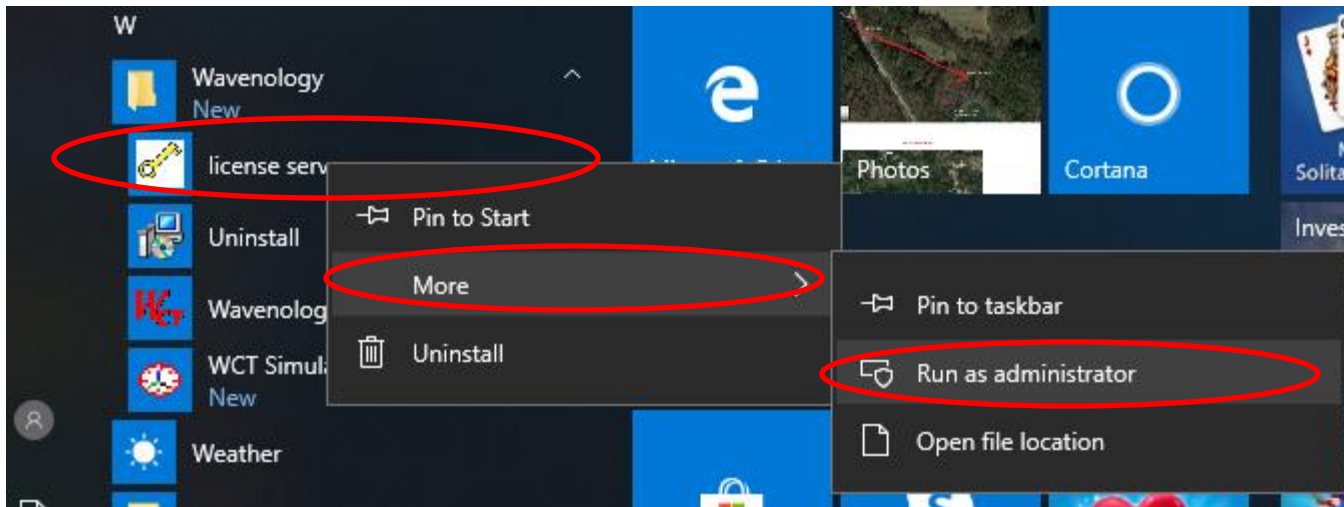


Quick Start

How to load a license to enable simulation

1. Make sure the Wavenology EM/EL package has been successfully installed in the computer
2. A valid license file is available

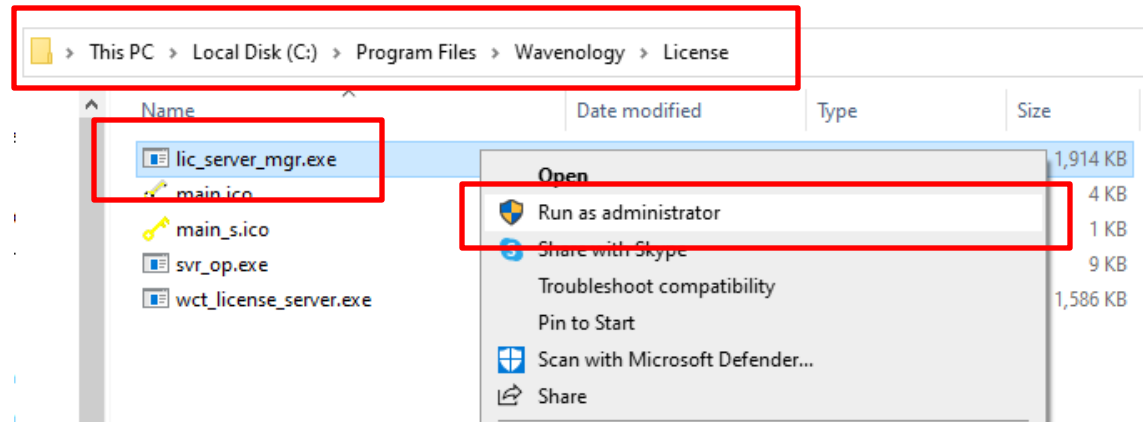
For Windows 10, start as



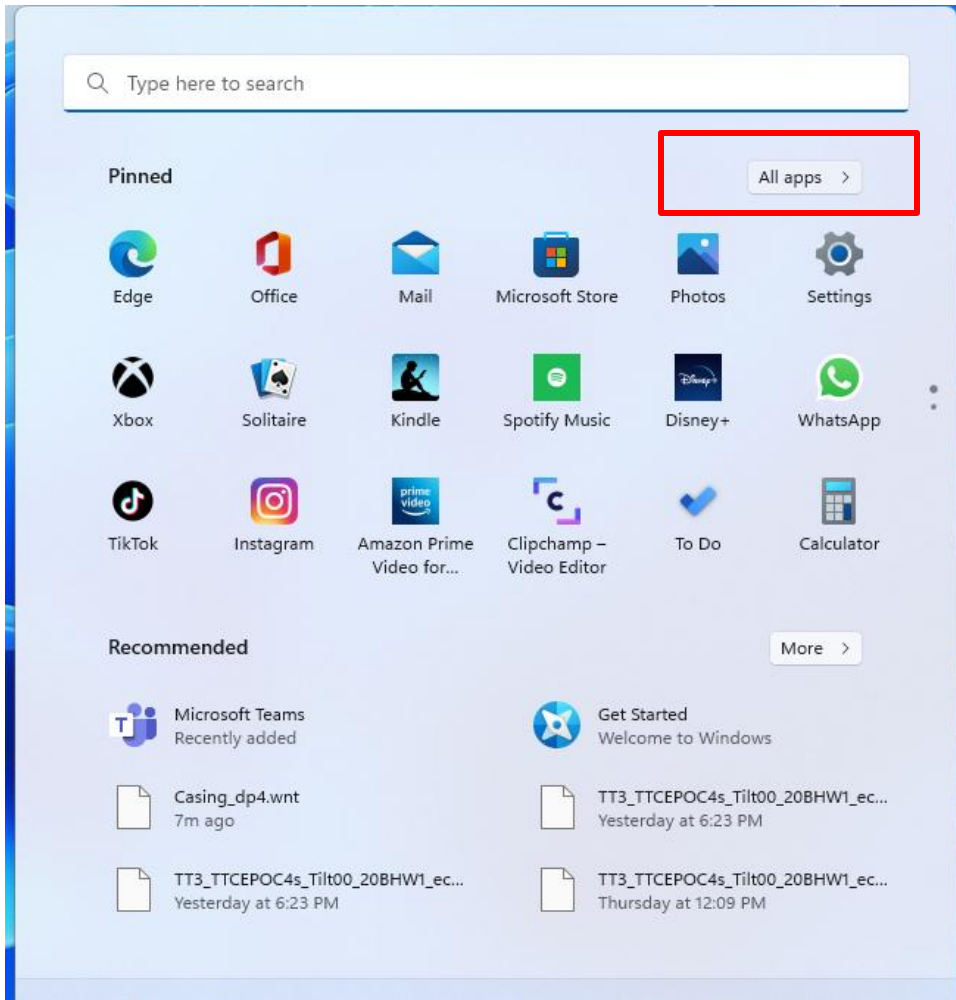
(please go to the next page)

However, for some cases, “**Run as administrator**” menu does not show as above

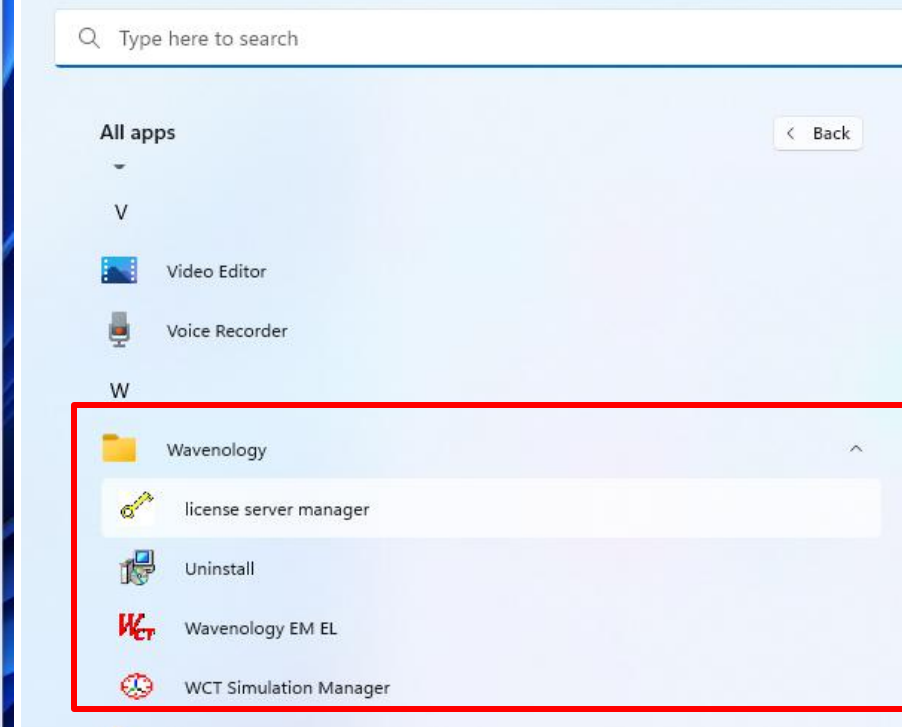
In this case, user need to go to the WCT installation folder to run the WCT license server manager



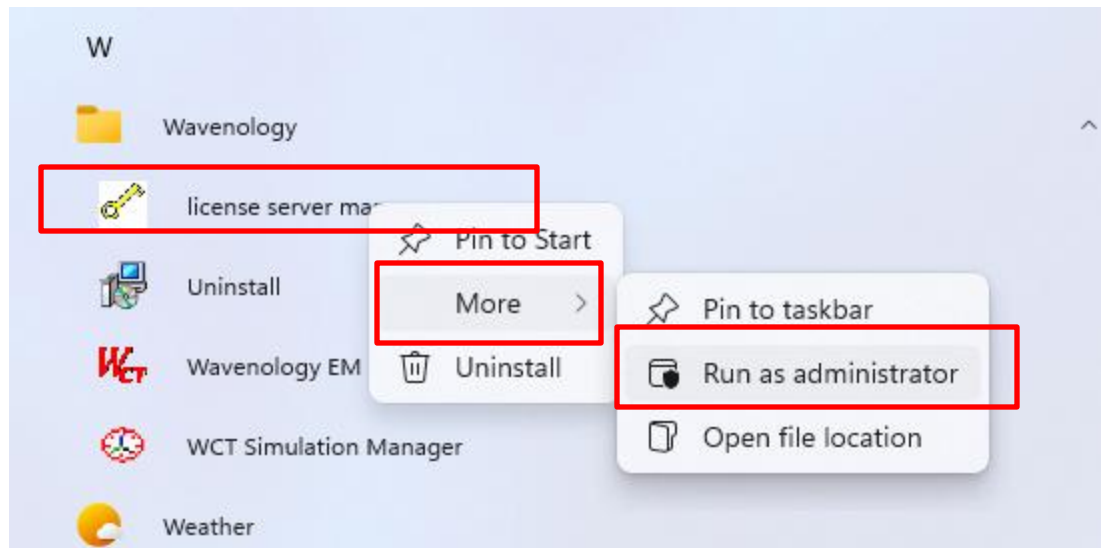
For Windows 11, start as



go to item "Wavenology"

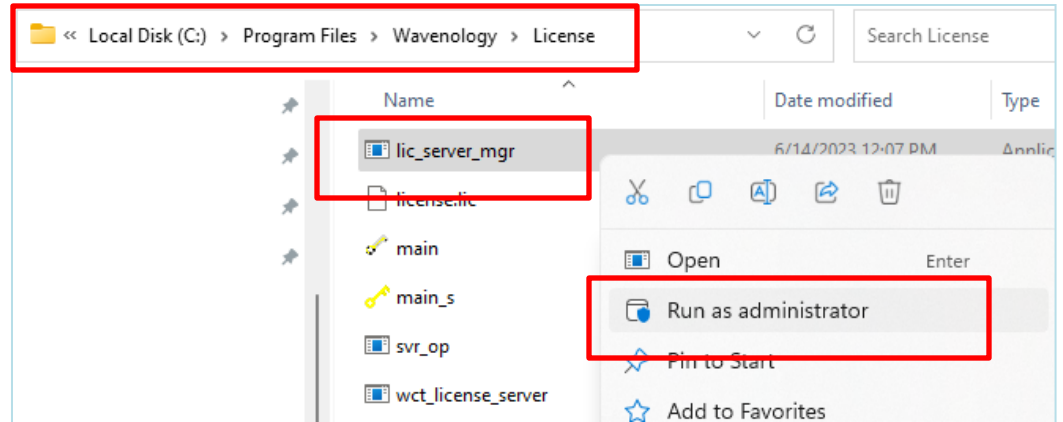
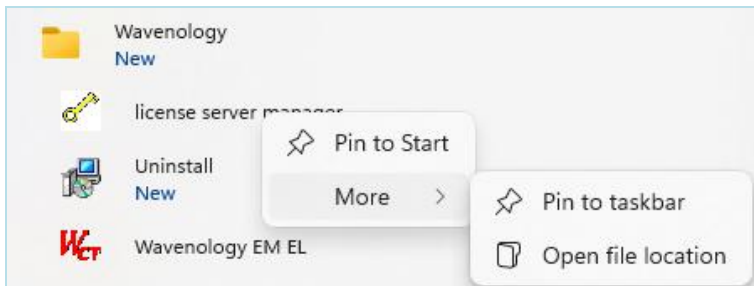


(please go to the next page)



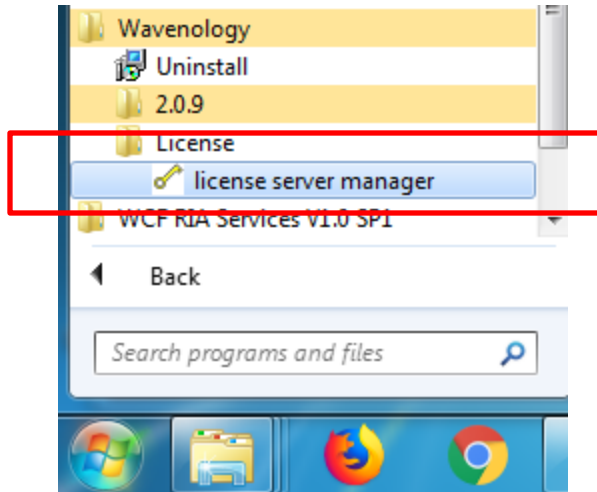
However, for some cases, “**Run as administrator**” menu does not show as above

In this case, user need to go to the WCT installation folder to run the WCT license server manager

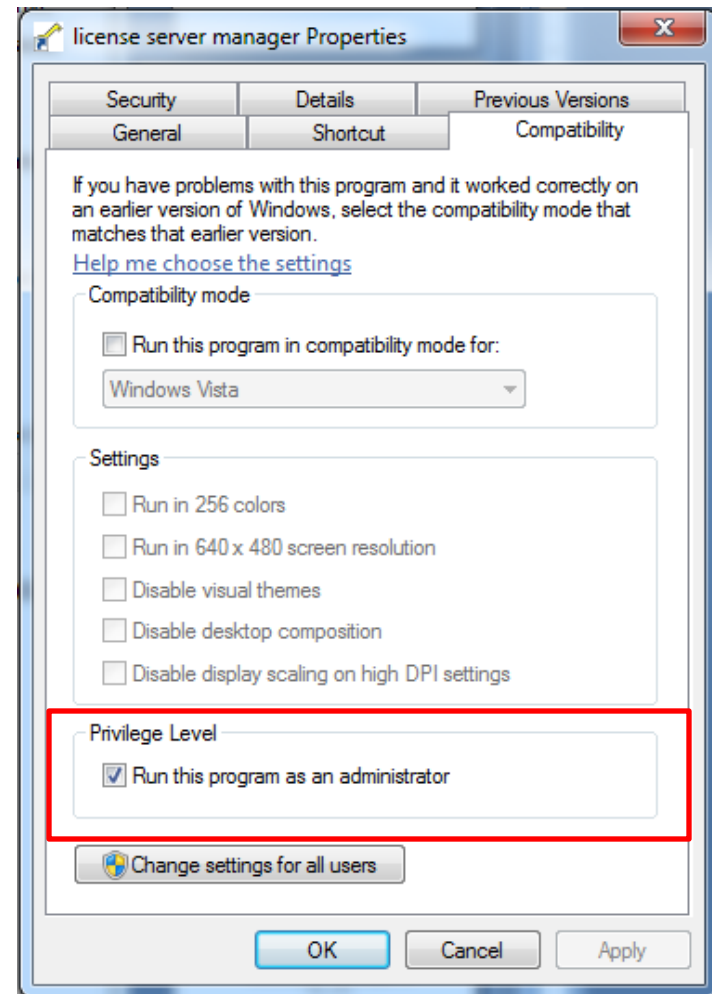


(please go to the next page)

For Windows 7, start as



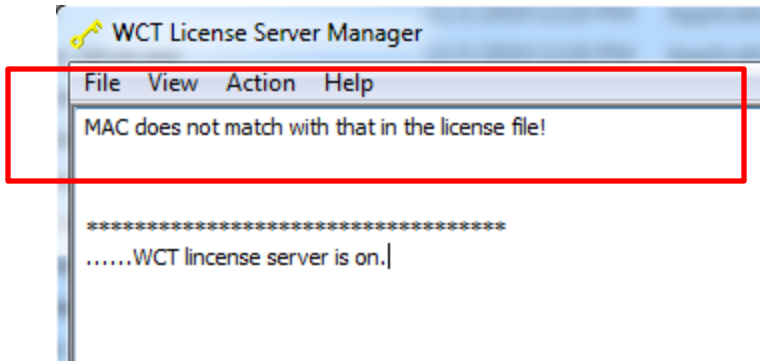
User need to run it in the “administrator” mode



