



**LISTSERV Maestro Admin Tech Doc 6**

# **IP Addresses and Ports**

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This document is a LISTSERV Maestro Admin Tech Doc. Each admin tech doc documents a certain facet of the LISTSERV Maestro administration on a technical level. This document is number 6 of the collection of admin tech docs and explains the topic “IP Addresses and Ports”.

Last updated for LISTSERV Maestro 10.0-1 on September 29, 2021. The information in this document also applies to later LISTSERV Maestro versions, unless a newer version of the document supersedes it.

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## 1 IP-Addresses and HTTP Ports bound by LISTSERV Maestro

If not configured differently, then LISTSERV Maestro by default uses the HTTP protocol with the default HTTP port and binds on the IP addresses 0.0.0.0 (for IPv4) and [::] (for IPv6), which means that it can be reached on all IPv4 and IPv6 addresses of the server.

The default HTTP port that LISTSERV Maestro binds to is defined by the “Port” entry in the “tomcat.ini” file:

```
[maestro_install_folder]/conf/tomcat.ini
```

Example:

```
Port=8080
```

If the entry is not present, then in turn it defaults to port “80”.

See also section “2 Using Non-Standard Ports” about issues that you need to be aware of if you use a HTTP port (or HTTPS port) other than the default.

If you want LISTSERV Maestro to use the HTTPS protocol, you will have to configure this with the help of the “SecureServer” and/or “Secure-IP\_ADDRESS” entries in the “tomcat.ini”. For the HTTPS protocol, LISTSERV Maestro uses the HTTPS port that is defined by the “SecurePort” entry (instead of the “Port” entry for normal HTTP). See the “LMA Admin Tech Doc 9 – Securing Access With HTTPS” for more details.

If for some reason it is required that LISTSERV Maestro binds only to some of the available IP-addresses and/or if you want LISTSERV Maestro to bind to different HTTP ports on different IP-addresses, you need to edit the “BindAddress” entry in the tomcat.ini.

The behavior of the “BindAddress” entry differs depending on the value of the “SecureServer” entry and if there are any “Secure-IP\_ADDRESS” entries:

BindAddr	SecureServer	Secure-IP_ADDRESS	Resulting Server Behavior
			Grey = HTTP Orange = HTTPS Violet = HTTPS, possibly mixed with HTTP
not present	false	not present	Server binds to 0.0.0.0 and [::] for HTTP access.
not present	false	present	Server binds exactly (and only) to the addresses from all “Secure-IP_ADDRESS” entries, all for HTTPS access.
not present	true	not present	Server binds to 0.0.0.0 and [::] for HTTPS access.
not present	true	present	Server binds to all IPv4 and IPv6 addresses individually, all for HTTPS access.
not present	IP address list	not present	Server binds exactly (and only) to the addresses from the “SecureServer” entry, all for HTTPS access.
not present	IP address list	present	Server binds exactly (and only) to the addresses from all “Secure-IP_ADDRESS” entries and also to the addresses from the “SecureServer” entry, all for HTTPS access.
IP address list	false	not present	Server binds exactly (and only) to the addresses from the “BindAddress” entry, all for HTTP access.
IP address list	false	present	Server binds exactly (and only) to the addresses from the “BindAddress” entry. All of these addresses that match one of the “Secure-IP_ADDRESS” entries are bound for HTTPS access, all others for HTTP access. Any “Secure-IP_ADDRESS” that is not also listed in “BindAddress” is ignored.
IP address list	true	not present	Server binds exactly (and only) to the addresses from the “BindAddress” entry, all for HTTPS access.
IP address list	true	present	Server binds exactly (and only) to the addresses from the “BindAddress” entry, all for HTTPS access. Any “Secure-IP_ADDRESS” that is not also listed in “BindAddress” is ignored.
IP address list	IP address list	not present	Server binds exactly (and only) to the addresses from the “BindAddress” entry. All of these addresses that match one of the addresses given in “SecureServer” are bound for HTTPS access, all others for HTTP access. Any address in “SecureServer” that is not also listed in “BindAddress” is ignored.
IP address list	IP address list	present	Server binds exactly (and only) to the addresses from the “BindAddress” entry. All of these addresses that match one of the “Secure-IP_ADDRESS” entries or one of the addresses given in “SecureServer” are bound for HTTPS access, all others for HTTP access. Any “Secure-IP_ADDRESS” and any address in “SecureServer” that is not also listed in “BindAddress” is ignored.

If present, the value of the “BindAddress” entry must be as follows:

- Alias to bind to all available **IPv4** addresses (but not to any IPv6 addresses):

```
BindAddress=OnlyIPV4Addresses
```

LISTSERV Maestro will then bind to all available IPv4 addresses, using the default port as defined by the “Port” entry.

