, and you can start using the application (if the screen does not switch, press Refresh button or Ctrl+R on your browser). If you are not activating the web browser yet, you can access the application by opening <http://localhost:7770/> with Google Chrome or Microsoft Edge. Furthermore, you can access the application from other client, using the IP address [e.g. <http://123.456.7.89:7770>] or domain name [e.g. http://my_pc.ap.com:7770] of the PC that is hosting the application.

When you start the application for the first time, a window regarding Windows security will be displayed. Please check the following checkmarks and press the "Allow access" button (Three checkmarks might appear. Please at least check "Private Network")

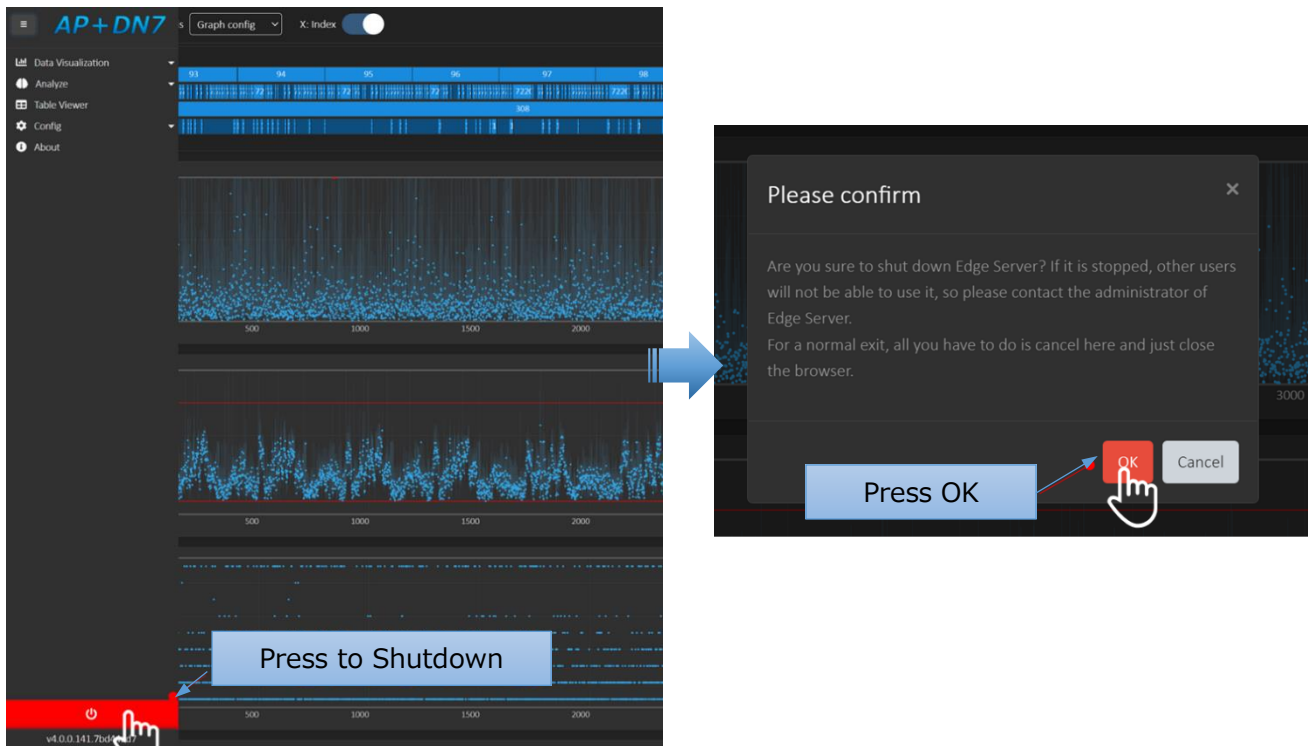


On the first time of your access to the Analysis Platform (or after the upgrade), the Terms of Use screen will appear. Read the terms of use carefully and press the "I Agree" button to display the top page of the app.



4.2. Shut down

There is a power icon at the bottom left of the page. This icon is only shown when it is accessed from the PC which the application is running. If you want to shut down the application, press the power button. A confirmation window will appear, and when you press the OK button, the application will shut down and the black window (console screen) will disappear automatically.



4.3. Proxy/Port number/Language Settings (Optional)

You can configure the activation settings of the Analysis Platform by editing "startup.ini" file.

Open the "startup.ini" file under the "AnalysisPlatform-master" folder with a text editor.