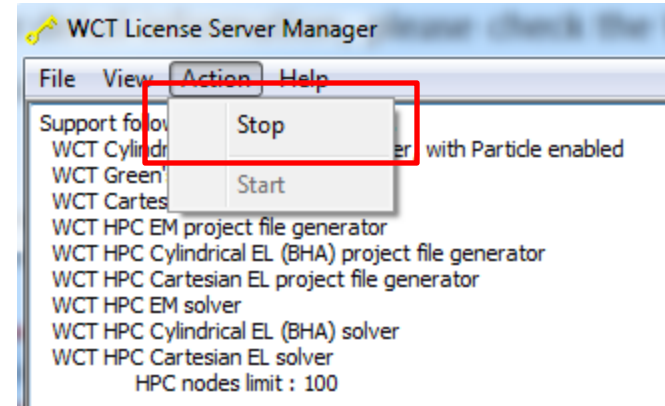
The property page of the “license server manager”

(please go to the next page)

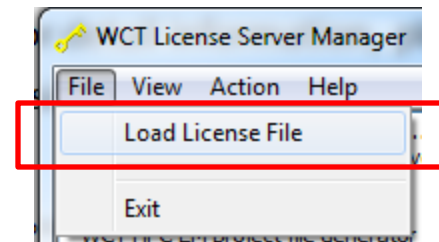
The default license in WCT installation package will show the information similar as



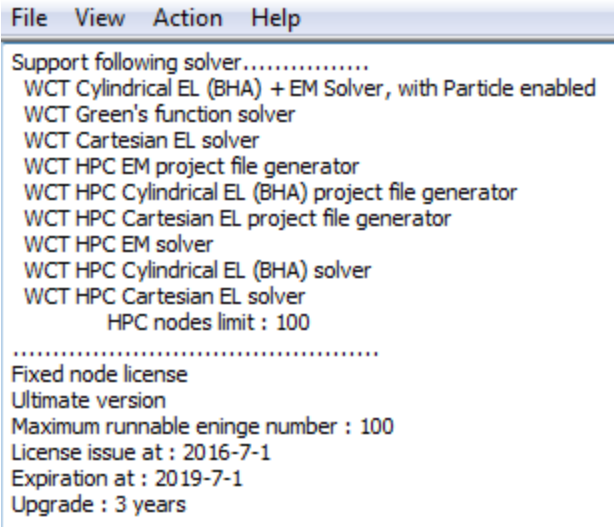
Stop the license manager



Load the license file provided from WCT



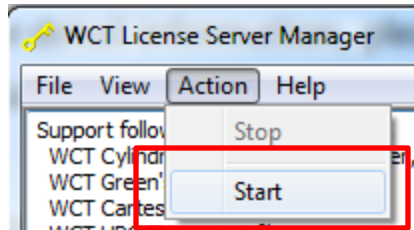
Make sure similar information shown



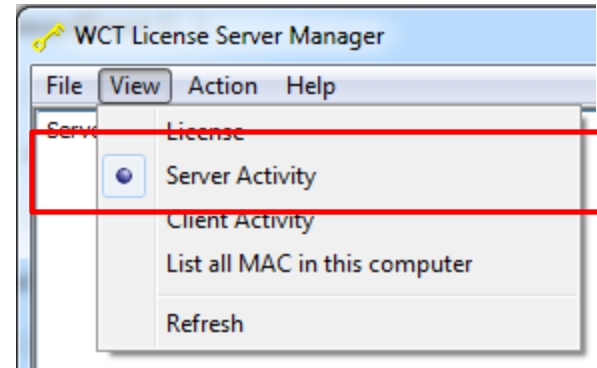
(please go to the next page)



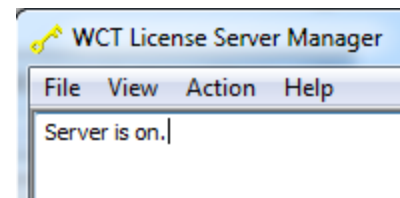
Restart the license manager



check the server status



Make sure the server is ON



If reach this step, it means that the license is loaded correctly and the license server works well.

User can quit the license server manager and start simulation.

Wavenology

License Configuration Manual

Wave Computation Technologies, Inc.
May, 2020

Contents

- [WCT license type](#)
- [WCT license server installation](#)
- [WCT license activation](#)
 - ❑ [General license activation method](#)
- [Special network controls for the floating license](#)
- [The license server manager](#)
 - ❑ [Loading a new License](#)
 - ❑ [Re-install and uninstall the license server](#)
 - ❑ [Define allowed IP ranges](#)
 - ❑ [Define allowed MAC](#)
- [Control the WCT license server by the Windows Services program](#)
- [Typical problem report by user](#)
 - ❑ Can't detect the licensing server or can't start the licensing server
- [Q &A](#)

Wavenology License Type

- Fixed node license
 - The license server is bound to a computer and it only accept the licensing request from this computer.
- Floating license
 - The license server is bound to a server on the network and it accepts the licensing request from any computers within the network.

Note:

- 1. A WCT license is bound to the machine with specified MAC only.*
- 2. The license defines the number of solvers that can be run simultaneously.*

Installation

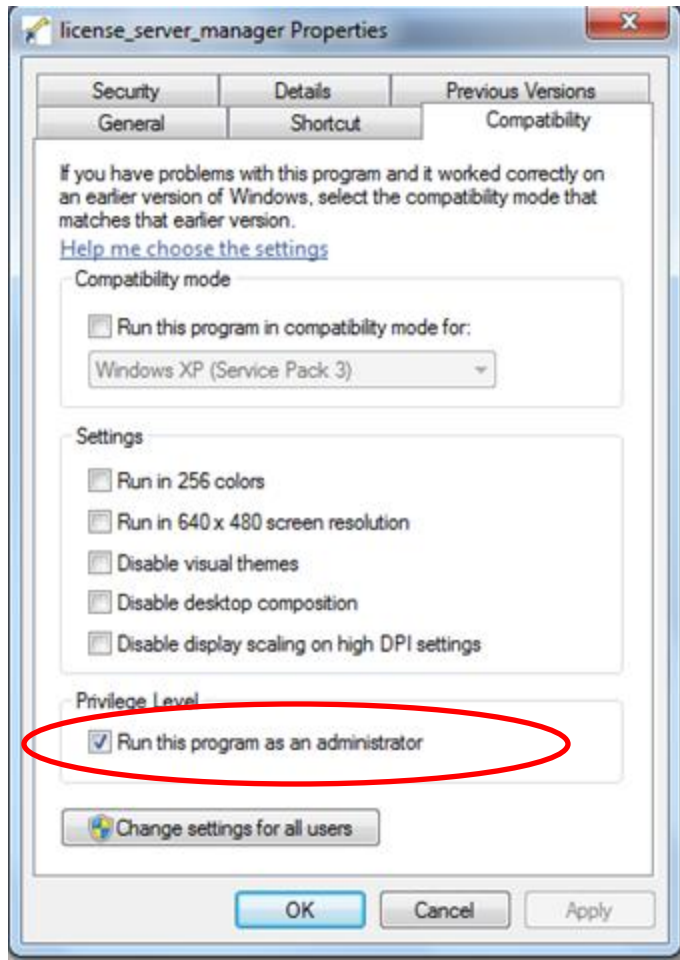
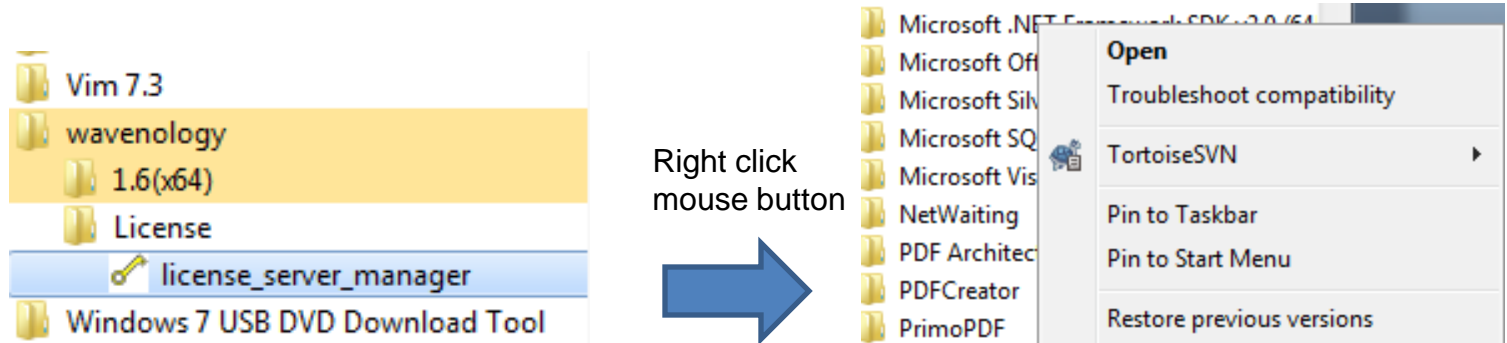
- The regular WCT installation package includes the license server. The installation of license server in the package is automatic.
- The WCT license server works as a Windows service.
- The WCT license server will start automatically after the installation.
- The WCT license server can be configured by the program “license server manager”.

Licensing Procedure

- User need to run the installation package first, the license server will be automatically installed.
- User need to get a valid license file from WCT.
- After the license server has been successfully installed, user need to load that valid license through Wavenology's license server manager.
 - *Run WCT license server manager*
 - *Stop the License server*
 - *Load the new license file*
 - *Start the License server*

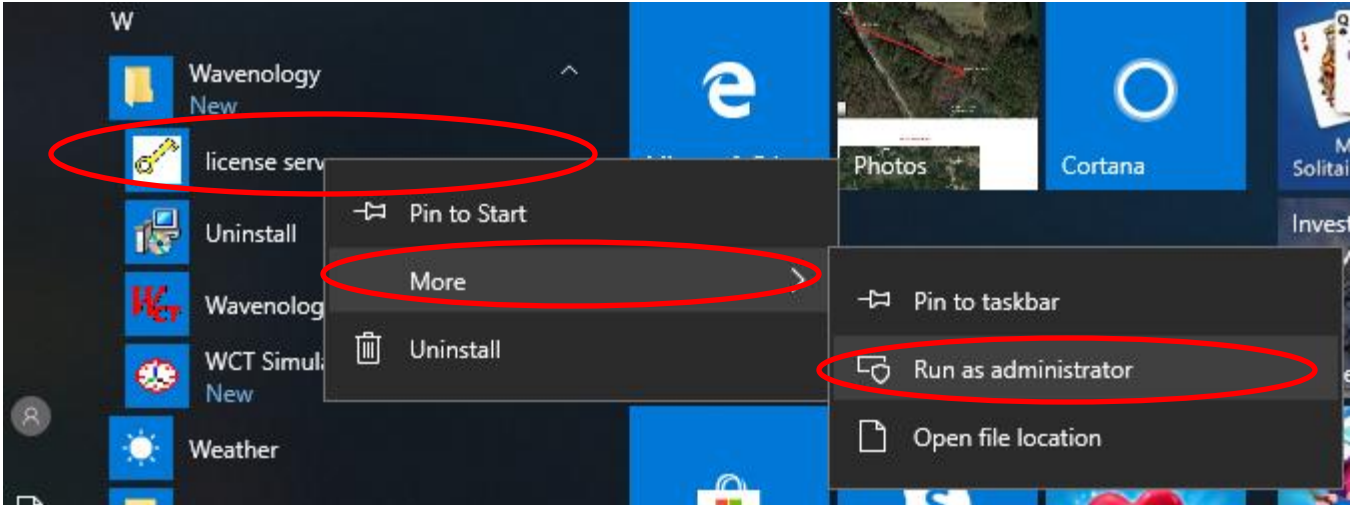
NOTE: license renewal follows the same procedure.

Run WCT license server manager (“Run as Administrator”)

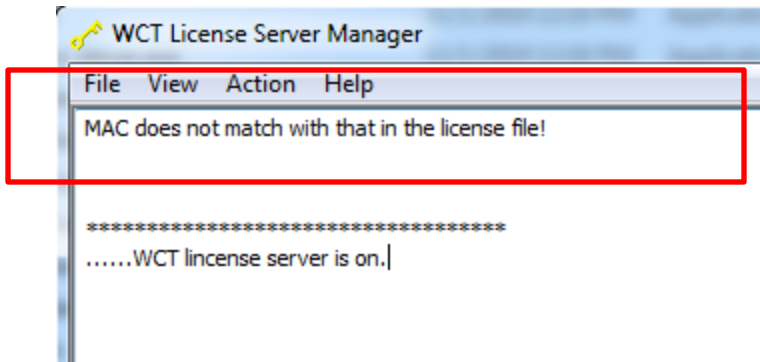


Windows 7

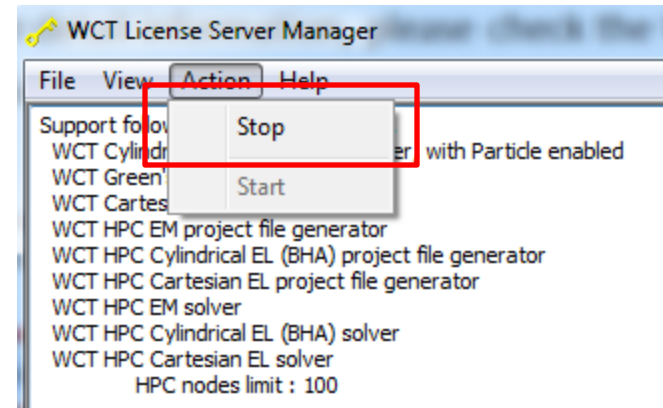
Windows 10



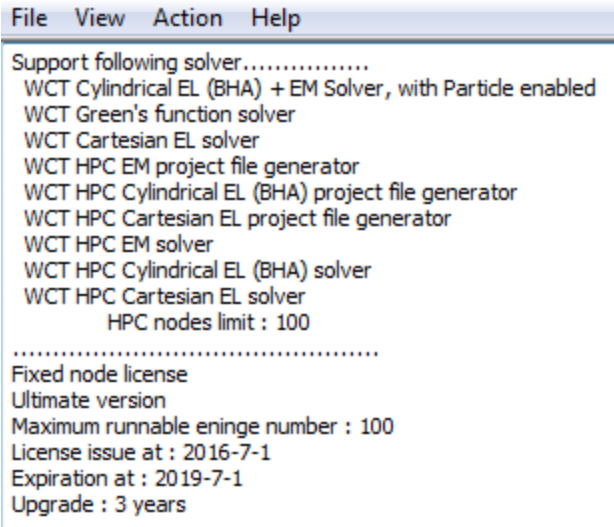
The default license in WCT installation package.



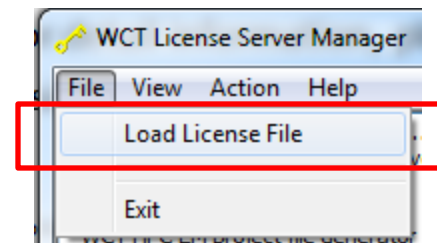
Stop the license manager



Load the license file provided from WCT



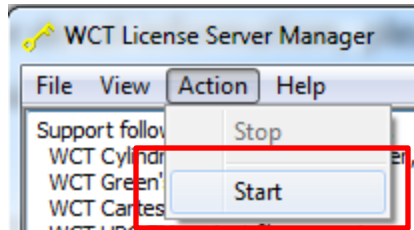
Make sure similar information shown



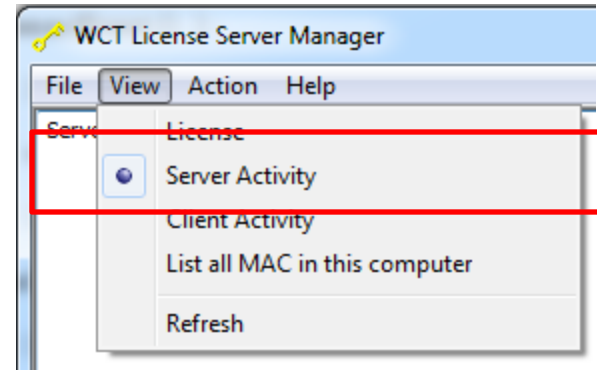
(please go to the next page)



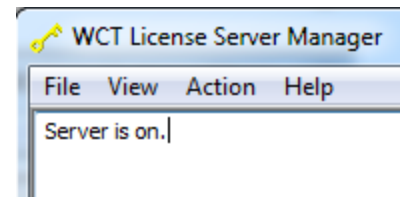
Restart the license manager



check the server status



Make sure the server is ON



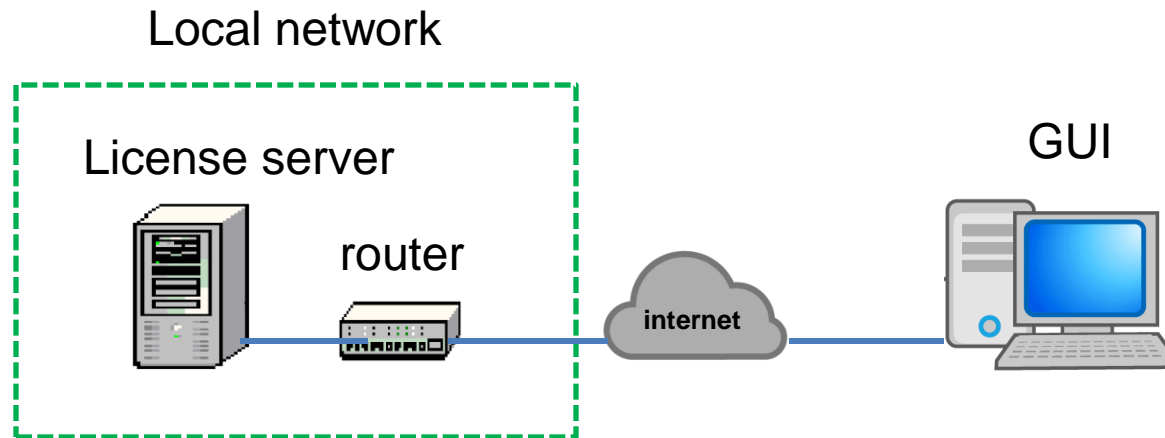
If reach this step, it means that the license is loaded correctly and the license server works well.

