

ADLINK SEMA 3.0

Software Installation Guide
(rev. 1.00)

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Revision History

Revision	Date	Changes
1.00	2015/12/09	Initial release

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1 OS Support

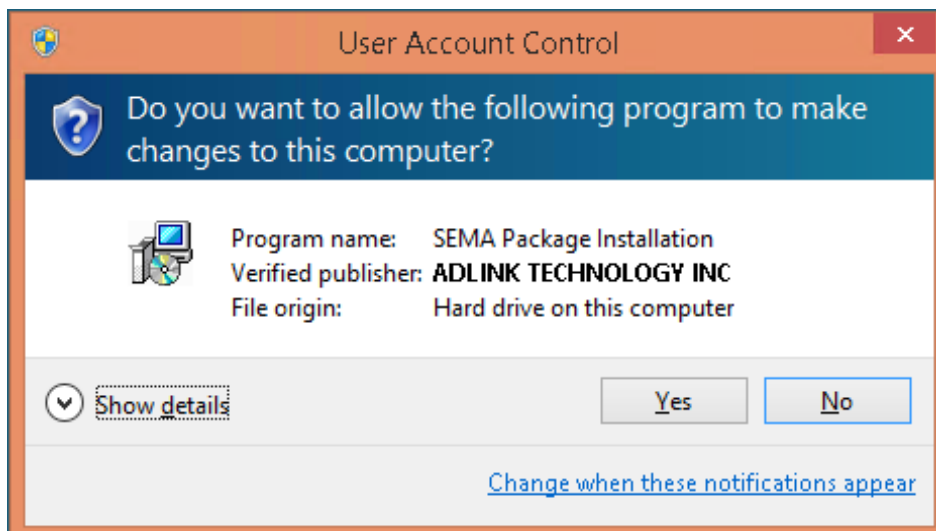
Currently, the following operating systems are supported:

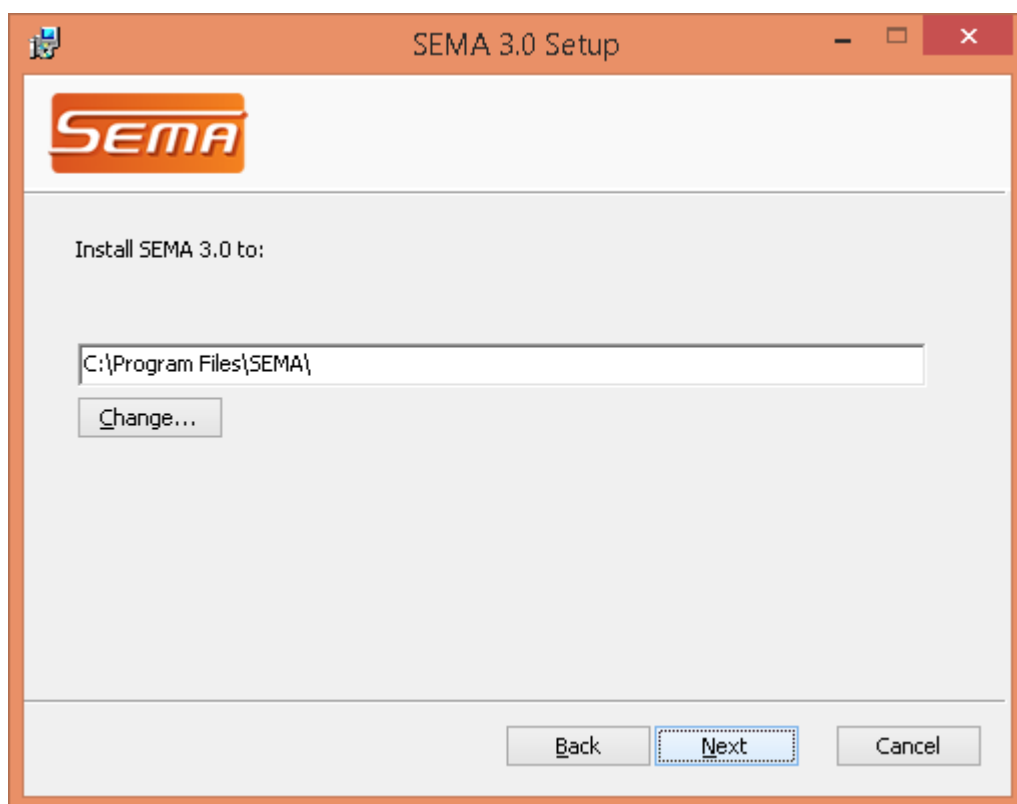
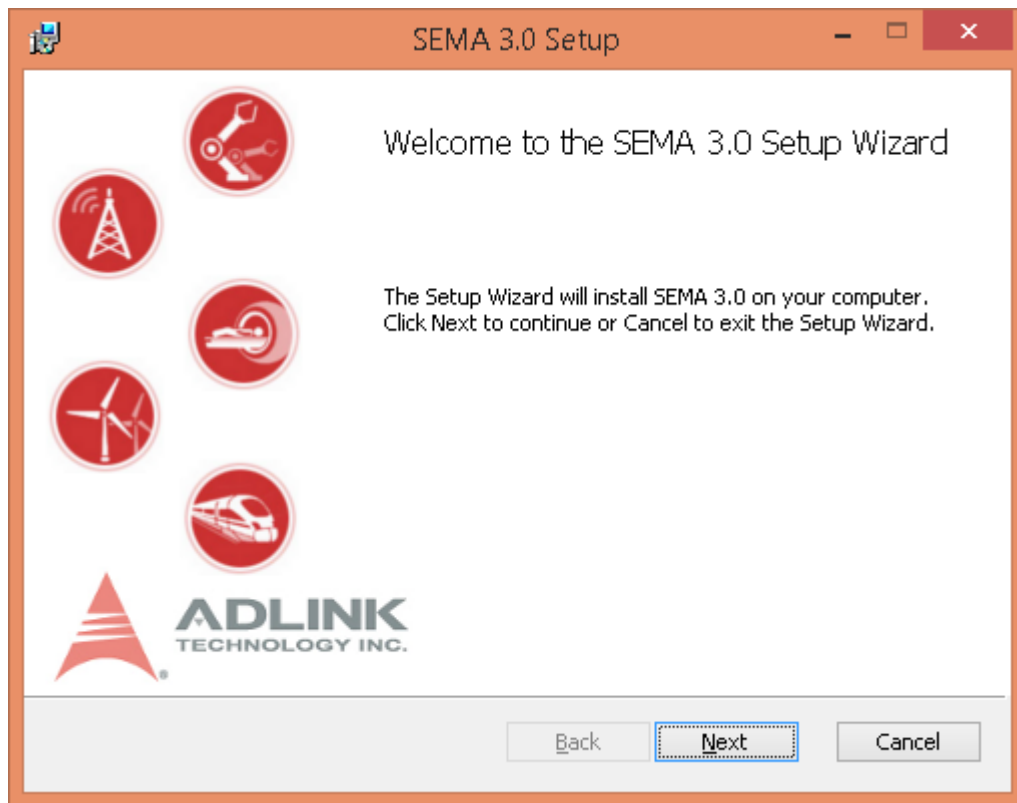
- Windows (win32/64)
 - Microsoft® Windows® 7
 - Microsoft® Windows® 8/8.1
- Linux® (3.2.x) 64/32