Make sure that the Analysis Platform is not activated when you are editing the "startup.ini" file.

Proxy setting

If you use a proxy to connect the Internet and the corresponding address is not registered in the environment variables, you need to specify the address of the proxy server.

- HTTP proxy: Remove ";" from line 35 or 36, and rewrite to an appropriate value.
- HTTPS proxy: Remove ";" from line 47 or 48, and rewrite to an appropriate value.

If you are using the same value as HTTP proxy, you can just remove ";" from line 41.

```
29 ; Proxy http
30 proxy=no
31 ;; proxy=no : Force to No Proxy
32 proxy=null
33 ;; proxy=null : Default or No Proxy
34 ;; If you have proxy, delete rem below
35 ;proxy=192.0.2.0:8080
36 ;proxy=proxy.example.com:8080
37 ;; proxy=xxx:80 : Force to use Proxy x
38 ;; Domain Name is also possible. Ex.
39 ; Proxy https
40 prxs=http
41 ;; prxs=http : Use same setting as Pr
42 ;prxs=no
43 ;; prxs=no : Force to No Proxy
44 ;prxs=null
45 ;; prxs=null : Default or No Proxy
46 ;; If you want to use different setti
47 ;prxs=192.0.2.0:8080
48 ;proxy.examples.com:8080
```

Before

After

HTTP proxy: remove ";" and rewrite

HTTPS proxy: remove ";" and rewrite

Port number setting

The Analysis Platform uses port 7770 by default. Edit line 14 if you want to change this value. The application will stop the activation if the port number is already in use, but just in case, if you are already activating other web application, check that the port number is not the same.

```
12 [StartUpSetting]
13 ; AP Port of Edge Server
14 port=7770
15 ;; Default: 7770 Recommended usage range: 7750-7770 Only Integer range:6000-7999 available
```

Language setting

Default language is set to en (English). You can change the language from the GUI of the application, but if you want to change the default language, edit line 18 (e.g. es, it, ja).

```
17 ; Default StartUp Language
18 lang=en
19 ;; lang=null : Use default setting
20 ;lang=ja
21 ;; Selecet from en, ja, it, es, ... (choose from AP+DN7 Selection)
```

Browser activation / Shortcut generation setting

The Analysis Platform automatically generates shortcuts of "start_ap.bat" and web browser on the desktop. You can change the corresponding line of line 50-64 to control this behavior.