User can quit the license server manager.

Special network controls for the floating license

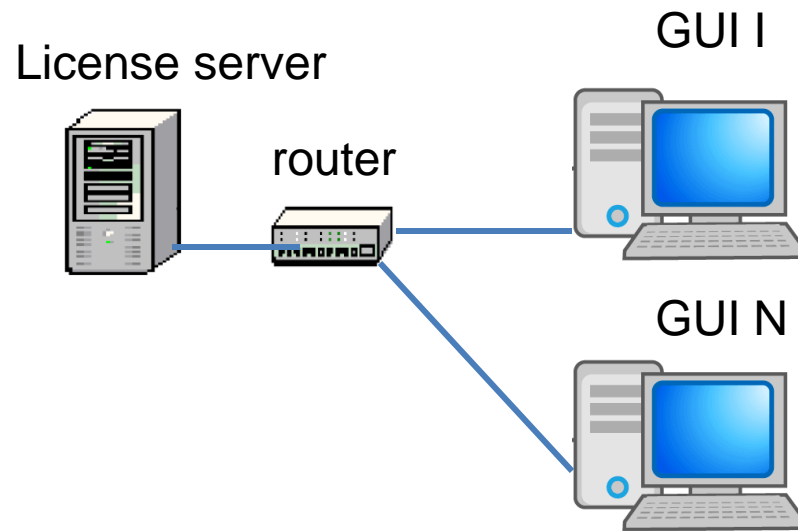
For a floating license, there are several network configurations, as following

(1) The computers running GUI and the license server are in the different local networks, they are connected by the internet.



For the case, the router must enable and **forward** the TCP port 4072 to the license server.

(2) The computers running GUI and the license server are in the same local network, they are connected by the router directly.



For the case, the router must enable the TCP port 4072 to let the computer can communicate with the license server.

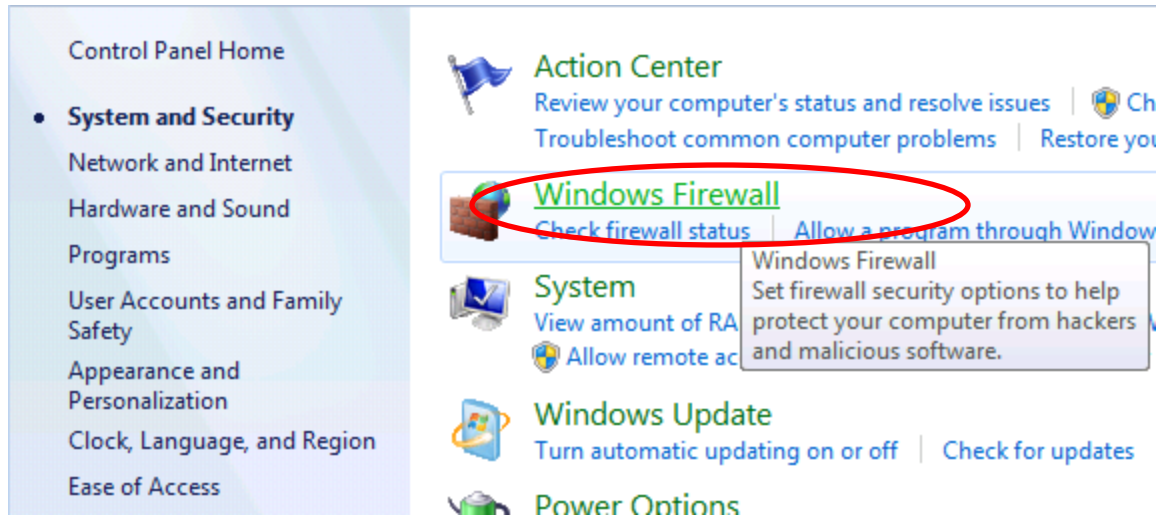
After the installation, for a floating server, user need to configure the system as following to enable the WCT License server (private port TCP port 4072) workable,

➤ Window 7 & Corresponding Windows server OS

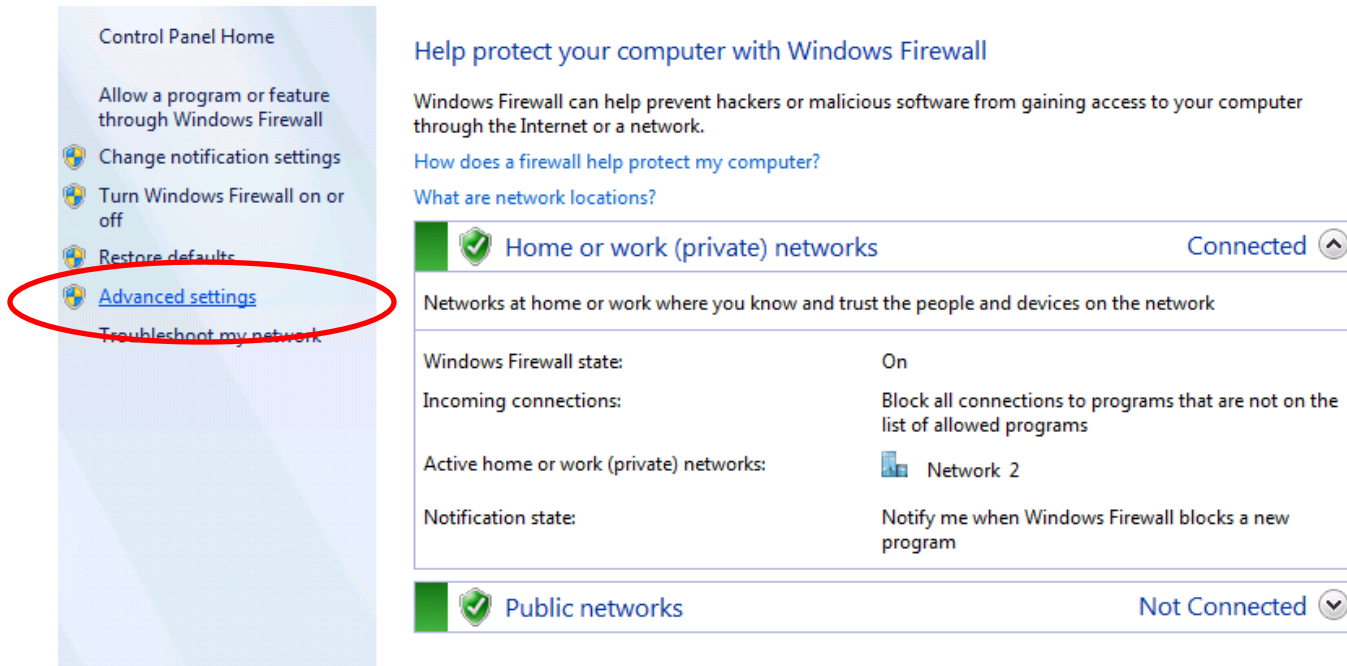
1.



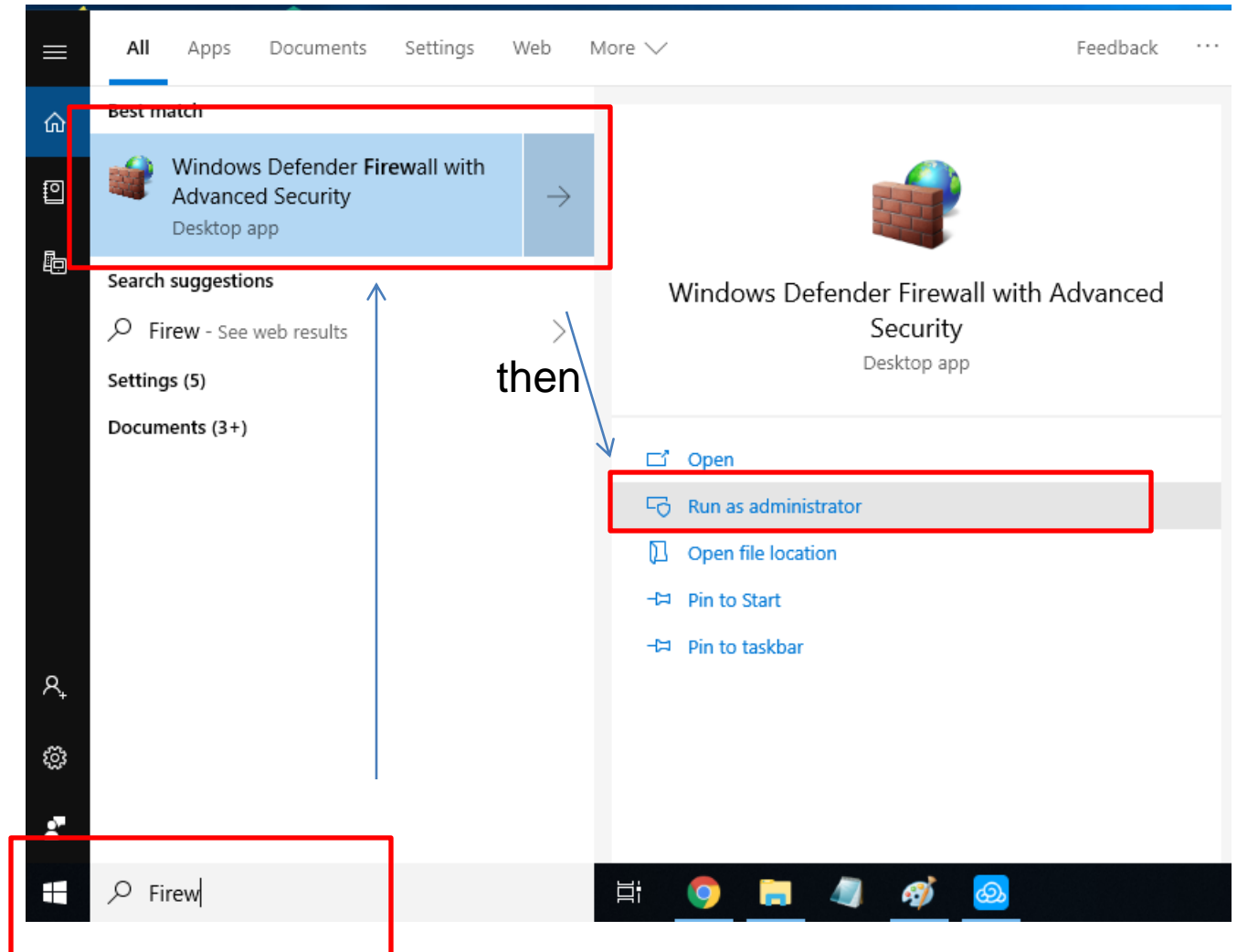
2.



3.



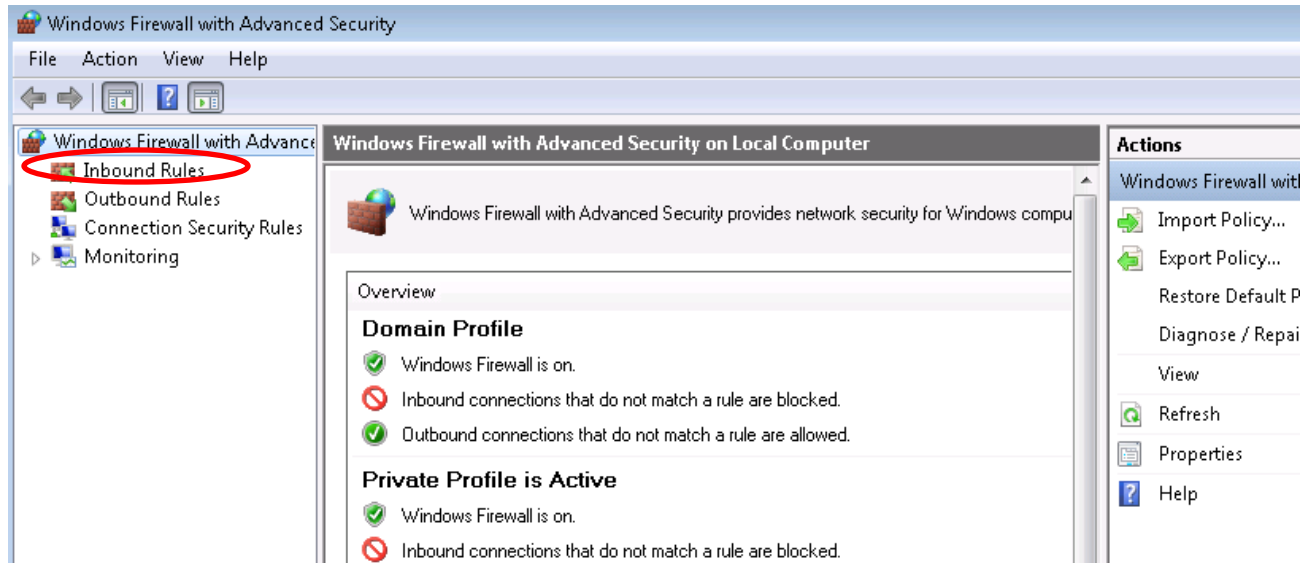
➤ Window 10 & Corresponding Windows server OS



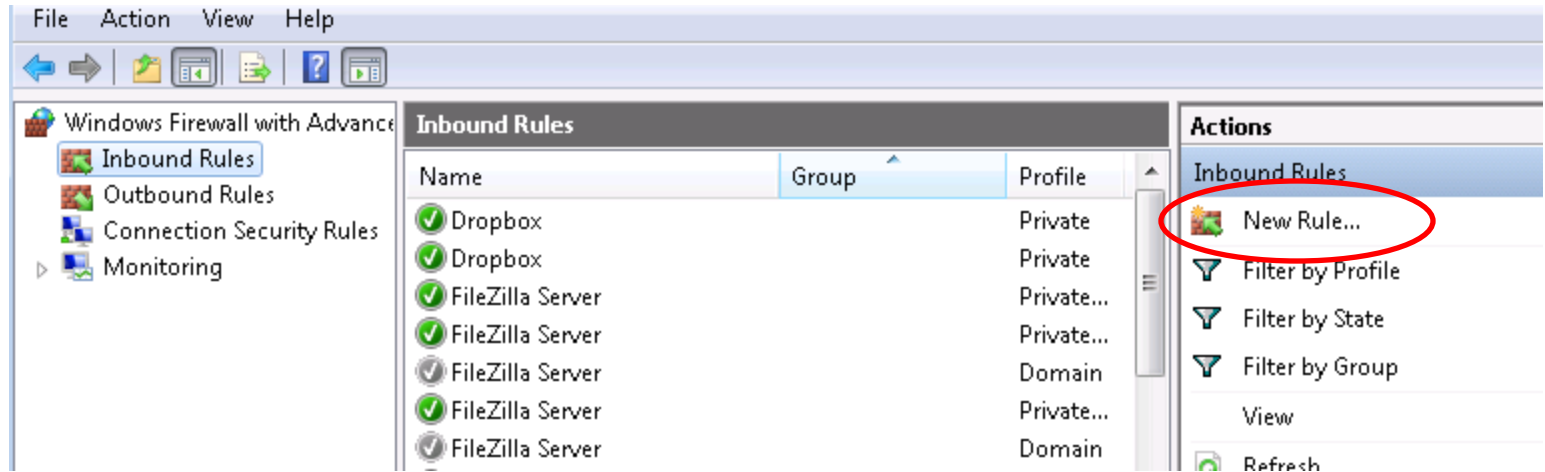
Type in “Firew” here to show the APP as the top part

In the “Windows Firewall with Advanced Security”

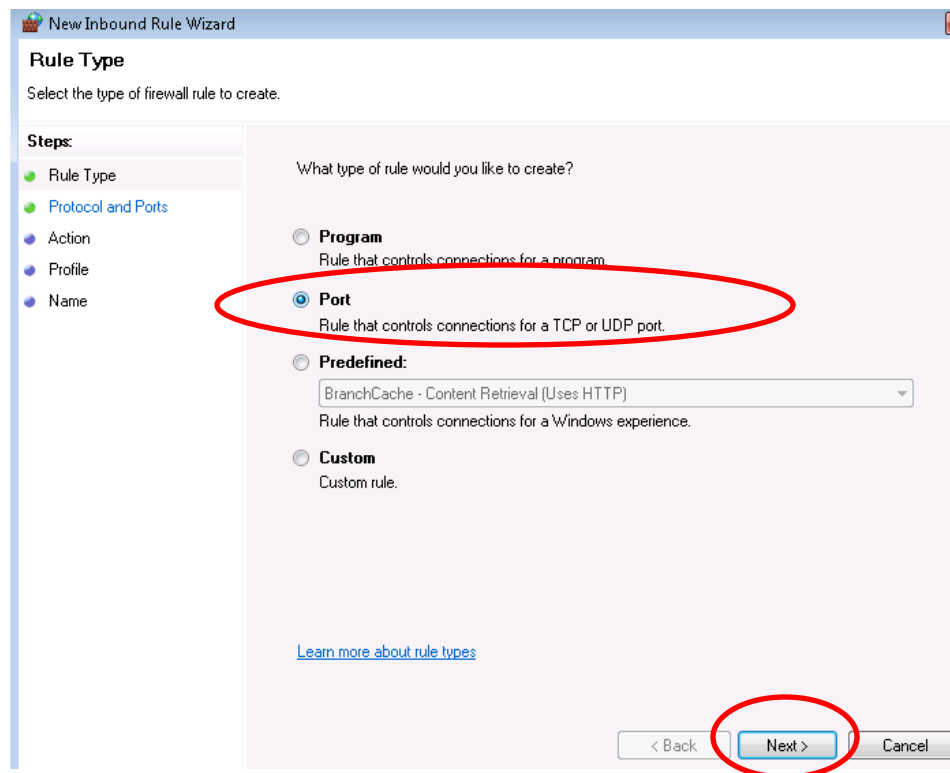
4.