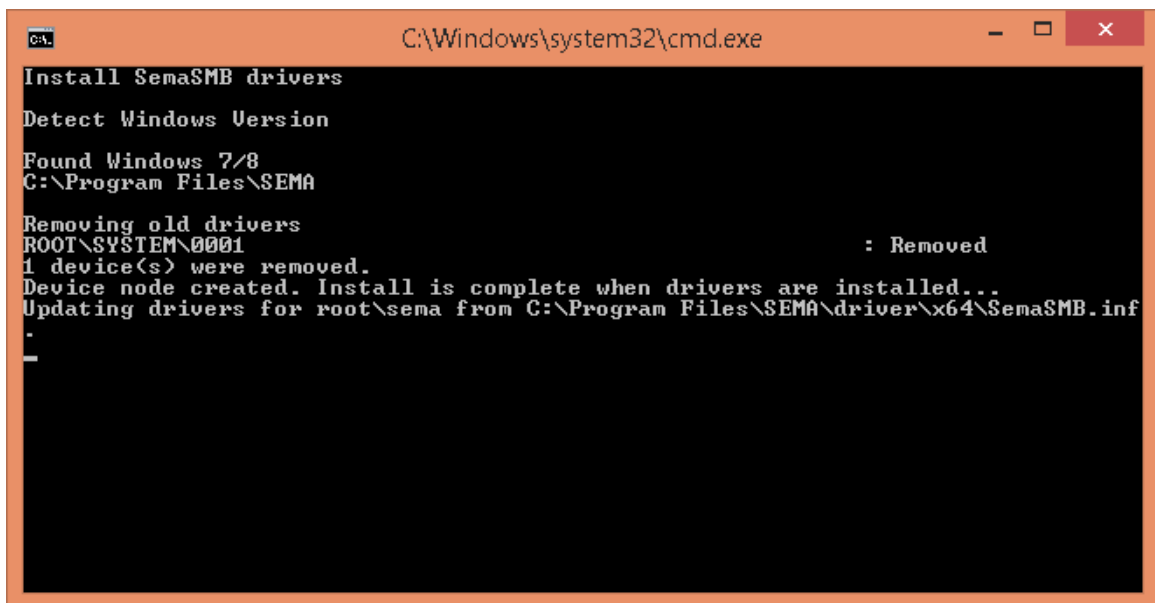
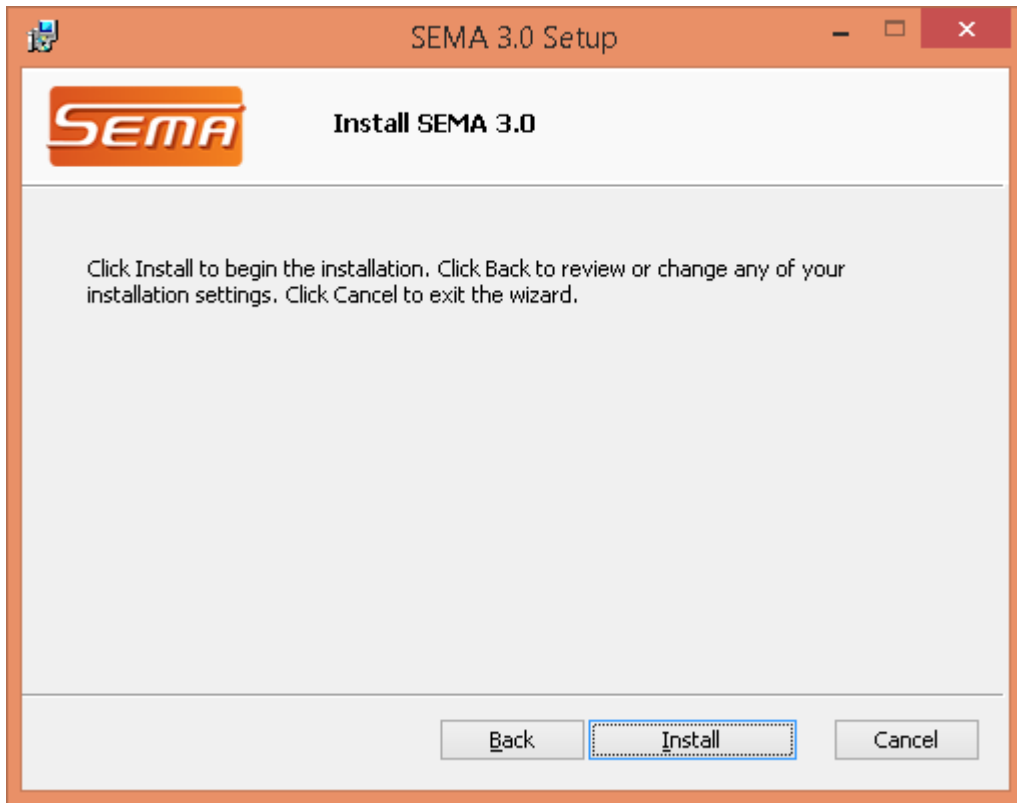
2 Installation