- Alias to bind to all available **IPv6** addresses (but not to any IPv4 addresses):

```
BindAddress=OnlyIPV6Addresses
```

LISTSERV Maestro will then bind to all available IPv6 addresses, using the default port as defined by the “Port” entry.

- To bind to a **specific set** of addresses (IPv4 and/or IPv6), or to use different HTTP ports on different addresses:

```
BindAddress=ADDRESS_LIST
```

Where “ADDRESS\_LIST” is specifies one or several comma-separated IP-addresses, optionally with ports. You can specify both IPv4 and IPv6 addresses (also mixed), but IPv6 addresses must be enclosed in brackets “[” and “]”. An IPv4 address with port is specified as `address:port`, an IPv6 address with port is specified as `[address]:port`. LISTSERV Maestro will then bind only to the specified addresses, using the specified ports. If for an address no port is specified, then the default port as defined by the `Port` entry will be bound on that address.

### Examples:

Bind only one IPv4 address, using the default HTTP port:

```
BindAddress=192.168.1.1
```

Bind all available IPv4 addresses, but none of the IPv6 addresses, using the default HTTP port:

```
BindAddress=OnlyIPV4Addresses
```

Bind three different addresses (where the second address is an IPv6 address), using the default HTTP port on each:

```
BindAddress=192.168.1.15, [fe80::7026:d336:94f8:74c7], 192.168.1.24
```

Bind three different addresses, using the default HTTP port on the first, but different ports on the other two, also the second address is an IPv6 address:

```
BindAddress=192.168.1.15, [fe80::7026:d336:94f8:74c7]:8081, \
192.168.1.24:8082
```

**Note:** If you have several LISTSERV Maestro components installed on the same server, then all of them will be affected by this change. E.g., it is **not** possible to use different bindings for each of the components, if the components are installed on the same server. However, if the components are installed on different servers, they can use different bindings.

**Important:** This change will only be effective after a restart of the component in question.

## 2 Using Non-Standard Ports

The components of LISTSERV Maestro use a number of ports to communicate with each other and with the external world.

The ports used are standard ports and will work well under most circumstances. However, under certain conditions it may be desirable to change one or several of them to other ports, for example, if another application installed at the same server already uses one of the ports LISTSERV Maestro wants to use.

### 2.1 Ports used by LISTSERV Maestro

The following subchapters list the individual ports used by each of the LISTSERV Maestro components.

#### 2.1.1 Ports used by the Administration Hub

The Administration Hub uses three different ports:

- For HTTP/HTTPS access to the Administration Hub user interface (via a web browser), the Administration Hub uses the standard HTTP/HTTPS port **80** or **443**.
- For internal communication with the other components, the Administration Hub uses port **1099**.
- For shutdown of the application server, the Administration Hub uses port **8007**.

#### 2.1.2 Ports used by the Maestro User Interface

The Maestro User Interface uses four different ports:

- For HTTP/HTTPS access to the Maestro User Interface (via a web browser), the Maestro User Interface uses the standard HTTP/HTTPS port **80** or **443**.
- For internal communication with the Administration Hub, the Maestro User Interface uses port **1099**.
- For the internal database connection, the Maestro User Interface uses port **3306**.
- For shutdown of the application server, the Maestro User Interface uses port **8007**.

#### 2.1.3 Ports used by Maestro Tracker

Maestro Tracker uses four different ports:

- To collect the tracking events from the mails that are sent with the Maestro User Interface, Maestro Tracker uses the standard HTTP/HTTPS port **80** or **443**.
- For internal communication with the Administration Hub, the Maestro User Interface uses port **1099**.
- To accept connections from the Maestro User Interface to transfer the tracking events, Maestro Tracker uses the Communications Port **7000**.
- For shutdown of the application server, Maestro Tracker uses port **8007**.

## 2.2 Configuring Port Usage

If any of the ports described in the previous sub-section is already in use on the server where you want to install the component in question, you can change LISTSERV Maestro's use of this port as described below.

Note, that some components make use of the same port as other components. This is not a problem between the different components of LISTSERV Maestro. E.g., if you have several components on the same server, then these components share usage of these ports (e.g. port 80 for HTTP access and port 1099 for internal communication). You do not have to configure one component to use a different port than the other, while the components are on the same server (actually, you cannot do this, see below).

### 2.2.1 Configuring the HTTP Port

To configure the HTTP port, you need to edit the "Port" entry in the file:

```
[maestro_install_folder]/conf/tomcat.ini
```

as described in section "1 IP-Addresses and HTTP Ports bound by LISTSERV Maestro". If you leave out the entry from the `tomcat.ini` file, the default port "80" will be used for HTTP connections.