5.



6.



Select this, then
“next”

7.

Protocol and Ports

Specify the protocols and ports to which this rule applies.

Steps:

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

Does this rule apply to TCP or UDP?

TCP
 UDP

Does this rule apply to all local ports or specific local ports?

All local ports
 Specific local ports:
Example: 80, 443, 5000-5010

[Learn more about protocol and ports](#)

< Back **Next >** Cancel

Input port number, then **“next”**

8.

New Inbound Rule Wizard

Action

Specify the action to be taken when a connection matches the conditions specified in the rule.

Steps:

- Rule Type
- Protocol and Ports
- Action
- Profile
- Name

What action should be taken when a connection matches the specified conditions?

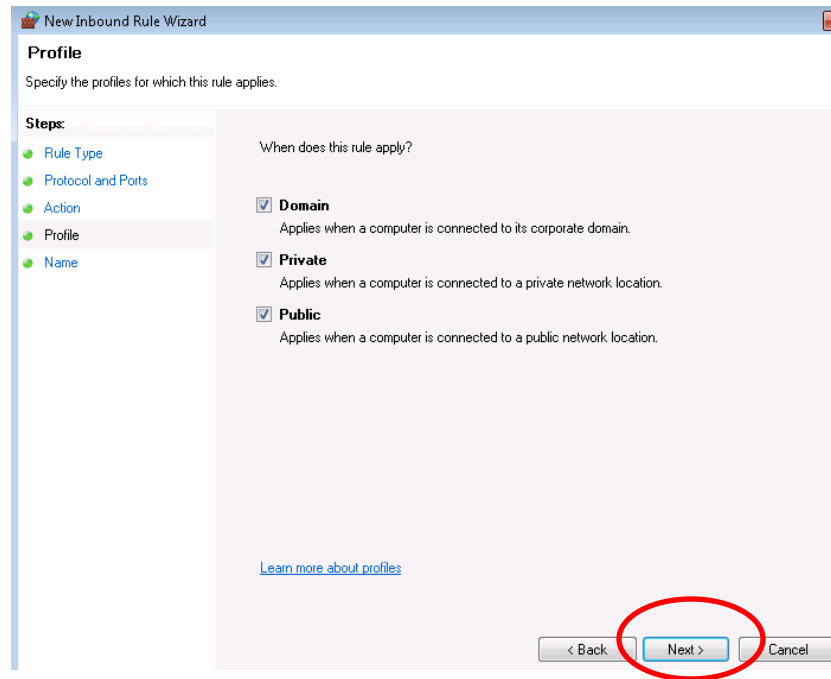
Allow the connection
This includes connections that are protected with IPsec as well as those are not.

Allow the connection if it is secure
This includes only connections that have been authenticated by using IPsec. Connections will be secured using the settings in IPsec properties and rules in the Connection Security Rule node.

Block the connection

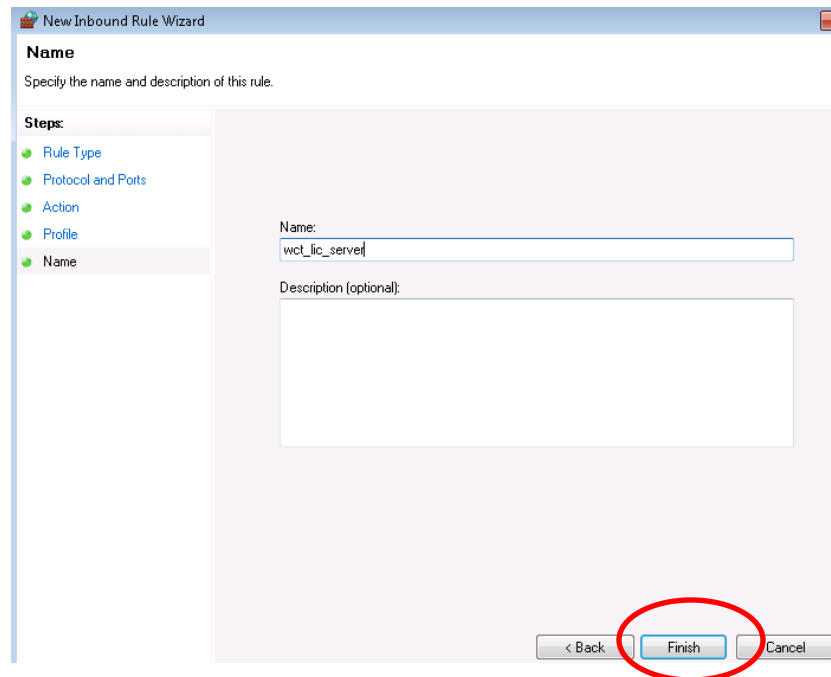
“next”

9.

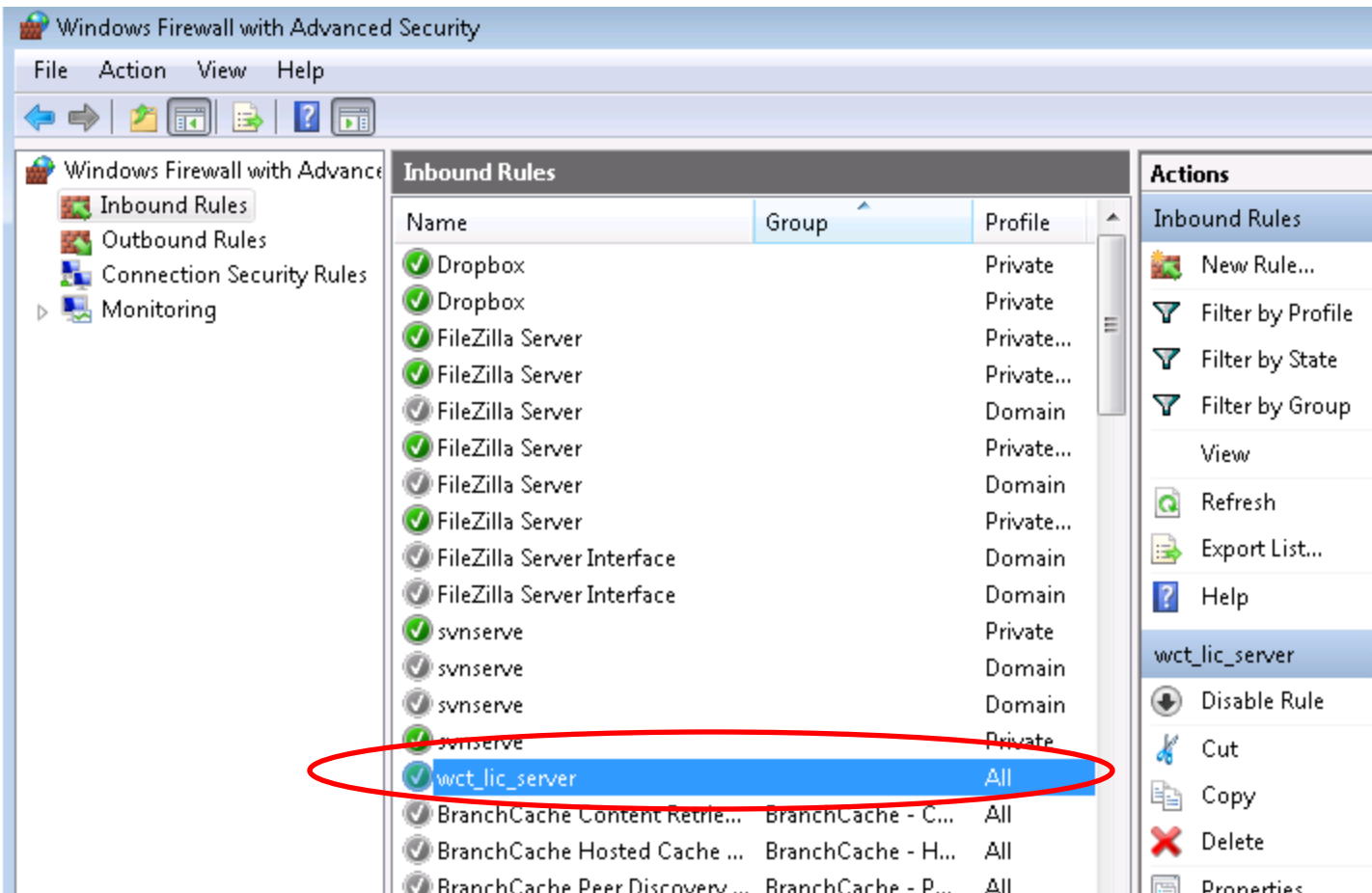


“next”

10.



Input a name then
“Finish”



TCP port 4072 is enabled.

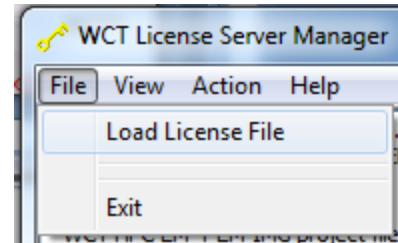
NOTE:

1. More actions might be required if there is anti-virus software is installed on the server.
2. For example, modify the network setting in the anti-virus software to let the communication can go through the port 4072.

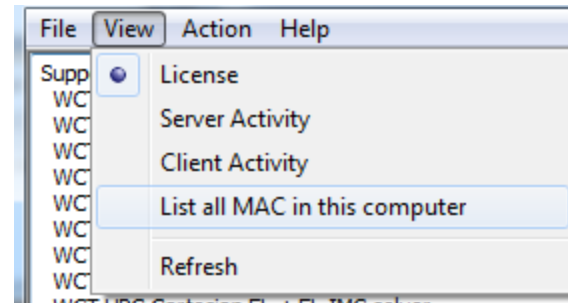
the License Server Manager

This program can

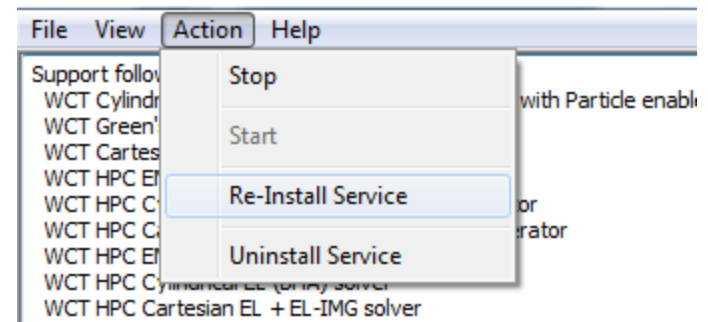
1. Load a new License



2. Display the license, MAC, server status and other information



3. Stop, start, re-install and uninstall the license server



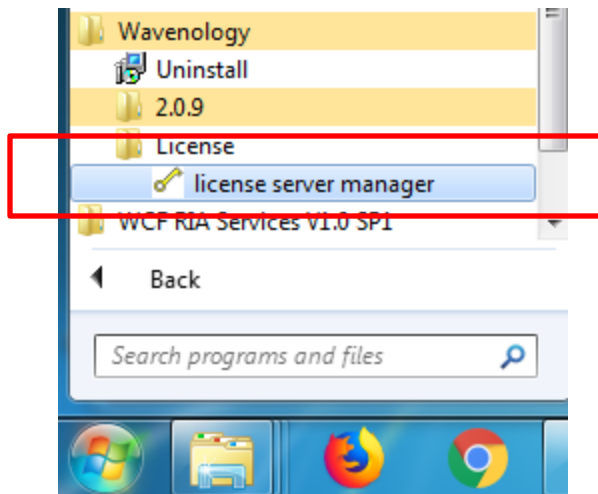
4. Define allowed IP ranges

5. Define allowed MAC

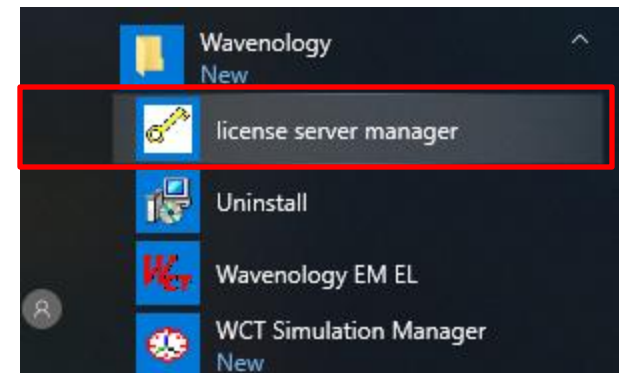
Loading a new License

1. The working license is the “License.lic” in folder of license server.
2. There is a pre-installed “License.lic” in the installation, which is a dummy license.
3. After user get his license file, user need to load this new License into WCT license server.

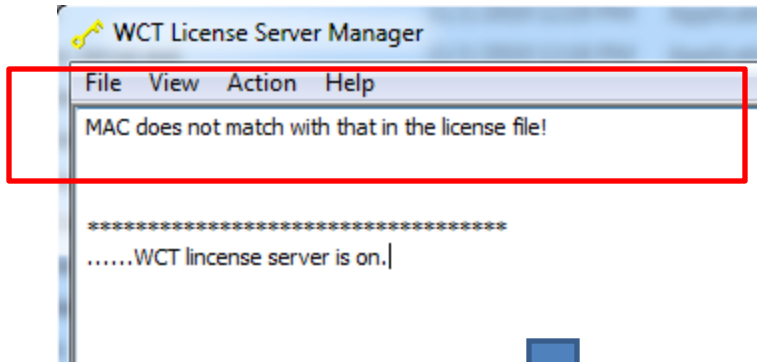
Start the license server manager



or



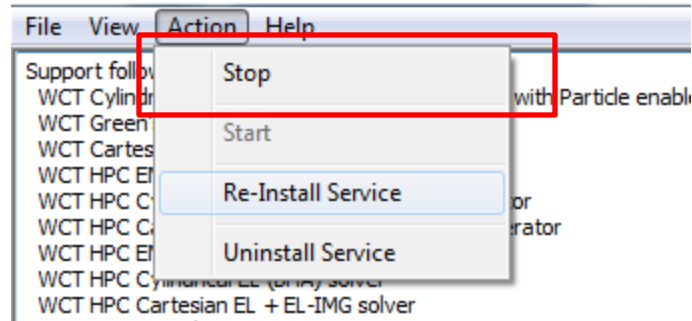
Please make sure to run it in the administrator mode, as shown in the page [#5](#) & [#6](#)



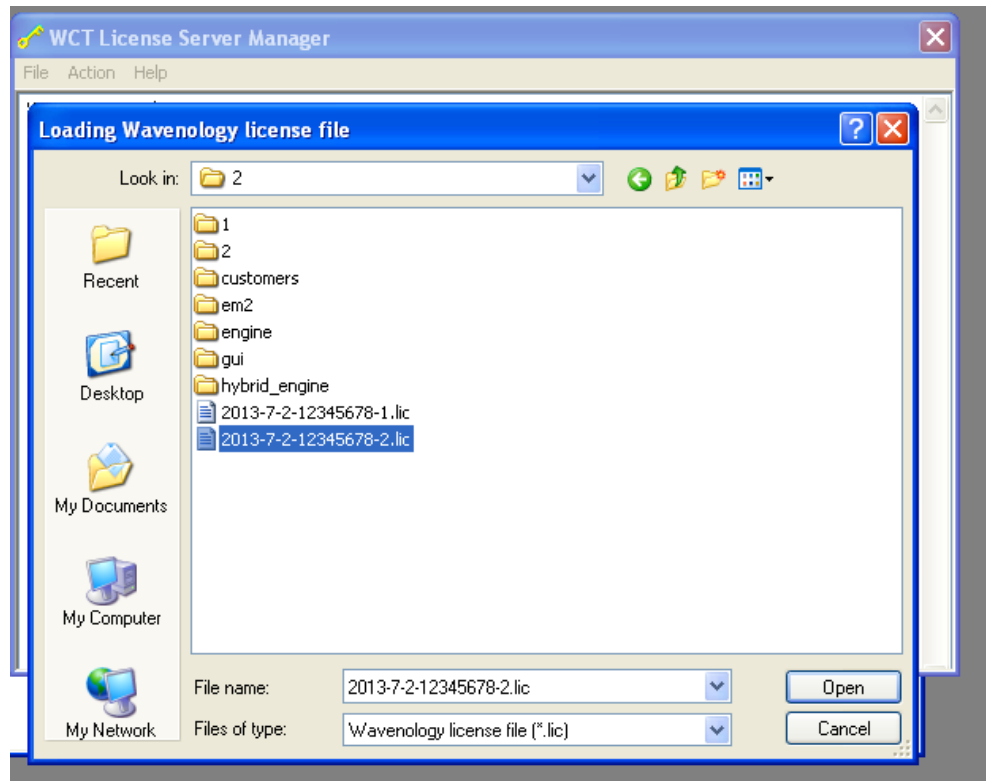
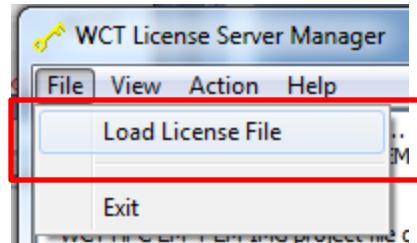
The pre-installed dummy license



Stop the server



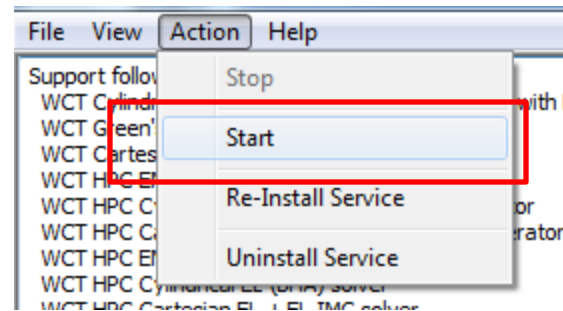
Load the new license file from WCT



After the new license is loaded, the displayed information will be changed to the content similar as following,