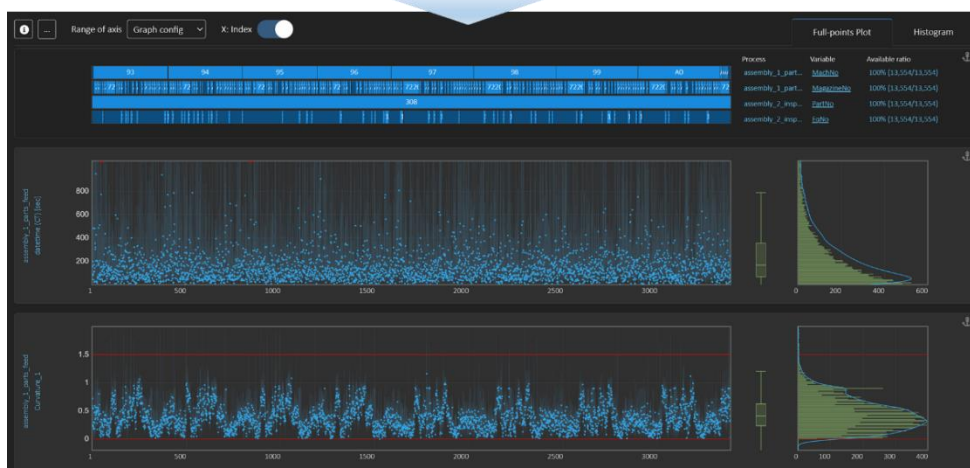
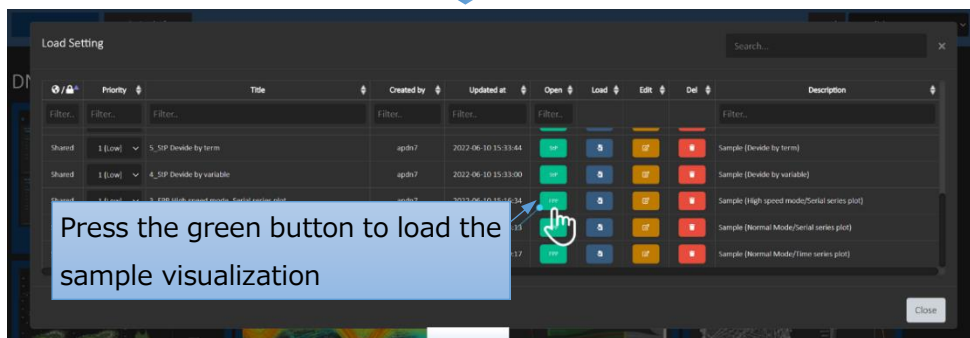
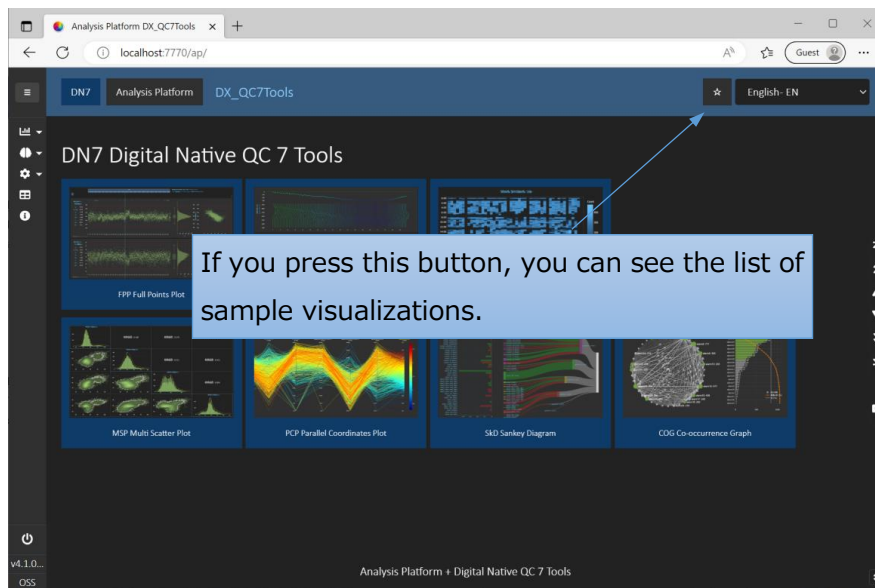
```
50 [BrowserLaunch]
51 ; Browser Launch 1:On 0:Off
52 launch_chrome=1
53 launch_edge=0
54
55 [ShortcutAdd]
56 ; Make Shortcut on DeakTop 2:Everytime 1:Just Installation 0:Off
57 ;; Analysis Platform
58 shortcut_app=1
59 ;; localhost
60 shortcut_web=1
61 ;; pc name For access from external PC (recommended)
62 shortcut_web_pc=1
63 ;; ip addr For access from external PC (when pc name access is not available)
64 shortcut_web_ip=1
```

Browser activation

Shortcut generation

5. Demo visualization

By pressing the star button on the top right corner of the page, you can read the sample settings of the sample data already included in the app. If you press green button in the “Load Setting” page, you can get the demo result of corresponding visualization tool.



6. Troubleshooting

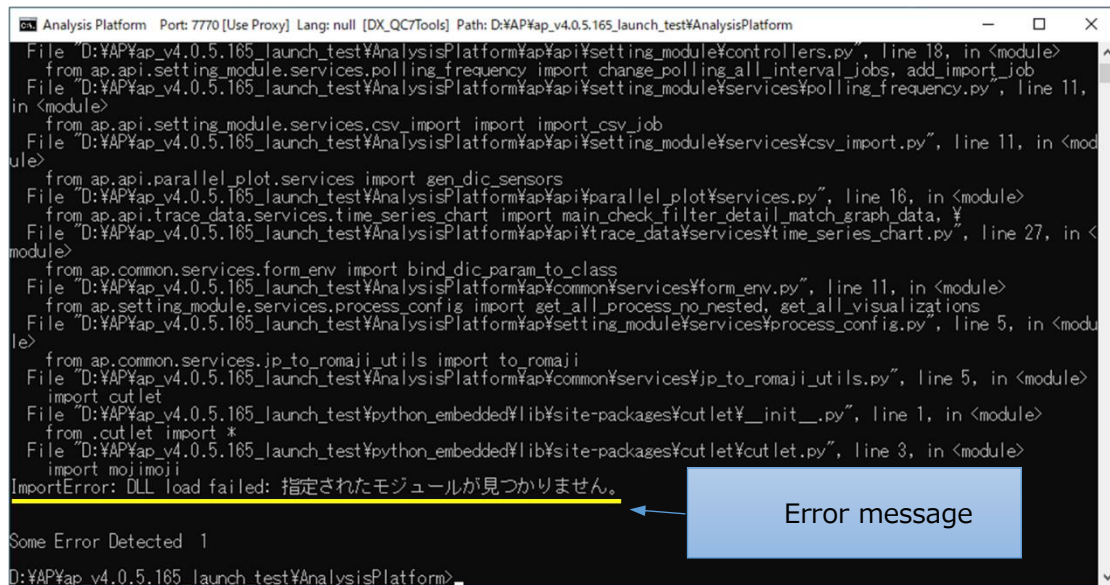
6.1. The Analysis Platforms fails to activate with an error message:

ImportError: DLL load failed: The specified module could not be found.

Issue

On the first time of the activation of the Analysis Platform, the activation fails with an error:

“ImportError: DLL load failed: The specified module could not be found.”



```
Analysis Platform Port: 7770 [Use Proxy] Lang: null [DX_QC7Tools] Path: D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform
File "D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform\api\setting_module\controllers.py", line 18, in <module>
  from ap.api.setting_module.services.polling_frequency import change_polling_all_interval_jobs, add_import_job
File "D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform\api\setting_module\services\polling_frequency.py", line 11,
in <module>
  from ap.api.setting_module.services.csv_import import import_csv_job
File "D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform\api\setting_module\services\csv_import.py", line 11, in <mod
ule>
  from ap.api.parallel_plot.services import gen_dic_sensors
File "D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform\api\parallel_plot\services.py", line 16, in <module>
  from ap.api.trace_data.services.time_series_chart import main_check_filter_detail_match_graph_data, ¥
File "D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform\api\trace_data\services\time_series_chart.py", line 27, in <
module>
  from ap.common.services.form_env import bind_dic_param_to_class
File "D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform\api\common\services\form_env.py", line 11, in <module>
  from ap.setting_module.services.process_config import get_all_process_no_nested, get_all_visualizations
File "D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform\api\setting_module\services\process_config.py", line 5, in <mod
ule>
  from ap.common.services.jp_to_romaji_utils import to_romaji
File "D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform\api\common\services\jp_to_romaji_utils.py", line 5, in <module>
  import cutlet
File "D:\AP\ap_v4.0.5.165_launch_test\python_embedded\lib\site-packages\cutlet\__init__.py", line 1, in <module>
  from .cutlet import *
File "D:\AP\ap_v4.0.5.165_launch_test\python_embedded\lib\site-packages\cutlet\cutlet.py", line 3, in <module>
  import mojimoji
ImportError: DLL load failed: 指定されたモジュールが見つかりません。
Some Error Detected 1
D:\AP\ap_v4.0.5.165_launch_test\AnalysisPlatform>
```

Suspected cause

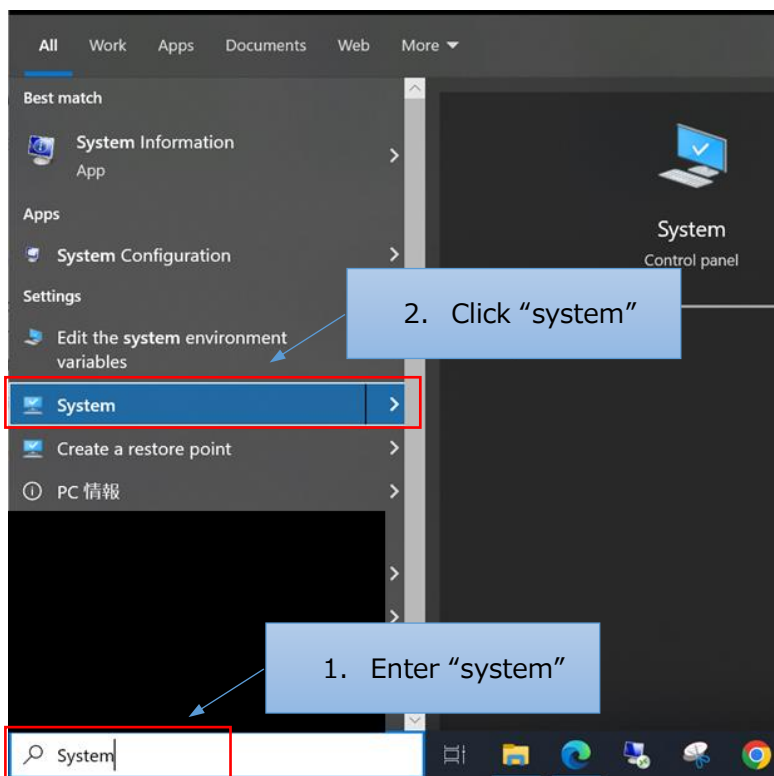
On the first activation of the Analysis Platform, the Analysis Platform uses "Microsoft Visual C++ Runtime Library" to install the necessary software. The installation of the library may fail due to version mismatch of the "Microsoft Visual C++ Runtime Library" depending on the version of the Windows OS or the installation status of Microsoft Office.