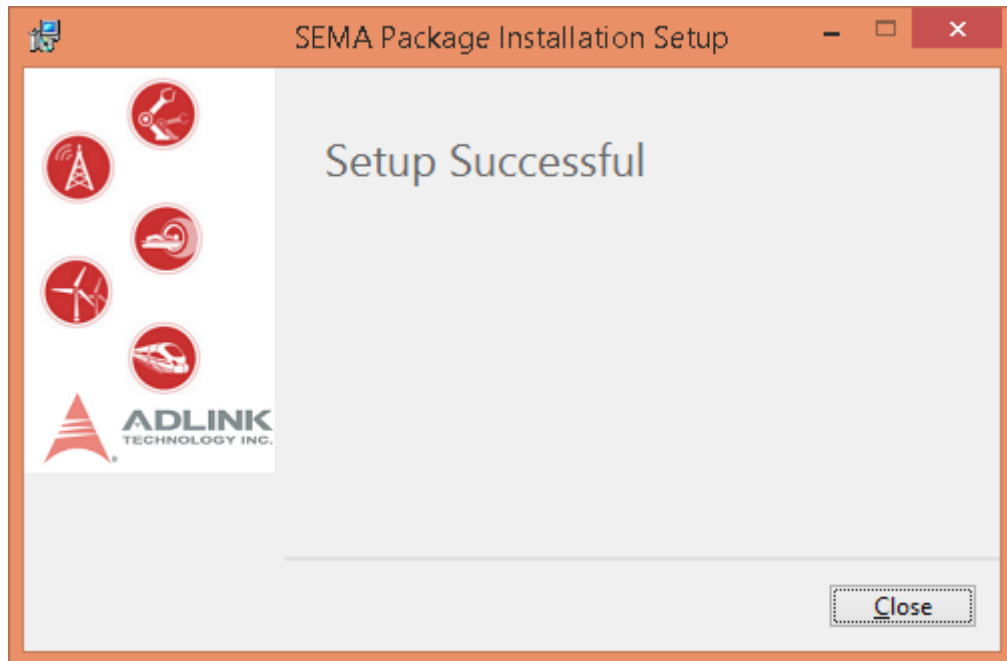
2.1 Windows:

Launch the install file in the release package corresponding with your operation system.









In Windows, the program files will be located at C:\Program Files\SEMA. The configuration file and keys for SSL connections will be located at C:\SEMA\

2.2 Linux:

Launch the install file in the release package corresponding with your operation system.

[Step 1]

```
root@sema-Express-xx-Express-yyy-Express-zzzz:/home/sema/Downloads# ls -al SEMA_x86
-rwxr-xr-x 1 sema sema 18791260 Sep 17 22:55 SEMA_x86
root@sema-Express-xx-Express-yyy-Express-zzzz:/home/sema/Downloads#
```

To view the file mode, use the `ls` command, or mark the file as executable with the `chmod` command.

[Step 2]

```
root@sema-Express-xx-Express-yyy-Express-zzzz:/home/sema/Downloads# ./SEMA_x86
Verifying archive integrity... All good.
Uncompressing install SEMA3.0(alpha)_Installer 100%
Copying binaries files ... DONE
Adding SEMA bin folder to PATH at startup ... DONE
Copying libraries files ... DONE
Setting up ldconfig ... DONE
Copying config files ... DONE
root@sema-Express-xx-Express-yyy-Express-zzzz:/home/sema/Downloads#
```

Now you can execute the installer in the terminal.

In Linux, the program files will be located at `/usr/local/Sema`. The configuration file and keys for SSL connections will be located at `/etc/SEMA/`

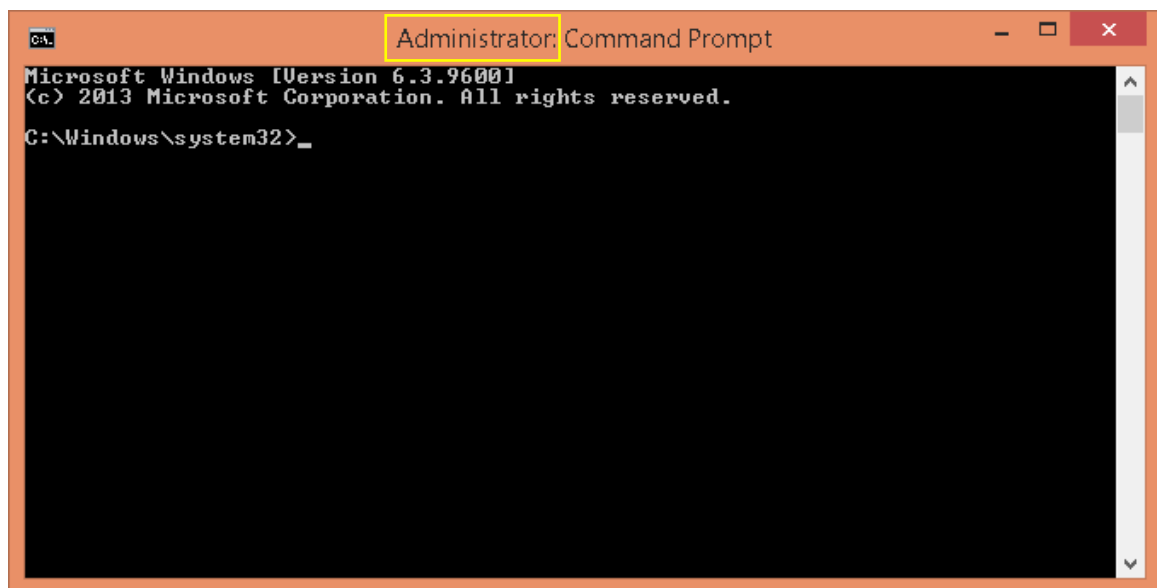
3 Setup Service

This section explains how to install SEMA services that can be automatically started when the computer boots. There are two services in SEMA installation package.