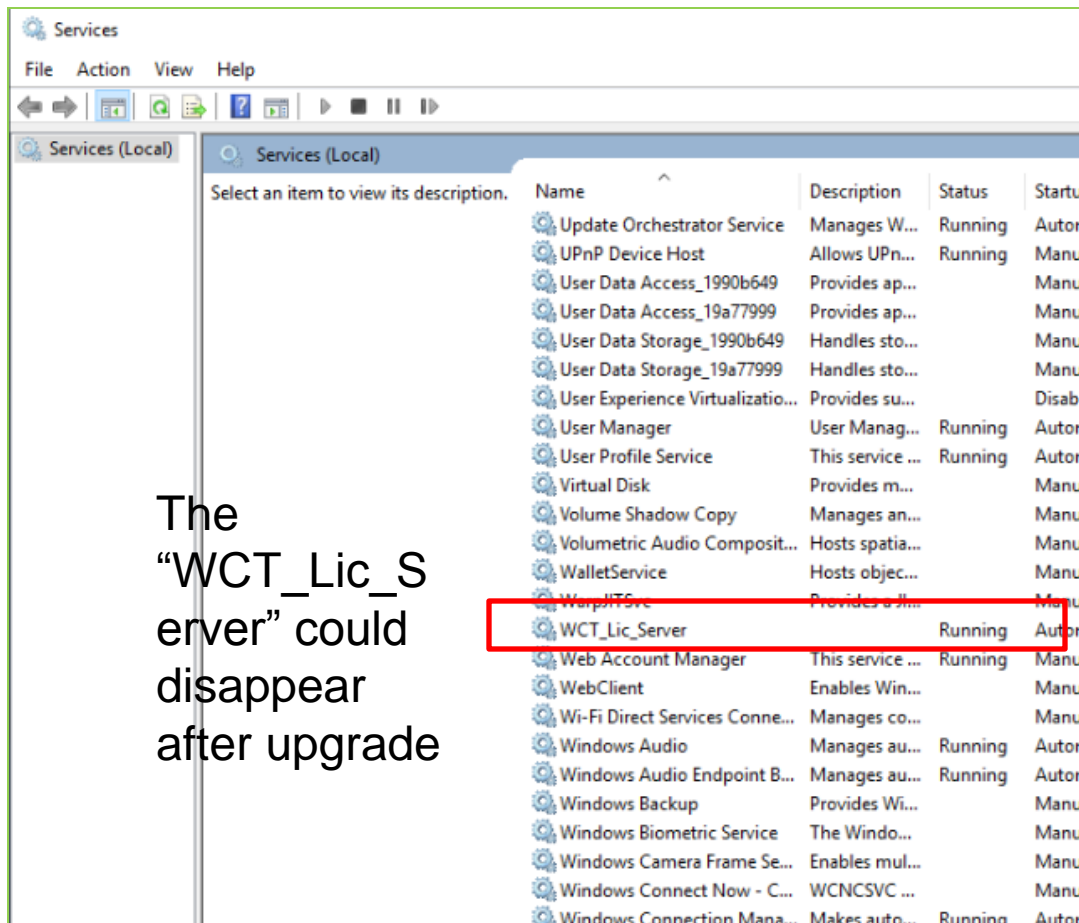
```
Support following solver.....
WCT Cylindrical EL (BHA) + EM + EM-IMG Solver, with Partide enabled
WCT Green's function solver
WCT Cartesian EL solver
WCT HPC EM + EM-IMG project file generator
WCT HPC Cylindrical EL (BHA) project file generator
WCT HPC Cartesian EL + EL-IMG project file generator
WCT HPC EM + EM-IMG solver
WCT HPC Cylindrical EL (BHA) solver
WCT HPC Cartesian EL + EL-IMG solver
WCT EM-SEM solver
      HPC nodes limit : 100
.....
Fixed node license
Ultimate version
Maximum runnable eninge number : 100
License issue at : 2017-8-1
Expiration at : 2022-7-1
Upgrade : 10 years
```

Re-start the server

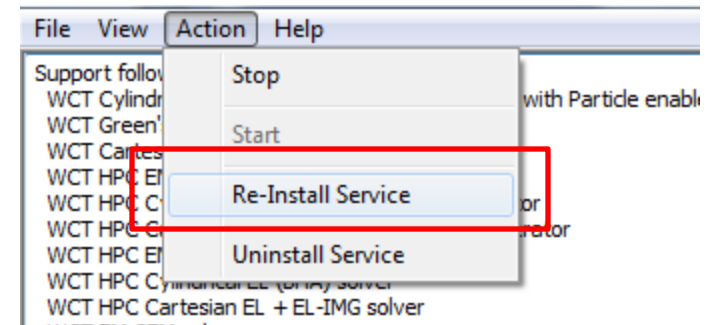


Re-install and uninstall the license server

Sometimes, the WCT license server is deleted in the OS upgrade, user can use the license manager to re-install the license server.

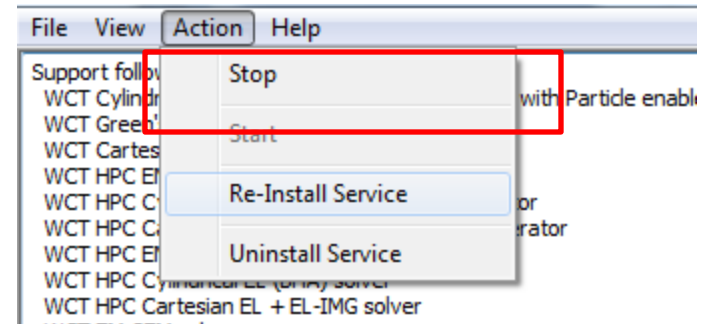


The
“WCT_Lic_S
erver” could
disappear
after upgrade



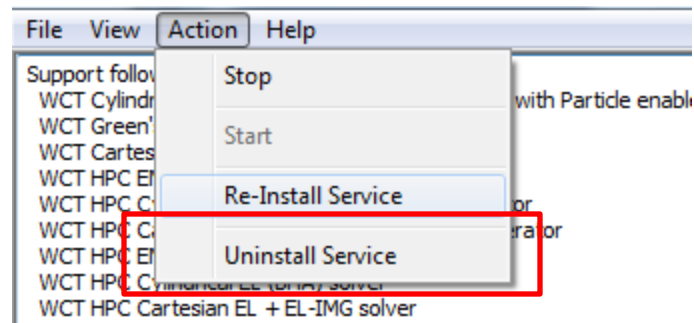
For an existing WCT license server, users can still uninstall it and then re-install it. The steps are:

➤ Stop the server



➤ Uninstall the server

➤ note: users need to exit the WCT license server manager after the uninstallation, then re-enter the WCT license server manager GUI again. Otherwise, the re-installation will fail.



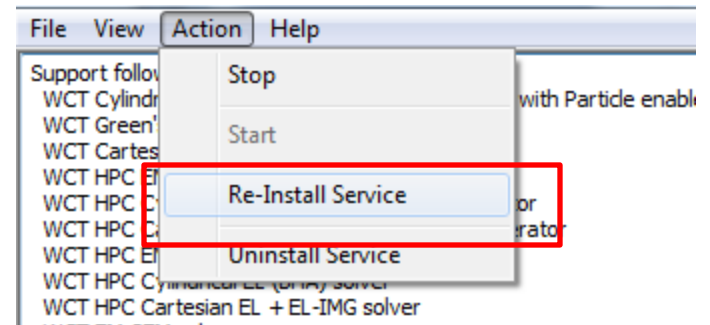
After uninstall, “Refresh” in the service management APP, you can see the “WCT_Lic_Server” is “Disabled” but is still in the system.

| Name | Description | Status | Startup Type | Log On As |
|----------------------|------------------|----------|--------------|-----------------|
| Themes | Provides us... | Started | Automatic | Local System... |
| Thread Ordering S... | Provides or... | | Manual | Local Service |
| UPnP Device Host | Allows UPn... | | Manual | Local Service |
| User Profile Service | This service ... | Started | Automatic | Local System... |
| Virtual Disk | Provides m... | | Manual | Local System... |
| Volume Shadow C... | Manages an... | | Manual | Local System... |
| WCT_Lic_Server | | Disabled | Disabled | Local System... |
| WebClient | Enables Win... | | Manual | Local Service |
| Windows Activati... | Performs W... | | Manual | Local System... |
| Windows Audio | Manages au... | Started | Automatic | Local Service |
| Windows Audio E... | Manages au... | Started | Automatic | Local System... |

Then quit the WCT license server manager, “Refresh” in the service management APP again, you can see the “WCT_Lic_Server” is not in the system anymore.

| Name | Description | Status | Startup Type | Log On As |
|----------------------|------------------|---------|--------------|-----------------|
| Themes | Provides us... | Started | Automatic | Local System... |
| Thread Ordering S... | Provides or... | | Manual | Local Service |
| UPnP Device Host | Allows UPn... | | Manual | Local Service |
| User Profile Service | This service ... | Started | Automatic | Local System... |
| Virtual Disk | Provides m... | | Manual | Local System... |
| Volume Shadow C... | Manages an... | | Manual | Local System... |
| WebClient | Enables Win... | | Manual | Local Service |
| Windows Activati... | Performs W... | | Manual | Local System... |
| Windows Audio | Manages au... | Started | Automatic | Local Service |
| Windows Audio E... | Manages au... | Started | Automatic | Local System... |

➤ Rerun the WCT server manager and Re-install the server

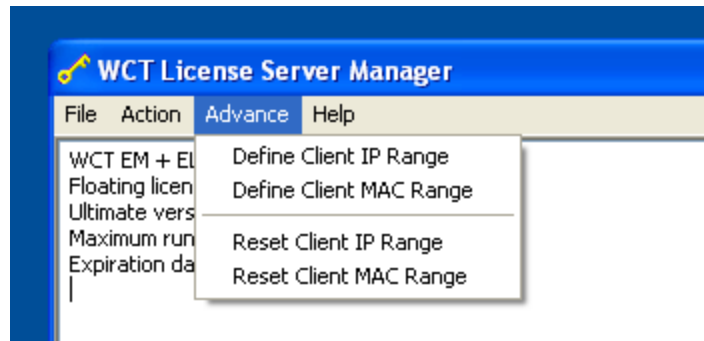


Then “Refresh” in the service management APP again, you can see the “WCT_Lic_Server” is installed successfully and already start .

| Name | Description | Status | Startup Type | Log On As |
|-----------------------|------------------|----------------|------------------|-----------------------|
| Themes | Provides us... | Started | Automatic | Local Syste... |
| Thread Ordering S... | Provides or... | | Manual | Local Service |
| UPnP Device Host | Allows UPn... | | Manual | Local Service |
| User Profile Service | This service ... | Started | Automatic | Local Syste... |
| Virtual Disk | Provides m... | | Manual | Local Syste... |
| Volume Shadow C... | Manages an... | | Manual | Local Syste... |
| WCT_Lic_Server | | Started | Automatic | Local Syste... |
| WebClient | Enables Win... | | Manual | Local Service |
| Windows Activati... | Performs W... | | Manual | Local Syste... |
| Windows Audio | Manages au... | Started | Automatic | Local Service |
| Windows Audio E... | Manages au... | Started | Automatic | Local Svste... |

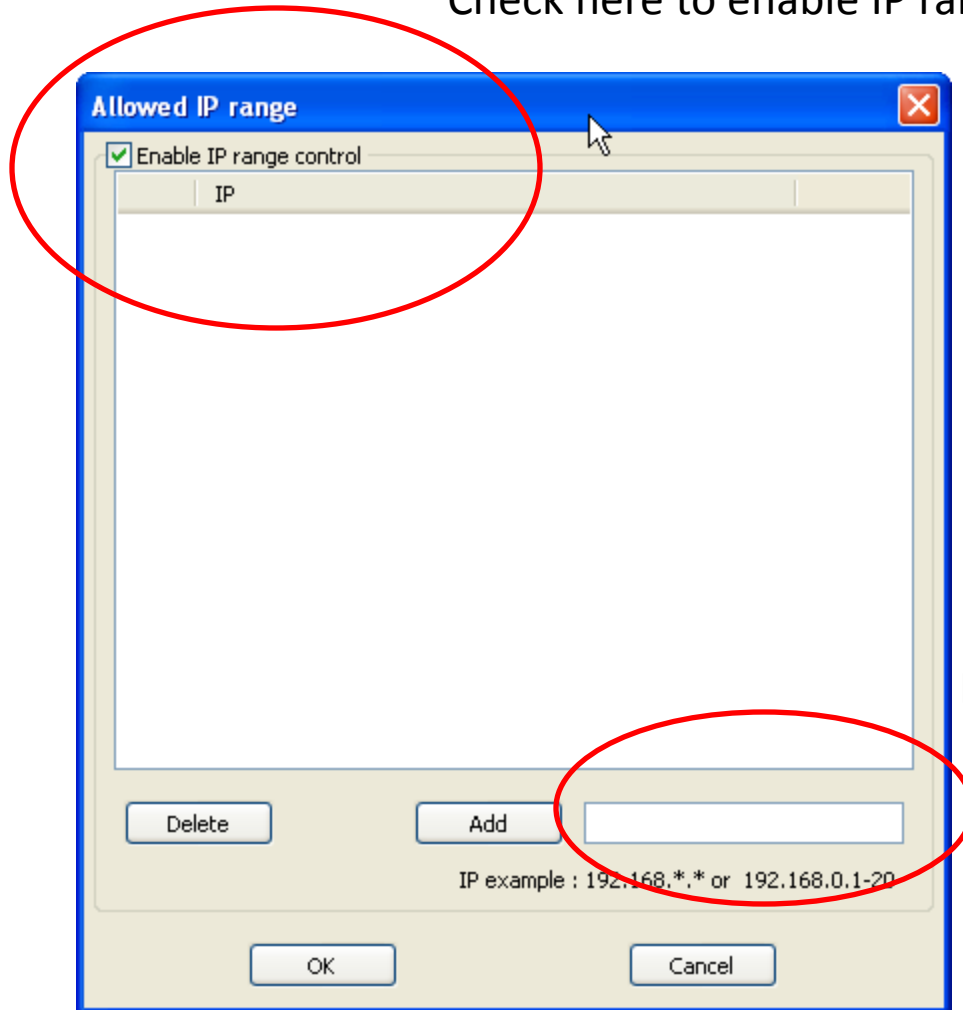
Define allowed IP ranges (for floating license only)

Due to the floating license can accept the licensing request from any network location for a default setting. WCT license server provides a tool to limit the IP range of licensing request.



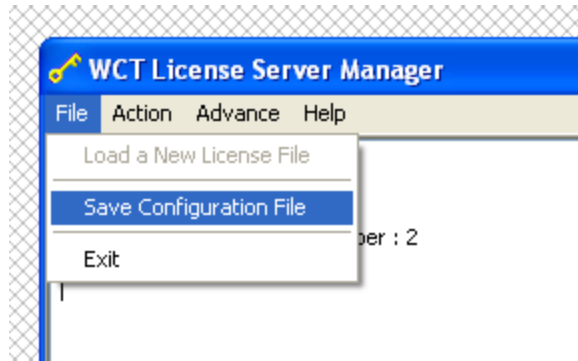
If user cannot see menu "Advance" and the license is floating, please close the License manager and re-run it.

Check here to enable IP range control



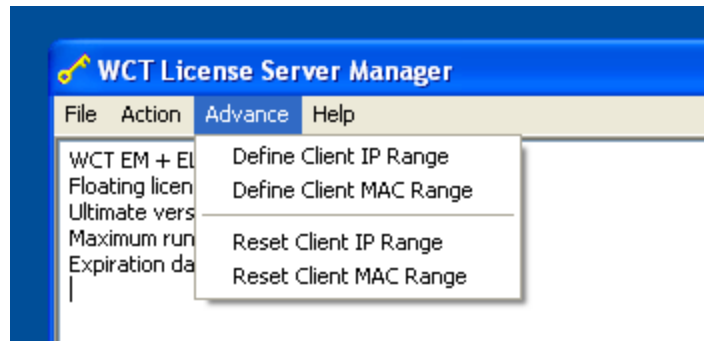
Input IP ranges

After defining the IP range, use “Save Configuration File” to save user input.