Solution

Follow the steps to install "Microsoft Visual C++ Runtime Library" and activate the Analysis Platform again.

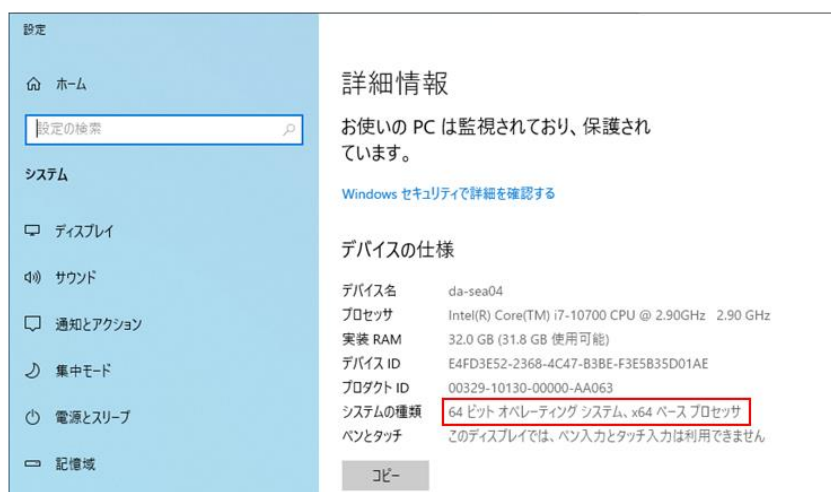
Check the system type of the PC (32bit/64bit)

First, log in to the PC, which you are going to host the Analysis Platform. Then, click the search button on the bottom left corner of the desktop. On the searchbox, enter "system", and from the shown candidates, click "System".



From the shown window, check the system type of the PC.

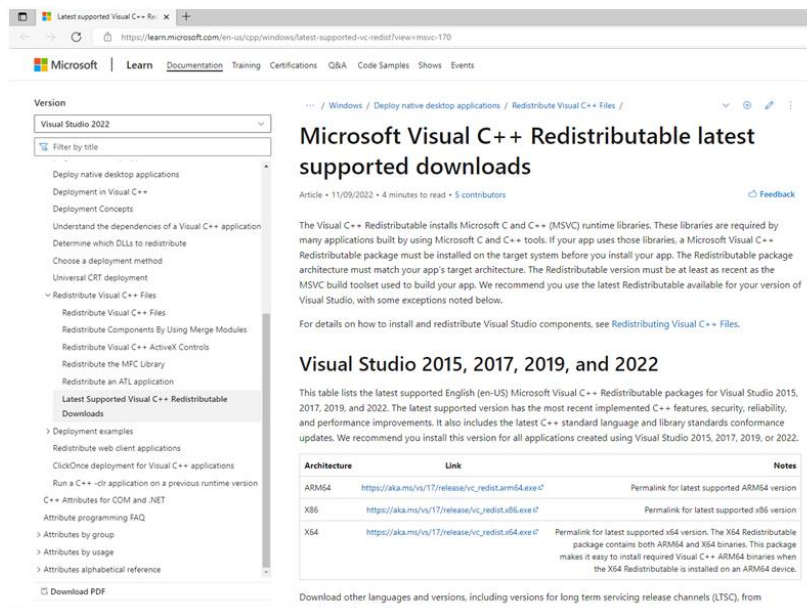
- 64bit operating system: x64
- 32bit operating system: x86



Download and install the Microsoft Visual C++ Runtime Library

Open the download page of the "Microsoft Visual C++ Runtime Library":

- <https://learn.microsoft.com/en-us/cpp/windows/latest-supported-vc-redist?view=msvc-170>



You will see download links on the middle of the page. Download the exe file using the appropriate link (x64: 64bit or x86: 32bit), based on the system type checked in Section 1.