1. eapi_serverd: A service that will response the SEMA EAPI remote procedure call to get the SEMA information of this device. If users don't need to run SEMA EAPI remotely, the installation of this service could be skipped.
2. sema_mqtttd: A service that will collect the SEMA information and push the data to the SEMA Dashboard. If users don't need to run SEMA Dashboard, the installation of this service could be skipped.

3.1 Windows

Setup



To execute a command prompt as an administrator:

1. Click *Start*, click *All Programs*, and then click *Accessories*.
2. Right-click *Command prompt*, and then click *Run as administrator*.

```

Administrator: Command Prompt
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Windows\system32>cd C:\Program Files\SEMA
C:\Program Files\SEMA>_

```

Access the directory where SEMA executable file is located.

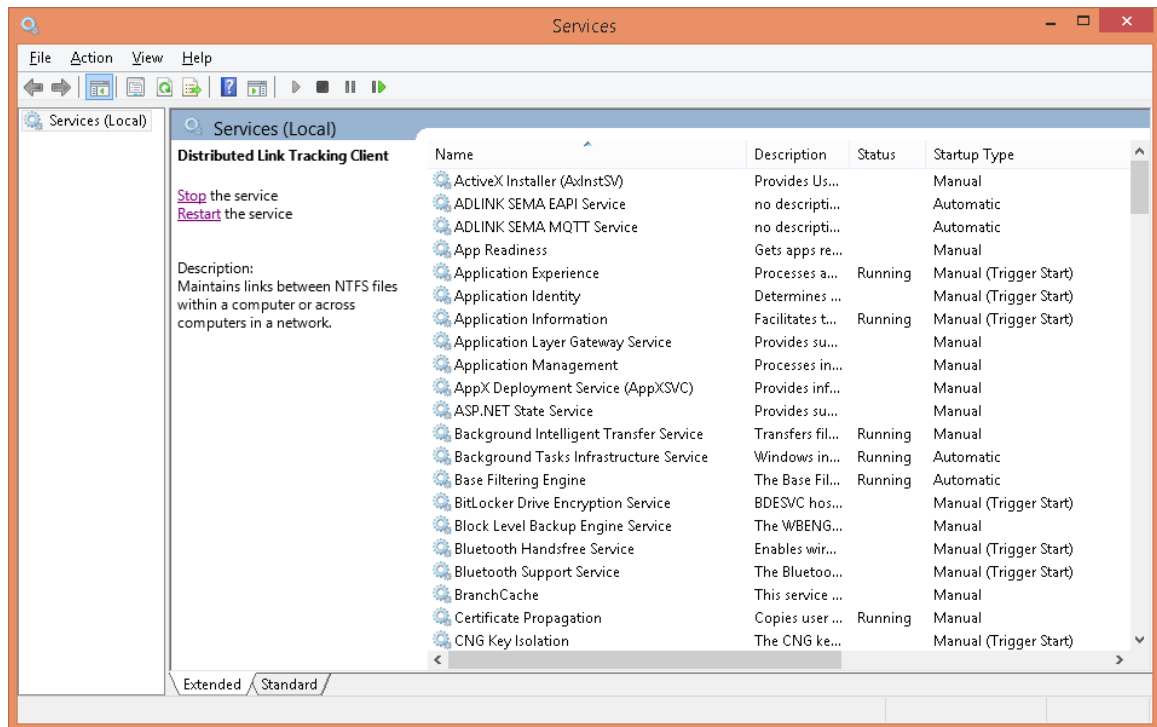
```

Administrator: Command Prompt
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\Windows\system32>cd C:\Program Files\SEMA
C:\Program Files\SEMA>eapi_serverd.exe --help
service options:
--help                produce a help message
-i                    install service
-u                    uninstall service
--name arg (<=SEMA_EAPI_Service)  service name
--display arg (<=ADLINK SEMA EAPI Service)  service display name (optional,
installation only)
--description arg (<=no description)  service description (optional,
installation only)
--path arg (<=C:\Program Files\SEMA\eapi_serverd.exe)  default path is C:\Program
Files\SEMA\eapi_serverd.exe
00007FF8C73F5D00
C:\Program Files\SEMA>eapi_serverd.exe -i
The operation completed successfully
C:\Program Files\SEMA>_

```

Run *eapi_serverd.exe/sema_mqttd.exe* from the command prompt with *-i* as a parameter.

Start/Stop EAPI Server service/MQTT Server service:



To Start or Stop Services in *Services* of Windows:

1. Open the *Control Panel* (icons view), click on the Administrative Tools icon, double click on *Services* shortcut.
2. Right click the *ADLINK SEMA EAPI Service/ADLINK SEMA MQTT Service*, and click *Start/Stop*.

3.2 Linux

Setup

Start services manually

Using the *exec* command

```
$ exec /usr/local/SEMA/bin/eapi_serverd
```

```
$ exec /usr/local/SEMA/bin/sema_mqttd
```

Start service automatically on startup

1. setup startup scripts in `/etc/rc.local` (e.g. `vim /etc/rc.local ..`)
2. add command `/usr/local/SEMA/bin/eapi_serverd` to script
3. add command `/usr/local/SEMA/bin/sema_mqttd` to script
4. reboot

Start/Stop EAPi Server service/MQTT Server service

Stop service

```
top - 10:27:37 up 21:46, 1 user, load average: 0.00, 0.00, 0.00
Tasks: 105 total, 1 running, 104 sleeping, 0 stopped, 0 zombie
Cpu(s): 0.1%us, 0.1%sy, 0.0%ni, 99.6%id, 0.2%wa, 0.0%hi, 0.0%si, 0.0%st
Mem: 4002912k total, 306024k used, 3696888k free, 21144k buffers
Swap: 4004732k total, 0k used, 4004732k free, 202456k cached
```