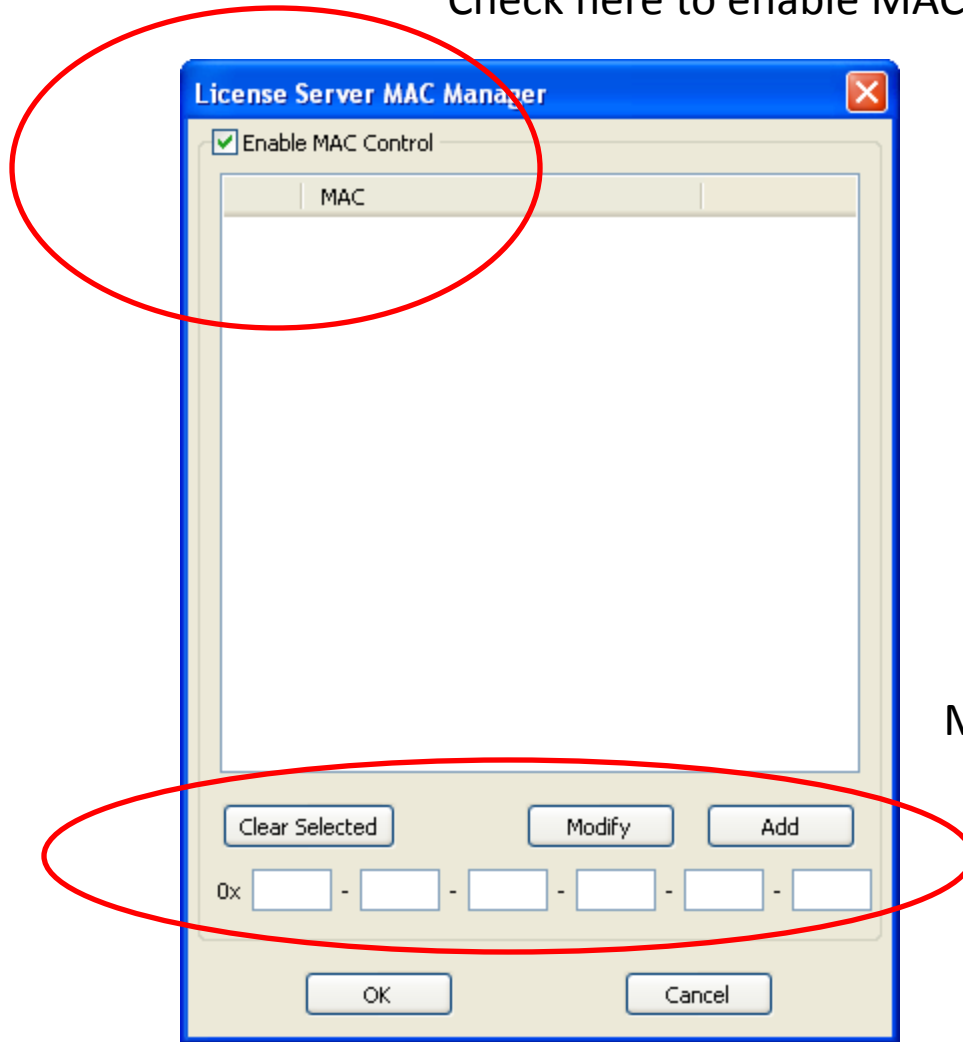
Define allowed MAC (for floating license only)

Due to the floating license can accept the licensing request from any computer for a default setting. WCT license server provides a tool to define the allowed computer to request licensing.



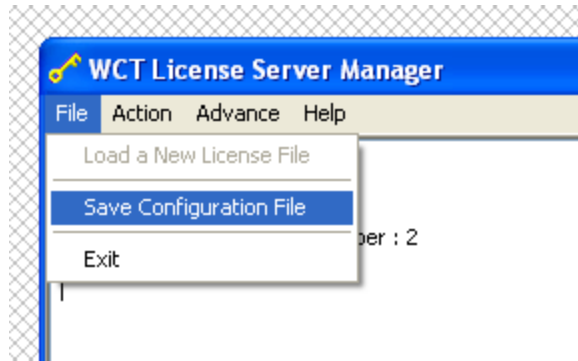
If user cannot see menu “Advance” and the license is floating, please close the License manager and re-run it.

Check here to enable MAC control



MAC editing

After defining the IP range, use “Save Configuration File” to save user input.

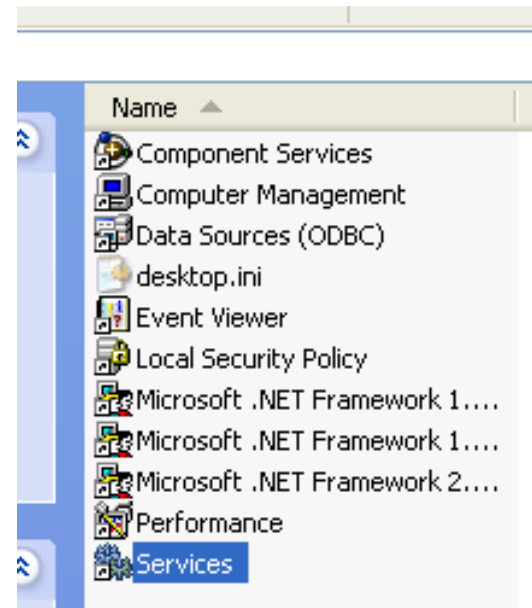
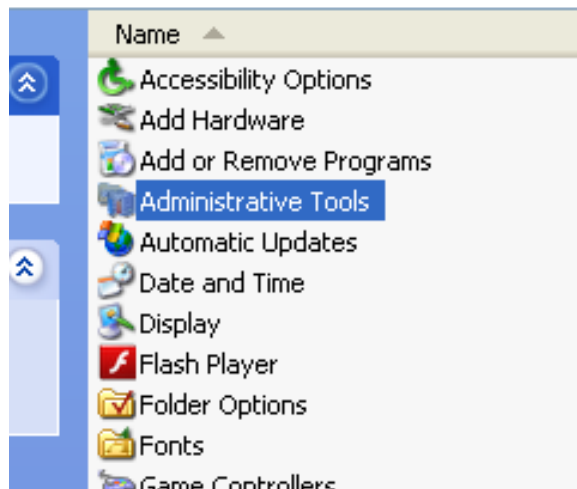


Control the WCT license server by the Windows Services Program

WCT license server runs as Windows service in the system. User can use system tools to monitor the status of license, or stop, start this service.

➤ Window 7 & Corresponding Windows server OS

Control Panel



➤ Window 10 & Corresponding Windows server OS

The screenshot displays the Windows 10 search interface. At the top, navigation tabs include 'All', 'Apps', 'Documents', 'Settings', 'Web', and 'More'. The search results are categorized into 'Best match', 'Apps', 'Search suggestions', 'Photos', 'Settings', 'Documents', and 'Folders'. The 'Best match' section highlights the 'Services' desktop app. A red box highlights the 'Services' app entry. Below it, the 'Apps' section lists 'Component Services', 'Settings', and 'SQL Server Installation Center (64-bit)'. A blue arrow points from the 'Services' app entry to the 'Run as administrator' option in the context menu. The context menu also includes 'Open', 'Open file location', 'Pin to Start', and 'Pin to taskbar'. A red box highlights the 'Run as administrator' option. At the bottom, the Windows taskbar is visible with icons for the Start menu, Chrome, File Explorer, Edge, Paint, and OneDrive.

Best match

Services
Desktop app

Apps

Component Services

Settings

SQL Server Installation Center (64-bit)

Search suggestions

ser - See web results

Photos (1+)

Settings (4+)

Documents (5+)

Folders (1+)

Services

then

Services
Desktop app

Open

Run as administrator

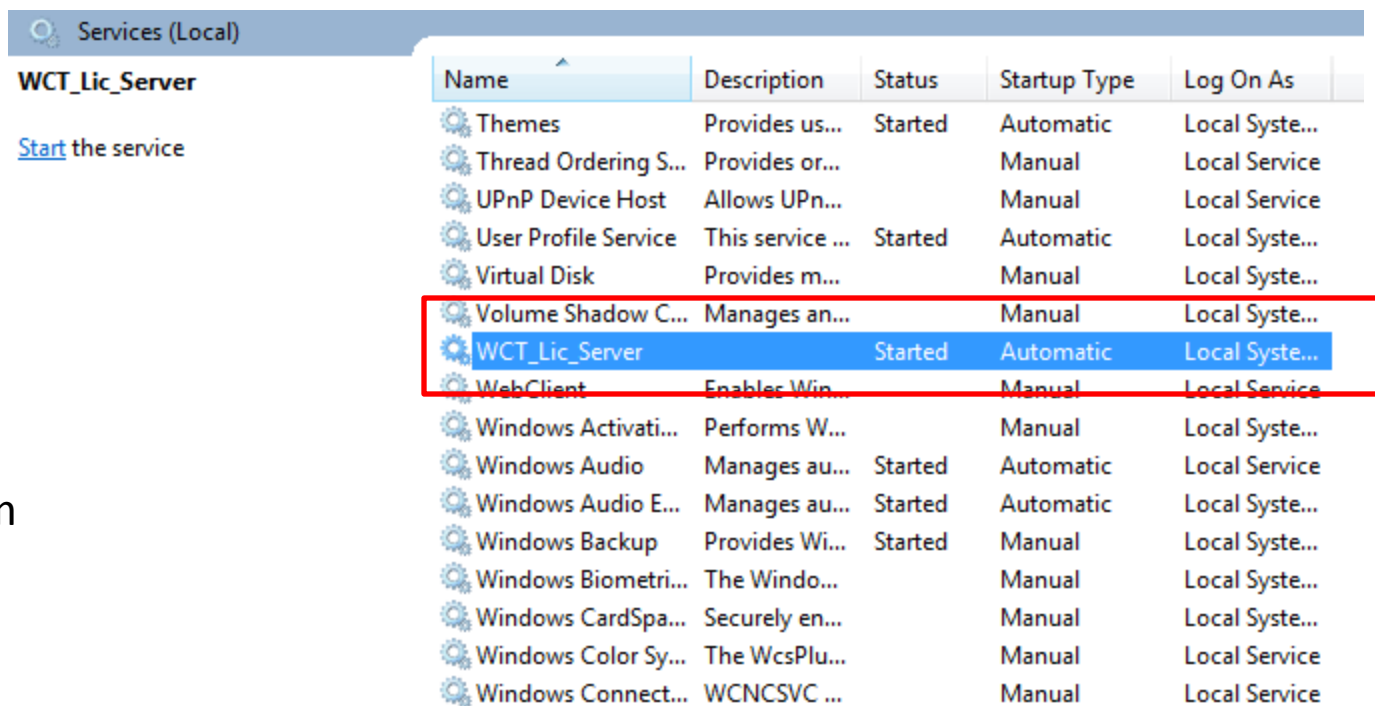
Open file location

Pin to Start

Pin to taskbar

Type in "Services" here to show the APP as the top part

If the WCT license server has been installed, user can see it in the system service list.

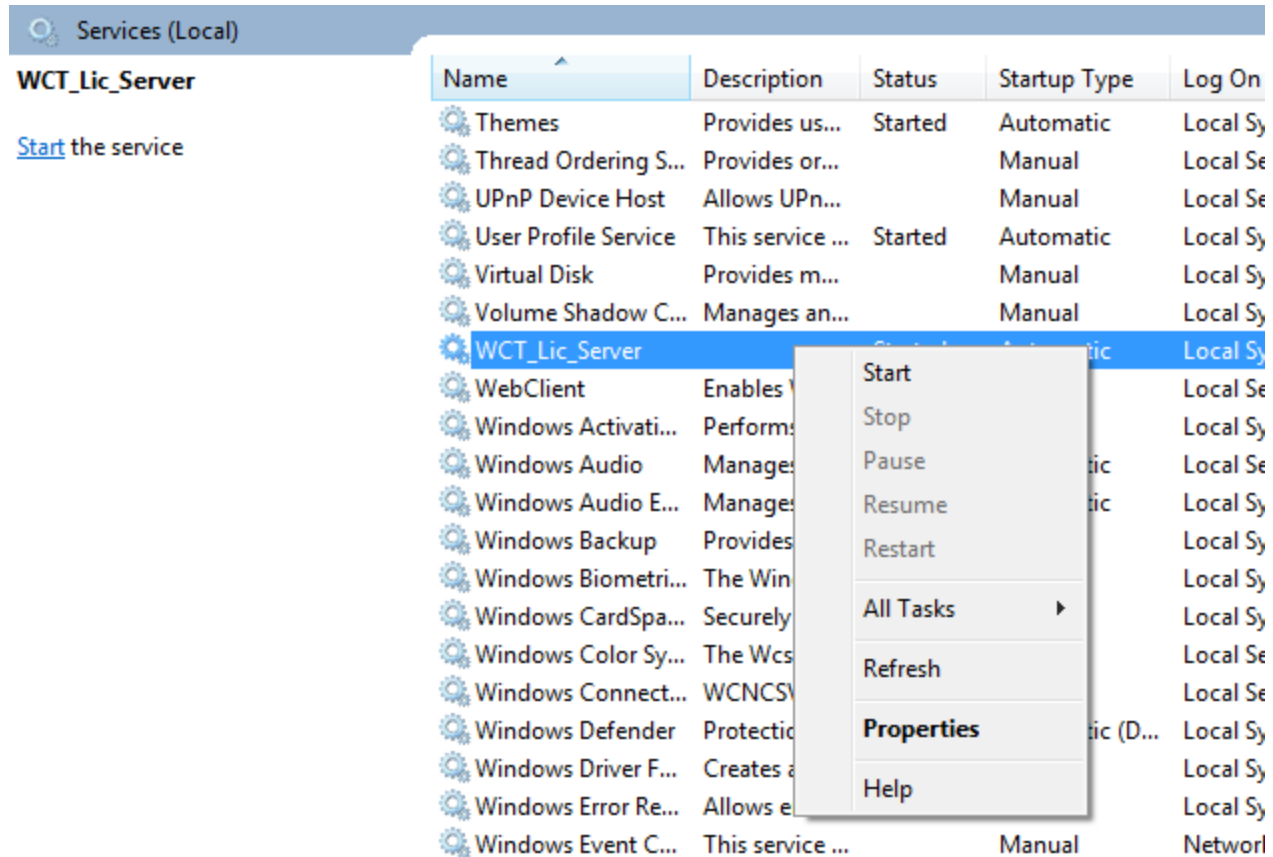


The screenshot shows the Windows Services (Local) console. The 'WCT_Lic_Server' service is highlighted in blue and enclosed in a red rectangular box. The service is listed with the following details:

| Name | Description | Status | Startup Type | Log On As |
|-----------------------|------------------|----------------|------------------|-----------------------|
| Themes | Provides us... | Started | Automatic | Local Syste... |
| Thread Ordering S... | Provides or... | | Manual | Local Service |
| UPnP Device Host | Allows UPn... | | Manual | Local Service |
| User Profile Service | This service ... | Started | Automatic | Local Syste... |
| Virtual Disk | Provides m... | | Manual | Local Syste... |
| Volume Shadow C... | Manages an... | | Manual | Local Syste... |
| WCT_Lic_Server | | Started | Automatic | Local Syste... |
| WebClient | Enabler Win... | | Manual | Local Service |
| Windows Activati... | Performs W... | | Manual | Local Syste... |
| Windows Audio | Manages au... | Started | Automatic | Local Service |
| Windows Audio E... | Manages au... | Started | Automatic | Local Syste... |
| Windows Backup | Provides Wi... | Started | Manual | Local Syste... |
| Windows Biometri... | The Windo... | | Manual | Local Syste... |
| Windows CardSpa... | Securely en... | | Manual | Local Syste... |
| Windows Color Sy... | The WcsPlu... | | Manual | Local Service |
| Windows Connect... | WCNCSVC ... | | Manual | Local Service |

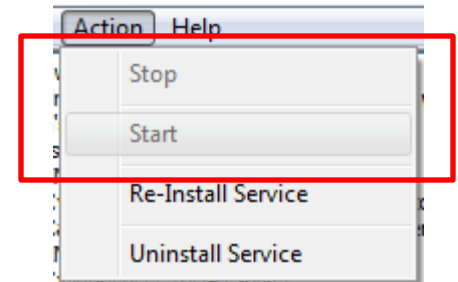
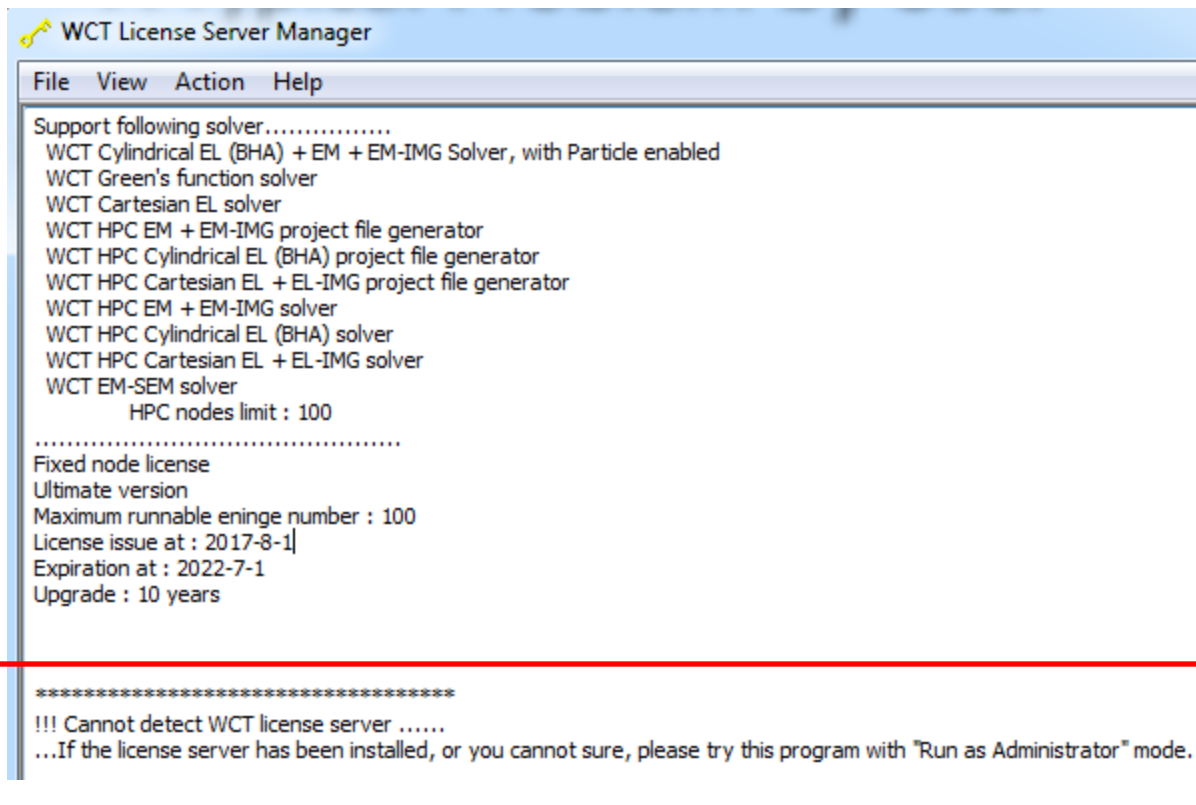
If this APP is run in the administrator mode correctly, user can use menu to “Stop” or “Start” the service.