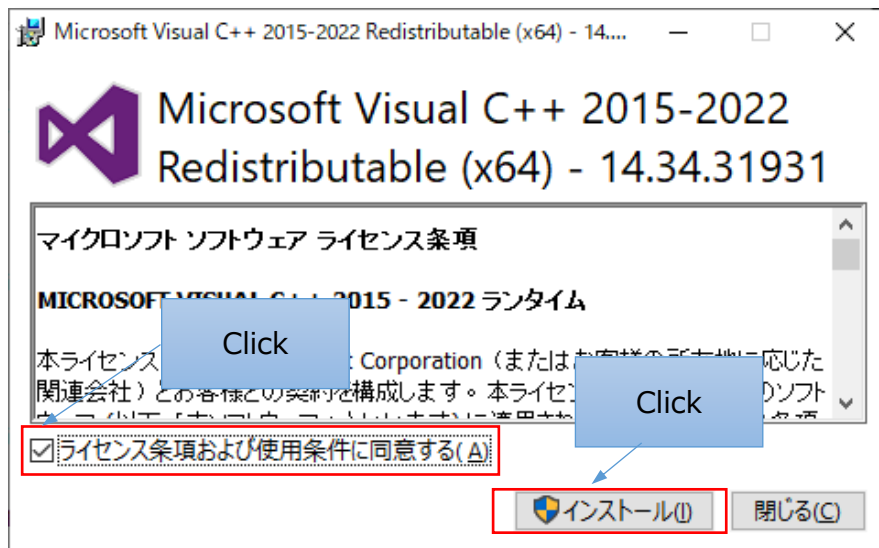
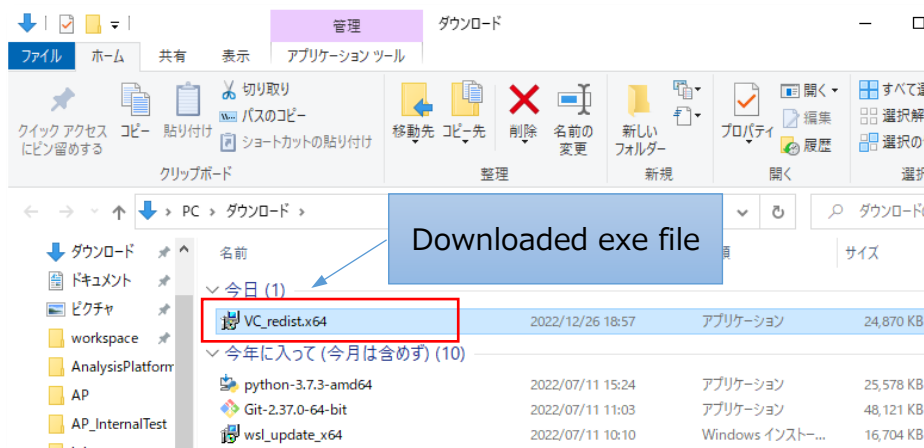
Visual Studio 2015, 2017, 2019, and 2022

This table lists the latest supported English (en-US) Microsoft Visual C++ Redistributable packages for Visual Studio 2015, 2017, 2019, and 2022. The latest supported version has the most recent implemented C++ features, security, reliability, and performance improvements. It also includes the latest C++ standard language and library standards conformance updates. We recommend you install this version for all applications created using Visual Studio 2015, 2017, 2019, or 2022.

| Architecture | Link | Notes |
|--------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ARM64 | https://aka.ms/vs/17/release/vc_redist.arm64.exe | Permalink for latest supported ARM64 version |
| X86 | https://aka.ms/vs/17/release/vc_redist.x86.exe | Permalink for latest supported x86 version |
| X64 | https://aka.ms/vs/17/release/vc_redist.x64.exe | Permalink for latest supported x64 version. The X64 Redistributable package contains both ARM64 and X64 binaries. This package makes it easy to install required Visual C++ ARM64 binaries when the X64 Redistributable is installed on an ARM64 device. |

The past version of "Microsoft Visual C++ Runtime Library" is installed simultaneously (In this case, 2015, 2017, 2019 and 2022) . Those are parallel installed (multiple version exists at the same time)

Double click the downloaded exe file and start the installation. Read the license terms carefully and if you agree, click the checkbox and “Install”.



Activate the Analysis Platform

After installing the “Microsoft Visual C++ Runtime Library”, activate the Analysis Platform.