PID	USER	PR	NI	UIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
2030	root	20	0	12056	3788	3016	S	0.0	0.1	0:00.80	sshd
2026	root	20	0	74720	3496	2632	S	0.0	0.1	0:00.72	eapi_serverd
1129	root	20	0	13892	2944	2276	S	0.0	0.1	0:00.59	master
1390	root	18	-2	3356	1848	596	S	0.0	0.0	0:00.08	udevd
1391	root	18	-2	3356	1848	596	S	0.0	0.0	0:00.05	udevd
2035	root	20	0	5120	1660	1424	S	0.0	0.0	0:00.10	bash
998	root	20	0	36988	1496	1016	S	0.0	0.0	0:00.10	rsyslogd
1	root	20	0	2896	1396	1200	S	0.0	0.0	0:01.86	init
1139	root	20	0	6032	1312	732	S	0.0	0.0	0:02.98	crond
2050	root	20	0	2680	1140	904	R	0.7	0.0	0:00.65	top
1052	root	20	0	9004	1080	540	S	0.0	0.0	0:00.04	sshd
420	root	16	-4	2700	1004	368	S	0.0	0.0	0:01.29	udevd
978	root	16	-4	12884	776	572	S	0.0	0.0	0:00.06	auditd
1350	root	20	0	2832	772	496	S	0.0	0.0	0:00.00	dhclient
1392	root	20	0	2004	508	448	S	0.0	0.0	0:00.00	mingetty
1380	root	20	0	2004	504	448	S	0.0	0.0	0:00.02	mingetty
1382	root	20	0	2004	504	448	S	0.0	0.0	0:00.01	mingetty
1386	root	20	0	2004	504	448	S	0.0	0.0	0:00.00	mingetty
1394	root	20	0	2004	504	448	S	0.0	0.0	0:00.00	mingetty
1384	root	20	0	2004	500	448	S	0.0	0.0	0:00.01	mingetty
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	RT	0	0	0	0	S	0.0	0.0	0:00.03	migration/0
4	root	20	0	0	0	0	S	0.0	0.0	0:00.00	ksoftirqd/0
5	root	RT	0	0	0	0	S	0.0	0.0	0:00.00	stopper/0

Find the PID of `eapi_serverd` and `sema_mqttd` from the `top`.

Using the `kill` command

```
$ kill -9 2026
```

3.3 Set Configuration

If users have installed SEMA Dashboard Server, the target device needs to set the configuration in mqtt.xml.

File path in Windows

C:\SEMA\config\mqtt.xml

File path in Linux

/etc/SEMA/config/mqtt.xml

```
<mqtt>
  <sn>ADLINK_SEMA</sn>
  <connection>
    <ip>172.16.6.180</ip>
    <port>1883</port>
    <timeout>10</timeout>
    <ping>10</ping>
    <cache>1000</cache>
  </connection>
  <configure>
    <Push_Interval>
      <timeout>60</timeout>
      <unit>second</unit>
    </Push_Interval>
    <Register>0</Register>
    <log>
      <level>warning</level>
      <size>4096</size>
    </log>
  </configure>
  <static_message>
    <ip></ip>
    <mac></mac>
    <disk>0</disk>
  </static_message>
</mqtt>
```

Open mqtt.xml with a text editor, set IP address, port and cache.

ip: The SEMA Dashboard Server's IP address.

port: The SEMA Dashboard Server port. Default value is 1883

cache: The data items could be stored temporarily offline. Default value is 1000.

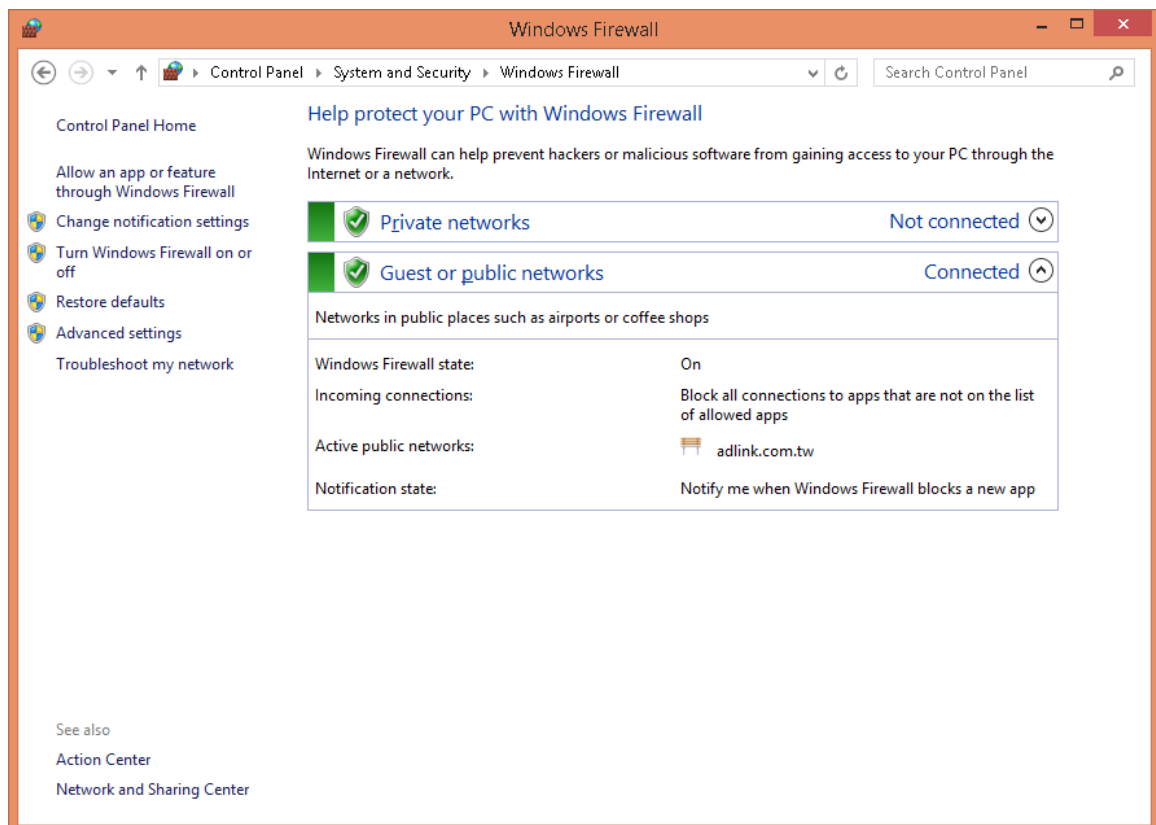
4 Firewall

By default, most of programs/ports are blocked by Firewall to help securing your computer. To enable the SEMA remote API call, customer needs unblock the port number to allow the SEMA communication through the firewall. SEMA uses port 9999 and 1883 by default. Please ensure the fireware is setup correctly.