If this APP is not run in the administrator mode, the “Stop” or “Start” menu item will be grey.



A Typical Problem

- Can't detect the licensing server or can't start the licensing server



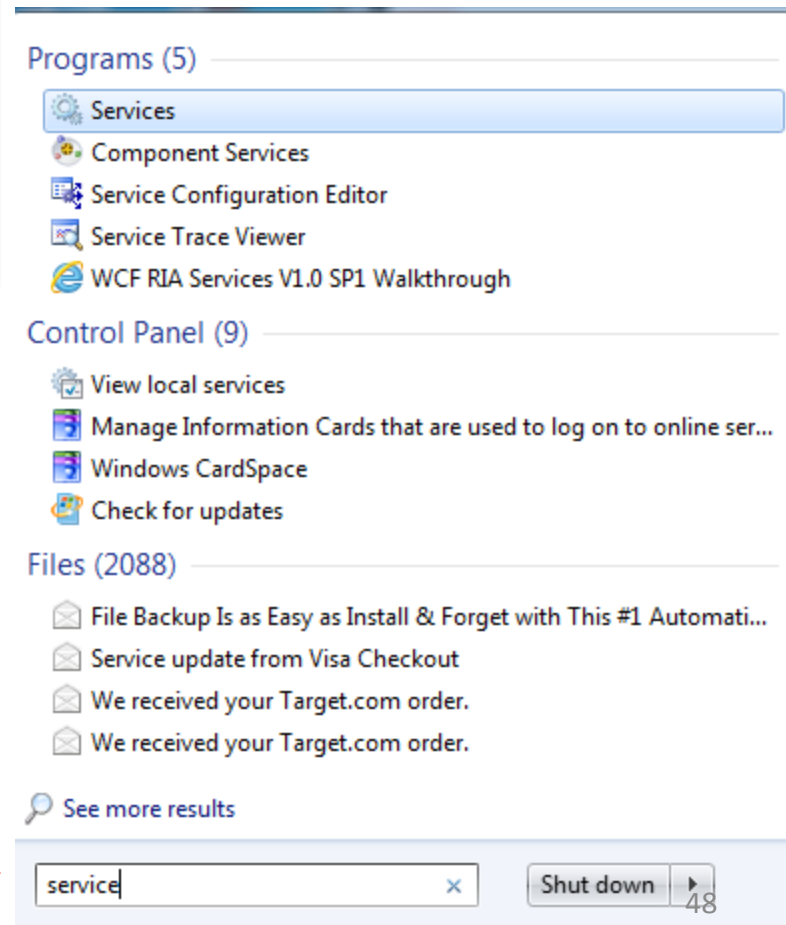
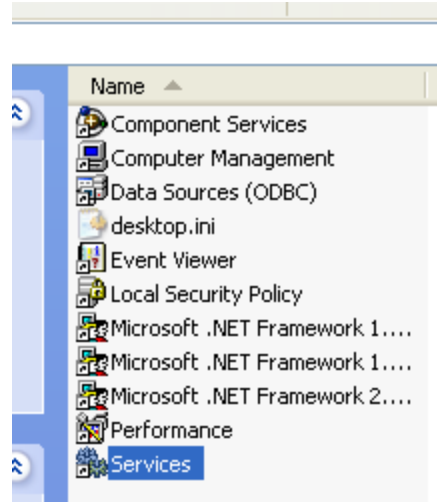
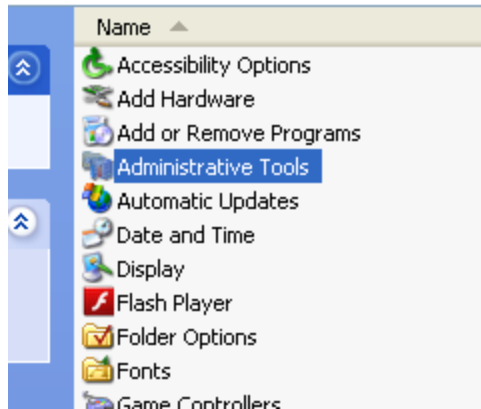
grey

Or even the
“Stop” & “Start”
item are not grey,
but it can't work
after click it.

In the Windows 7,

- a. please check the status of the license server as following steps

Control Panel



➤ or Type in “*service*” in *Search programs* to start “Services”



Or in the Windows 10,

The screenshot shows the Windows 10 search interface. At the top, there are navigation tabs: All, Apps, Documents, Settings, Web, and More. The search results are categorized into 'Best match' and 'Apps'. The 'Best match' section shows the 'Services' desktop app as the top result, highlighted with a red box. Below it, the 'Apps' section lists other applications like 'Component Services', 'Settings', and 'SQL Server Installation Center (64-bit)'. A blue arrow points from the 'Services' app in the 'Best match' section to the 'Run as administrator' option in the context menu. The context menu is also highlighted with a red box. At the bottom left, the search bar contains the text 'Services', which is also highlighted with a red box. A text box at the bottom center contains the instruction: 'Type in "Services" here to show the APP as the top part'. The taskbar at the bottom shows several icons, including the Start button, Chrome, File Explorer, and others.

All Apps Documents Settings Web More Feedback

Best match

Services
Desktop app

Apps

Component Services

Settings

SQL Server Installation Center (64-bit)

Search suggestions

ser - See web results

Photos (1+)

Settings (4+)

Documents (5+)

Folders (1+)

Services

then

Services
Desktop app

Open

Run as administrator

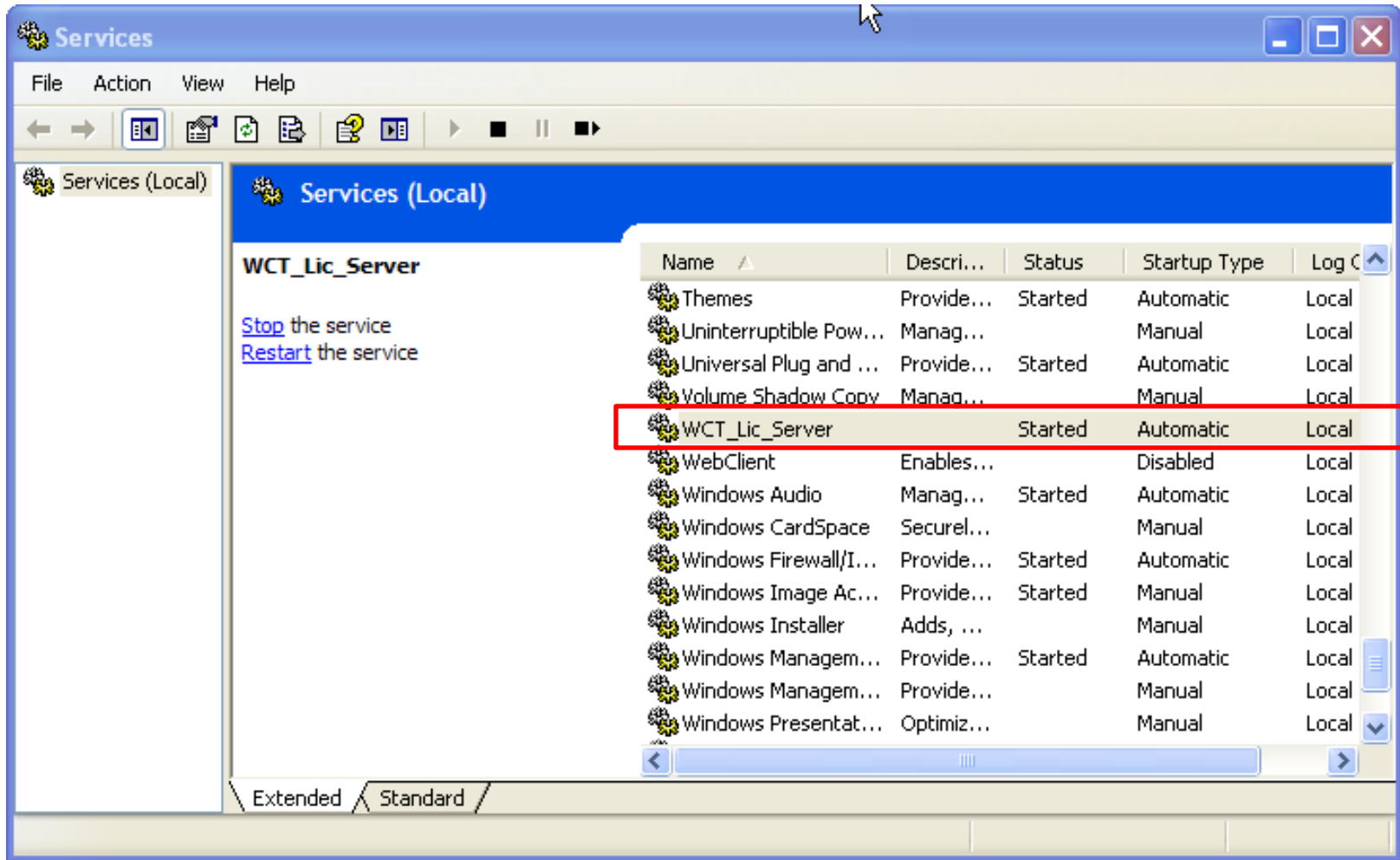
Open file location

Pin to Start

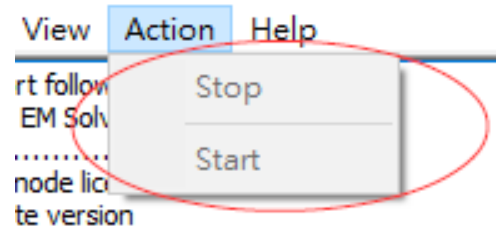
Pin to taskbar

Type in "Services" here to show the APP as the top part

After get “Services” Panel, make sure the WCT license server (name as: *WCT_Lic_Server*) has been installed, not matter it is **Started** or **Stop**



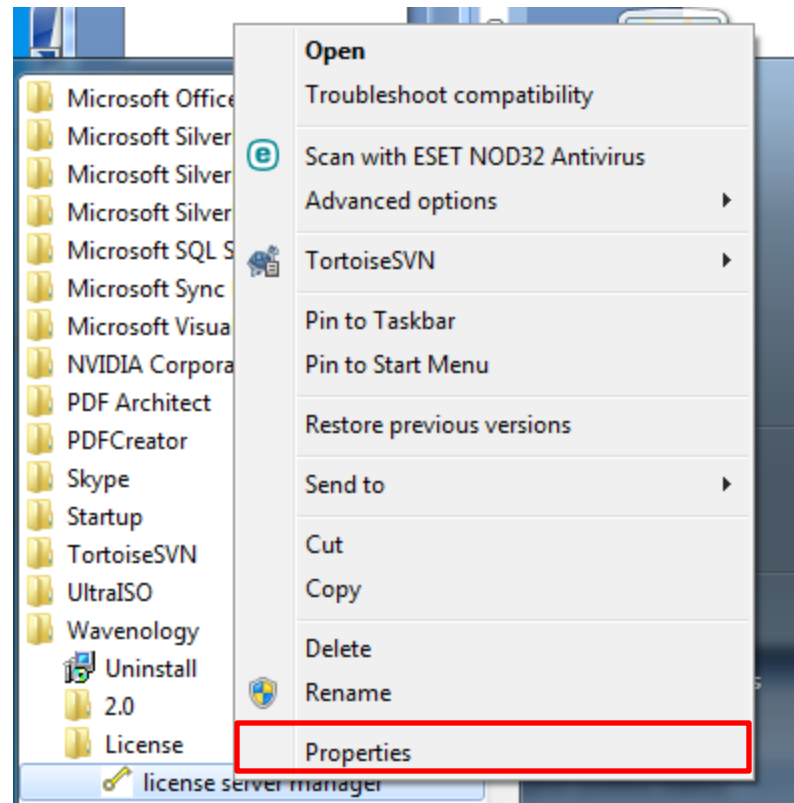
➤ if you can see **WCT_Lic_Server** in services list, but you get a gray menu in **WCT license server manager** as



One reason is, the **WCT license server manager** is not working in the correct mode, even use “Run as administrator”.

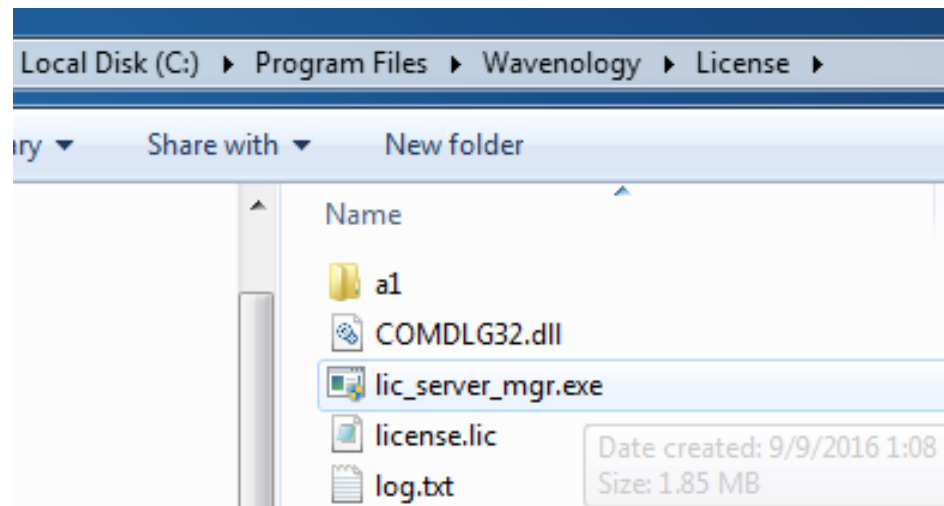
Possible solutions

- for situation “*license server not installed*”
 - uninstall and re-install WCT license server as [this](#)
 - or, uninstall and re-install WCT package
- for “*license server installed*”, but you see a Gray Menu in the *WCT license server manager*
 - setup the “Compatibility->Privilege Level” of WCT “lic_server_mgr.exe” as “Run this programs as an administrator”
 - one way is as this