Note: Make sure the port 9999 and 1883 are not banned by the IT infrastructure.

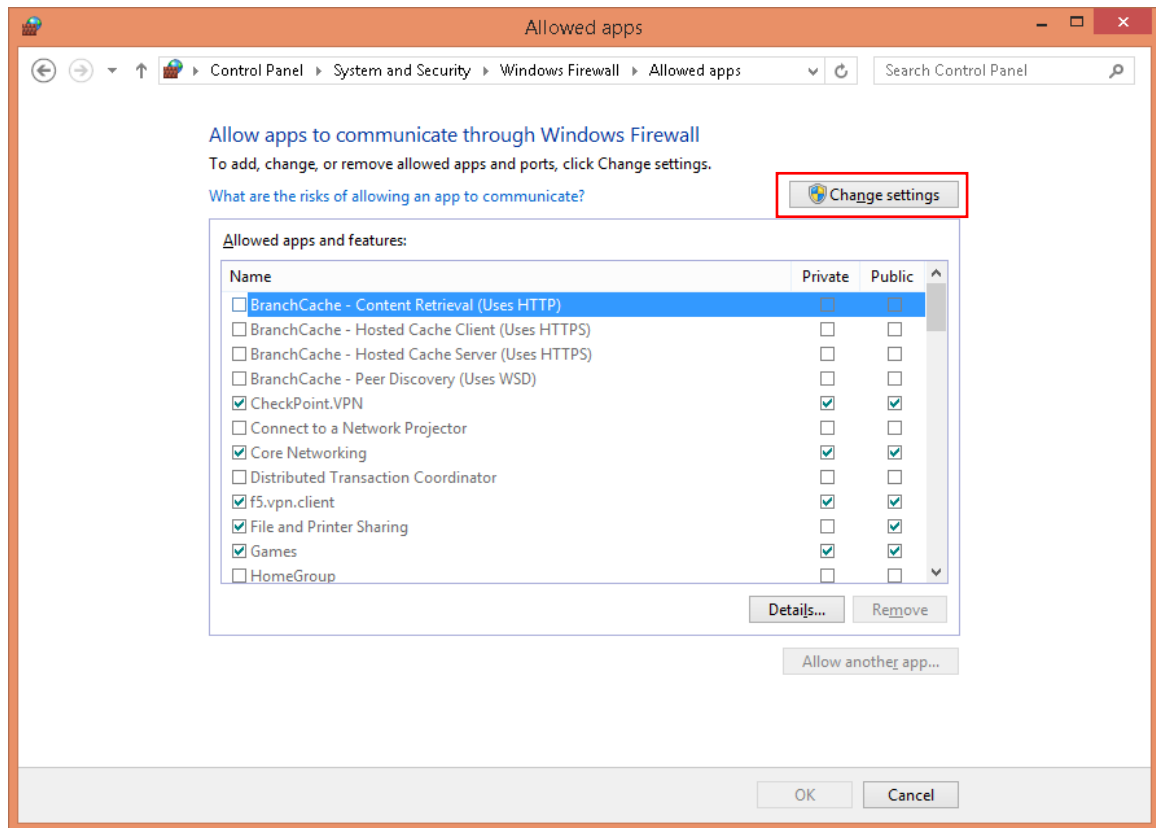
4.1 Windows

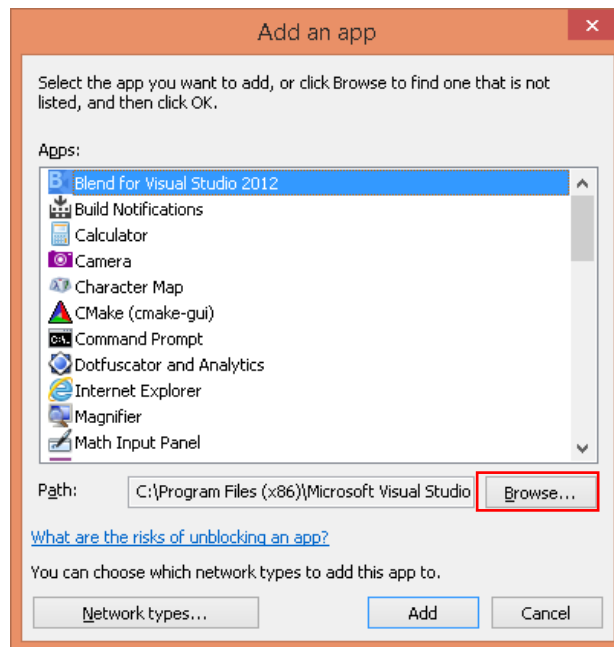
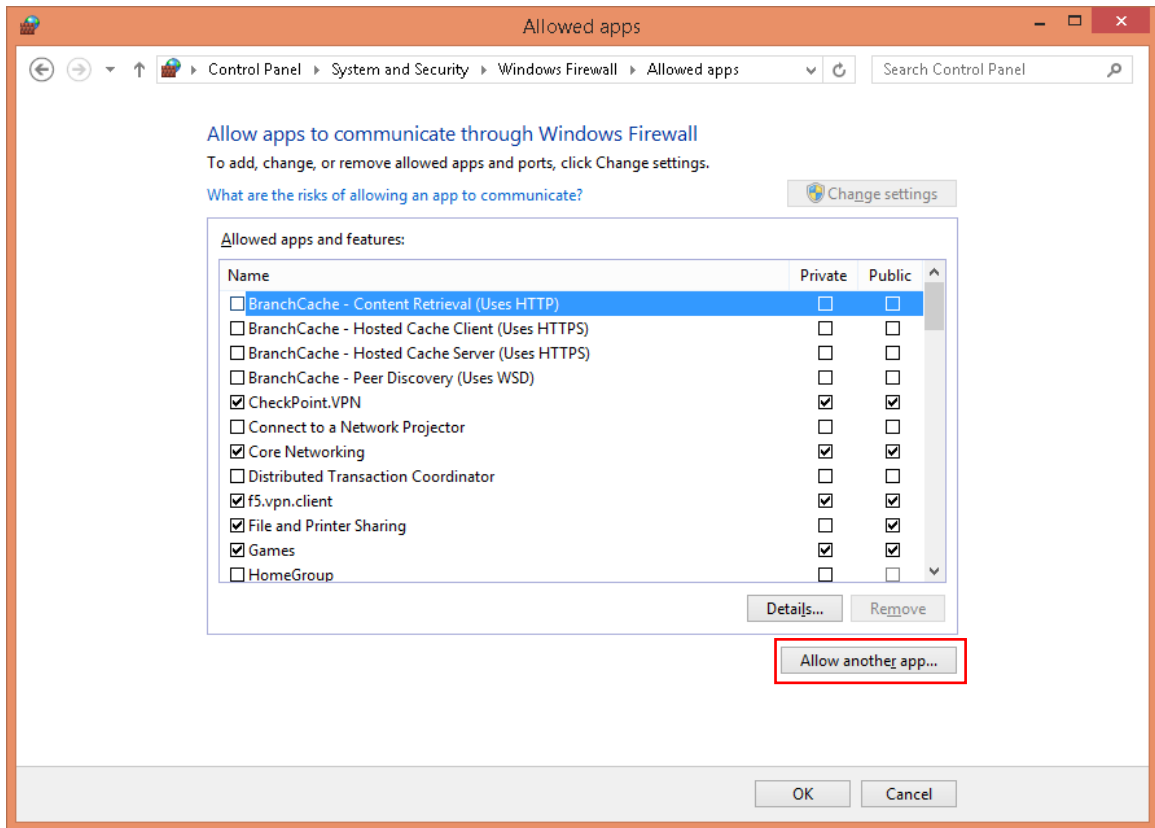
Add an app to the list of allowed apps.

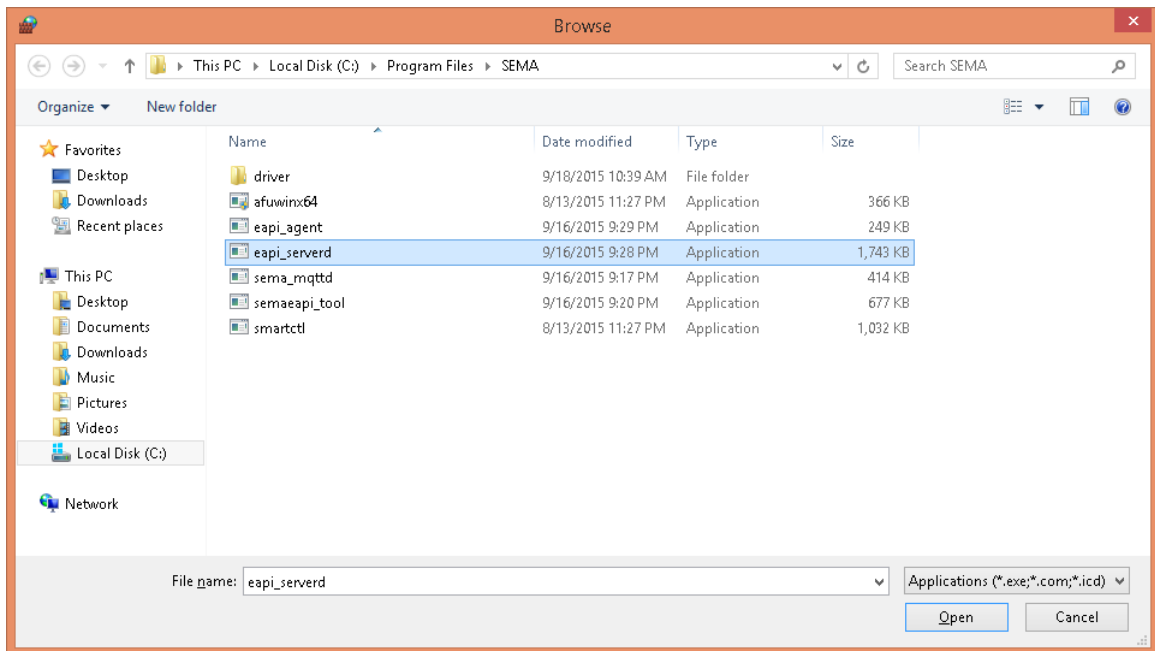


1. Open Windows Firewall by clicking the *Start* button icon, and then clicking *Control Panel*. In the search box, type *firewall*, and then click *Windows Firewall*.