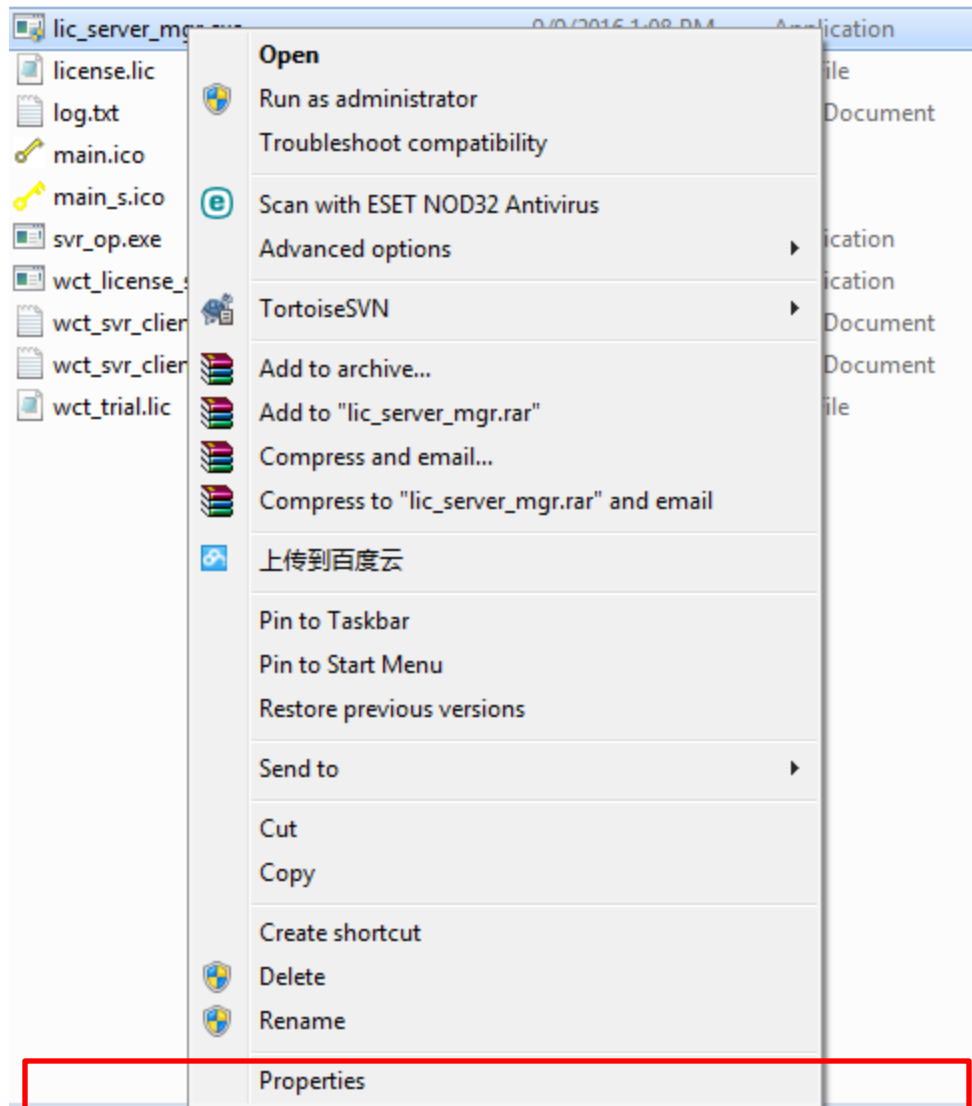


Or

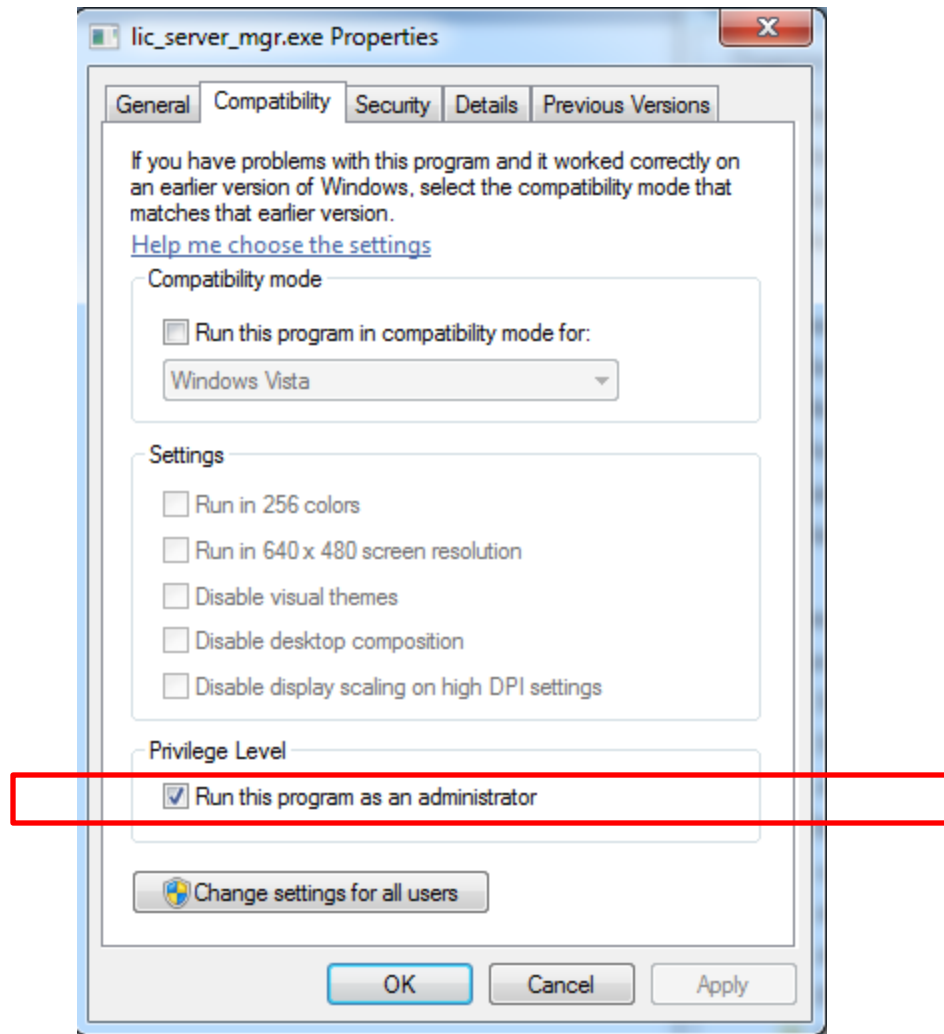
- locate WCT “lic_server_mgr.exe” in
 - version 2.0.0, x64: “C:\Program Files\Wavenology\License”
 - version 1.8.x, x64: “C:\Program Files (x86)\Wavenology\License”



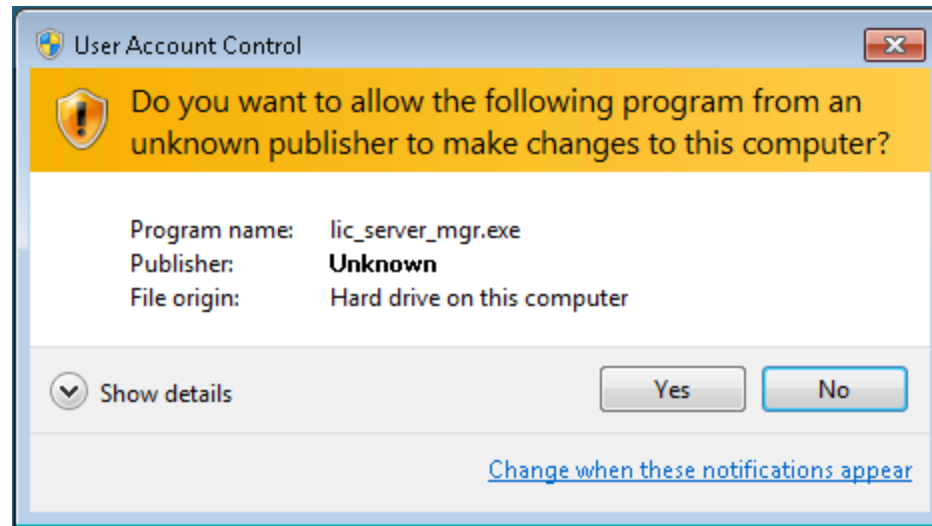
➤ select “lic_server_mgr.exe” and right click mouse to get menu as



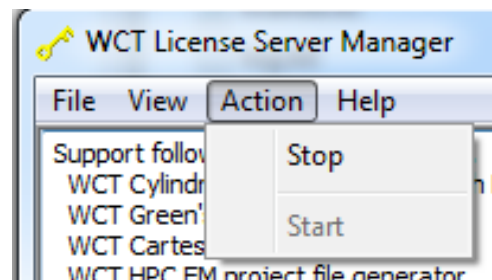
In page “Compatibility”, check “Run this programs as an administrator”



Then run “lic_server_mgr.exe” by double click. In general, you will get a dialog as following, please click “Yes”



After this, in general, you will get a working menu in the *WCT license server manager*



- Another possibility is when user upgrade WCT from v1.x to v2.0
 - WCT v1.x use 32bit licensing system even in x64 version
 - WCT v2.0 use 64bit licensing system in x64 version

- with this change, WCT licensing system installation folder is changed from “C:\Program Files (x86)\Wavenology\License” to “C:\Program Files\Wavenology\License”, this may cause the v2.0 licensing system can't find the existing license file that in the old folder.

- Solution for this case
 - copy “license.lic” or all “.lic” files from “C:\Program Files (x86)\Wavenology\License” to “C:\Program Files\Wavenology\License”

 - “reboot computer” or “uninstall and re-install WCT package”

One Possible Problem caused by Anti-Virus Software

- In some cases, the WCT license server is terminated and uninstalled from OS by the anti-virus software
 - in this situation, even user want to Re-install the WCT license server from WCT license server manager, it may fail
 - the solution:
 - run “**cmd.exe**” in Administrator mode
 - enter the WCT license server installation folder, for example, “*C:\Program Files\Wavenology\License*”
 - Register WCT license server in the OS by command: “**wct_license_server.exe --install**”
 - Then use WCT license server manger to “**Start**” the server
 - or use Windows Services App to “Start” the service “WCT_Lic_Server”

Q & A for Licensing

- What is WCT EM & EL package?
 - WCT EM & EL package is a general GUI to simulate multiple physics. It supports following solvers by the same GUI
 - Cartesian EM
 - Cartesian EM Imaging
 - Particle in cell
 - Green's Function for Layer media
 - SEM solver for Lithography
 - Cartesian EL
 - Cartesian EL Imaging
 - Cylindrical EL for Borehole acoustic (BHA)
- OS requirement
 - It only pass the tests in Window 7 x64, Windows 10 x64, and corresponding Windows server OS. It is x64 version only.
- Where can get WCT EM & EL package?
 - Please go to: <http://www.wavenology.com/download.html> and download the installation package with the download key provided by Wave Computation Technology.

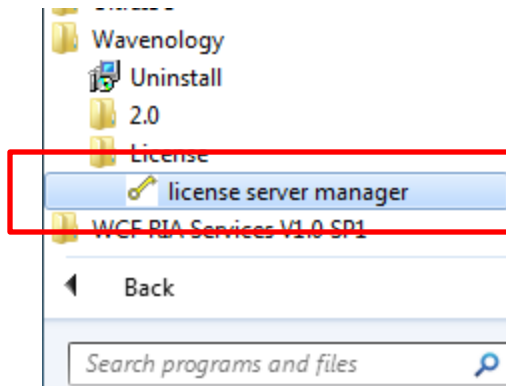
- What is in the WCT EM & EL package?
 - setup.exe & Data.msi
- How to install WCT EM & EL package?
 - Unzip the installation package and run “setup.exe”. In most cases, the installation has not other requirements. If there is error, please refer to the “Installation” section in the WCT download page.
- What is WCT license?
 - To start a simulation in GUI, the corresponding engine need to be unlocked. WCT GUI uses a license to unlock the engine.
 - A license is bound to a MAC provide by user and can be used on the computer with that MAC only.
- Does WCT GUI requires license?
 - Not, WCT GUI does not require license. After installation, the GUI can be used for modeling purpose, or load the existing WCT project to check existing simulation result.

- How to obtain a license?
 - Please contact WCT to purchase a license.
 - Or register in WCT website to obtain a free license for 30 days evaluation purpose.
- Whether there is multiple WCT license types?
 - Yes. There are two types of license: fixed node or floating
 - A fixed node license can be used on the computer with a specified MAC.
 - A floating license should be installed on the computer with a specified MAC, but other computers can link to this computer to unlock the engine.
 - Basically, one WCT license file can unlock one or multiple engines, not matter it is fixed node or floating.
- What is the WCT license server?
 - WCT license server is a service installed in OS after WCT EM & EL package is installed.
 - It is used to manage the license.
 - The WCT GUI need to communicate with it to unlock the engine.
 - Without the WCT license server, the simulation can't start.

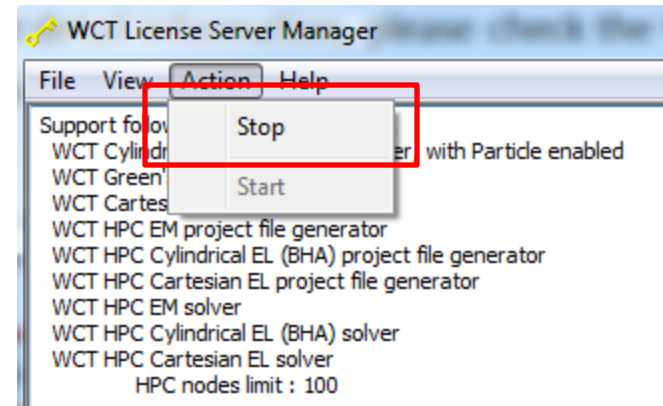
- How to load a license?

- For detail information, please check **the WCT licensing Manual**
- A simple procedure is:

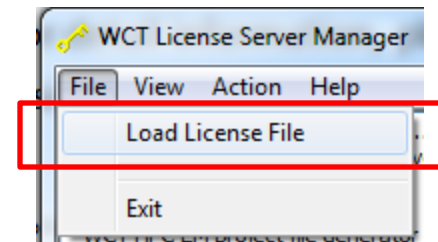
Stop the license manager



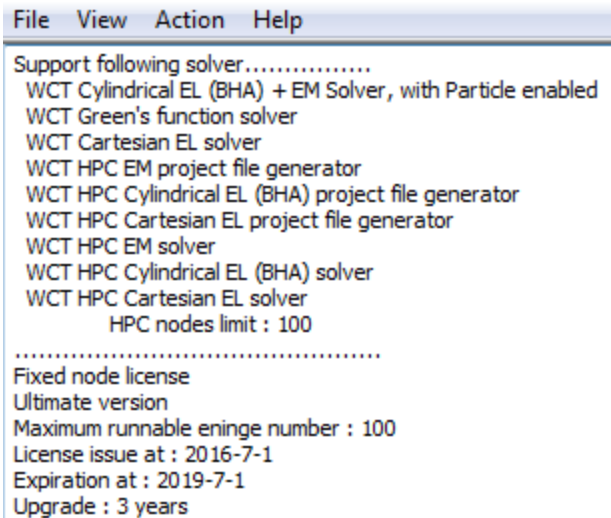
Run as administrator



Load the license file provided from WCT



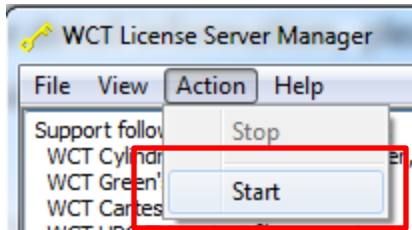
Make sure similar information shown



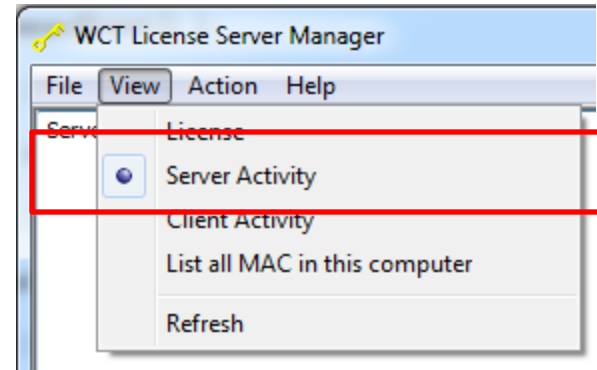
(go to next page)



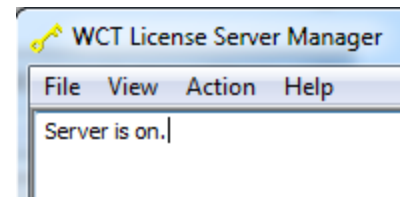
Restart the license manager



check the server status



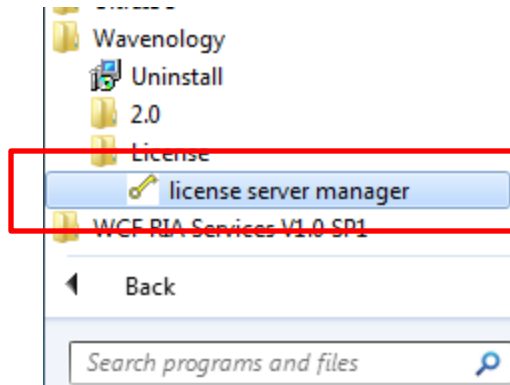
Make sure the serve is ON



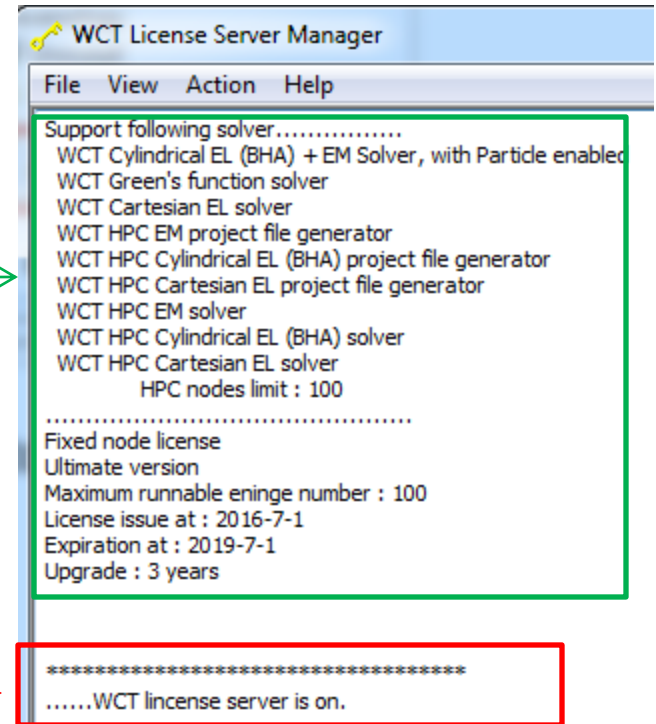
If reach this step, the license is loaded correctly and the license server works well.

User can quit the license server manager.

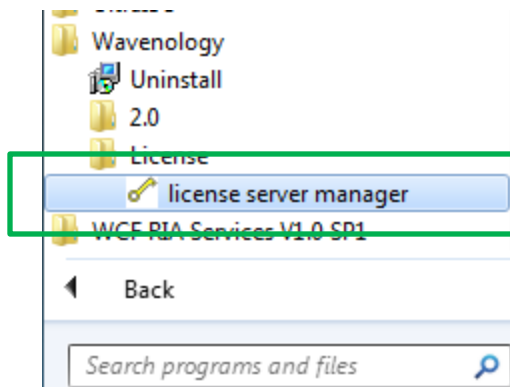
- How to check the status of WCT license server?



Run as administrator



- How to check the status of a license?



Run as administrator



- Make sure the solver type and the time are correct.

- What is the meaning of following information?
 - Sometimes, user can't start a simulation and get following information in the log.

```

.....Acquiring a license for --the BHA solver-- to start job (simulation or others) at Sun Apr 28 22:55:11 2019 .....

*****!!!!!!!!!!!! Failure in license request, Job (simulation or others) can't start. Sun Apr 28 22:55:12 2019 !!!!!!!!!!!!!*****
.....It may be due to one of the following reasons: 1. Other copies of WCT are running simulation; 2. the IP of the WCT license server is wrong; 3. the WCT license server is turned off; 4. the requested solver is not supported by the license
.....
.....Corresponding solutions: 1. Wait until other copies of WCT finish simulations; 2. set a correct IP for the WCT license server; 3. turn on the WCT license server.....

.....*** More detail information about the failure: Fail to connect to server. ***.....

```

It means that the GUI can't unlock the engine to start the simulation, the reasons could be:

- The license is not loaded correctly.
- The requested engine does not match the license.
- The license expires already.
- The requested simulation number excess the register number in the license.
 - For example, if the license support 2 simulations simultaneously, the request for the 3rd simulation will be rejected. User must wait until one of existing simulation finish.
- The license server is OFF, or does not exist.
 - An known problem is, in Windows 10, after OS upgrade, the WCT license server may be removed by OS. In this situation, user need to un-install WCT and re-install it. But in this situation, user does not need to reload the license.
- For a floating license, the GUI can't connect to the license server.
- If the GUI is terminated manually, the license server need to wait 15 seconds to make sure whether the GUI is still alive and just lost connection. So, a new simulation should wait 15 seconds to start a new simulation.

Support Contact

support@wavenology.com