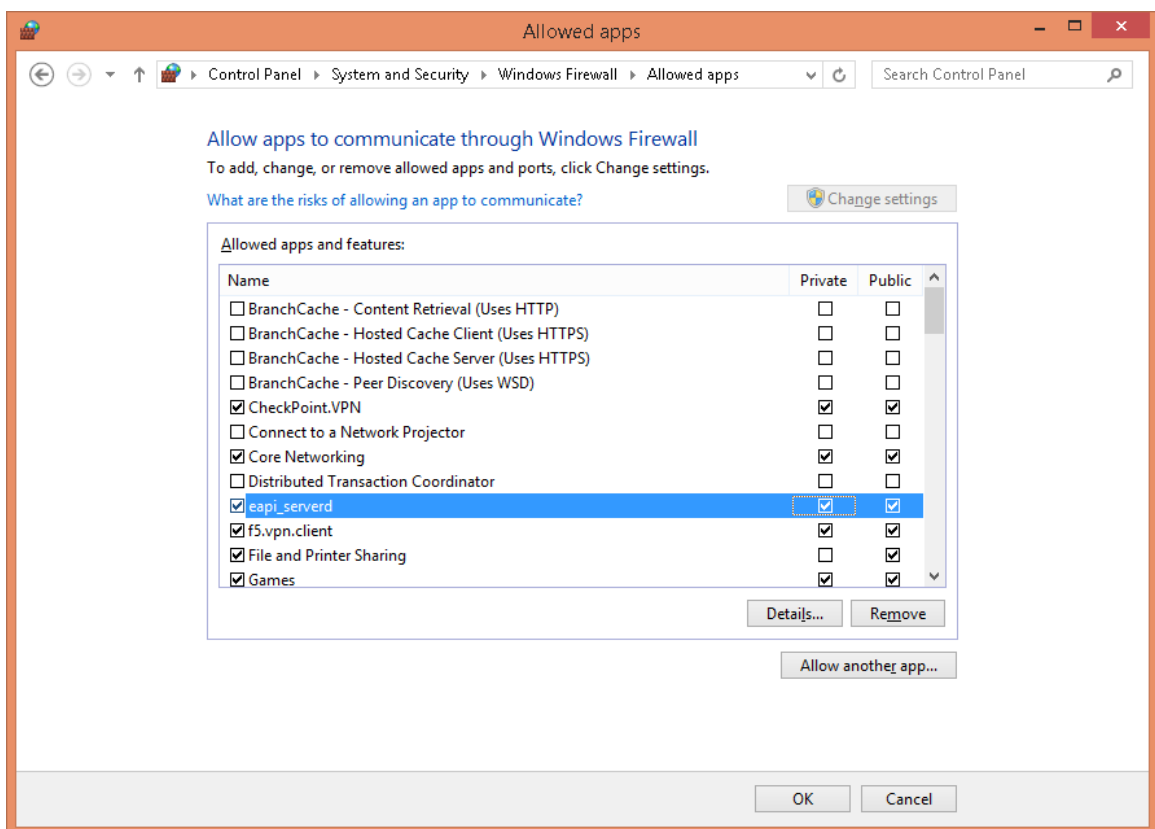
2. In the left pane, click *Allow a program or feature through Windows Firewall*.







Select the check box next to the program *eapi_serverd* to allow, select the network locations you want to allow communication on, and then click *OK*.



Use the same way to allow *sema_mqtt* (port 1883) to communicate through Windows Firewall.

4.2 Linux

Allow port through firewall

```

<?xml version="1.0"?>
<Server>
  <id>ADLINK_SEMA3.0.0</id>
  <security>
    <!-- true for SSL , false for non-SSL connection -->
    <SSL>true</SSL>
    <!-- the files must be located at the same folder as EAPI_Server -->
    <certificate>server.crt</certificate>
    <privatekey>server.key</privatekey>
    <dhfile>dh512.pem</dhfile>
    <passwd>202CB962AC59075B964B07152D234B70</passwd>
  </security>
  <ipversion>IPV4</ipversion>
  <port>9999</port>
  <maxconnection>10</maxconnection>
  <logsize>4096</logsize>
  <loglevel>warning</loglevel>
</Server>
~
~
~
~
~
"/etc/SEMA/config/conf.xml" [noeol] 18L, 538C          1,1          All

```

```

<?xml version="1.0"?>
<mqtt>
  <sn>ADLINK_SEMA</sn>
  <connection>
    <ip>61.222.153.59</ip>
    <port>1883</port>
    <timeout>10</timeout>
    <ping>10</ping>
    <cache>1000</cache>
  </connection>
  <configure>
    <Push_Interval>
      <timeout>60</timeout>
      <unit>second</unit>
    </Push_Interval>
    <Register>1</Register>
    <log>
      <level>warning</level>
      <size>4096</size>
    </log>
  </configure>
  <static_message>
    <ip />
  </static_message>
</mqtt>
"/etc/SEMA/config/mqtt.xml" 27L, 471C          1,1          Top

```

Find the setting files */etc/SEMA/config/conf.xml* and */etc/SEMA/config/mqtt.xml*, and allow the port in these files through firewall.

4.3 Configuration file

Setting	Description
id	The id string to identify the target device.
security\SSL	true: enable SSL socket. false: disable SSL socket
security\certificate	The location of certification
security\privatekey	The location of private key
security\dhfile	The location of dhfile
security\passwd	The password to connect to EAPI server. MD5 encrypted
ipversion	IPV4: use ipv4 IP address IPV6: use ipv6 IP address
port	The port number to listen for the client connection.
maxconnection	The max connection number at a time.
logsize	The max log size (in kB)
loglevel	The detail of log information "trace" "debug" "info" "warn " "error" "fatal"
watchdog\enable	Not support currently
watchdog\resettime	Not support currently

5 Security Connection

In case if SSL encryption is enabled, the same set of SSL keys should be installed on all computers that involved in remote communication via SEMA API. Keys can be generated on any decent Linux host using following commands:

Generate a private key:

```
# openssl genrsa -des3 -out server.key 1024
```

Generate a certificate signing request:

```
# openssl req -new -key server.key -out server.csr
```

Sign the certificate with the private key:

```
# openssl x509 -req -days 3650 -in server.csr -signkey server.key -out server.crt
```

Remove password requirement:

```
# cp server.key server.key.secure
```

```
# openssl rsa -in server.key.secure -out server.key
```

Generate a dhparam file:

```
# openssl dhparam -out dh512.pem 512
```

The resulting *dh512.pem*, *server.crt* and *server.key* need to be put in */etc/SEMA/cert/* or *c:\SEMA\cert* directory on all computers involved in remote communication via SEMA API. If these files are not generated and installed manually.



The install package come with predefined keys for customer's test. These keys will be distribute in public. Customer should create their own key to make sure the connection is security.

6 Getting Service

Contact us should you require any service or assistance.

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