**Note:** If you have several LISTSERV Maestro components installed on the same server, then all of them will be affected by this change. E.g., it is **not** possible to use different HTTP ports for each of the components, if the components are installed on the same server. However, if the components are installed on different servers, they can use different HTTP ports.

When changing the HTTP port, there are a few issues you should be aware of:

**Note:** These changes will only become active after LISTSERV Maestro has been restarted, i.e. after you have performed all the steps described below, restart LISTSERV Maestro. (Except in those cases where it is explicitly noted that you need to perform the configuration step after the restart, not before.)

- If you change the HTTP/HTTPS port on a server where it affects the Maestro User Interface component, then you also have to change the "LUI Access URL for Users" and "URL for Recipients, Subscribers and Others" settings in the Administration Hub, to reflect this port change.

This may affect the "Default LUI Access URL for Users" under **Main Menu → LUI Settings → Application Default Settings → URL Settings** and/or the individual "LUI Access URL for Users" setting on group or user level.

You may also have to change the "LUI Access URL for Admin" setting (on default level) and/or the "URL for Recipients, Subscribers and Others" setting (on group or user level), if these settings do not inherit the "LUI Access URL for Users" setting.

If any LISTSERV Web Interface Links have been defined for the Maestro User Interface (in the Administration Hub), then these must be refreshed so that they are aware of the new HTTP/HTTPS port: In the Administration Hub, select **Main Menu → LUI Settings → LISTSERV Web Interface Access → LISTSERV Web Interface Links**. If you have any entries in the table on this page, then you need to refresh **each** entry as follows (do this **after** applying all the other steps described here and after you have restarted LISTSERV Maestro):

Click the "Edit" link of the entry. On the next page, take note of the host name which is currently selected in the drop-down list at the top, then copy the access URL from the edit

box at the bottom (for later paste). Then click the “**Delete Link**” button. This deletes the old interface link and you are now back on the previous page. Now click the “**Create New Link**” button. On the next page, select the same server as was used before from the drop-down list at the top, then paste the access-URL which you copied before into the edit box at the bottom. Click “**OK**” to re-create the link. This way, you have deleted the old interface link and replaced it with an equivalent new one which is now aware of the new HTTP port used by LISTSERV Maestro.

Important: If the LISTSERV Web Interface (WA) is also being hosted by LISTSERV Maestro’s Tomcat, then the HTTP port change will also affect the WA, which means that also the access URL which you copied and pasted above needs to be changed (to reflect the new HTTP port). In this case, before you click “**OK**”, first edit the pasted access URL so that it contains the new HTTP port (this is not necessary if the WA is being hosted on a different server).

- If you change the HTTP/HTTPS port on a server where it affects the Maestro Tracker component (e.g. where this component is installed), then you also have to change the “Tracking URL” setting in the Administration Hub, to reflect this port change.

This may affect the “Default Tracking URL” under **Main Menu → LUI Settings → Application Default Settings → URL Settings** and/or the individual “Tracking URL” setting on group or user level.

- If you change the HTTP/HTTPS port on a server where it affects the Administration Hub component, then you also have to change the “HUB Access URL for Admin” setting in the Administration Hub, to reflect this port change, under **Main Menu → LUI Settings → Application Default Settings → URL Settings**.
- The Maestro User Interface and the Administration Hub user interface are both accessed via this HTTP/HTTPS port. This means, that if you change this port, you can no longer access these interfaces by entering their plain URL into the location field of your browser. Instead you have to add the port number (with a colon “:”) to the URL.

Example: If you change the HTTP port to 8080, then you need to use an access URL like the following one: “`http://your_host:8080/lui`”.

- The shortcuts to access the Maestro User Interface and the Administration Hub user interface that are installed in the Windows start menu do not include any port information, e.g. they expect the user interfaces to be accessible on the standard port 80. If you change this port, then you need to edit these shortcuts and add “:yourPort” to the URL, as described above.
- If LISTSERV Maestro is installed behind a firewall (which is advisable) and you want to be able to access the Maestro User Interface and/or the Administration Hub user interface from a computer outside the firewall, then you must configure your firewall to allow access on the port you configured instead of the standard HTTP port.
- Similarly, if the Maestro Tracker component is installed behind a firewall, then you **have to** configure the firewall to give all outside users access to the server where Maestro Tracker is installed on the port that is configured for HTTP access. This normally is the port 80, or it is a different port, if you changed it as described above.

This is very important: The whole tracking mechanism of LISTSERV Maestro **will not work** if the Maestro Tracker component is installed behind a firewall in a way, that outside clients do not have access to its configured HTTP port.

## 2.2.2 Configuring the HTTPS Port

To configure the HTTPS port, you need to edit the “SecurePort” entry in the file:

```
[maestro_install_folder]/conf/tomcat.ini
```

If you leave out the entry from the `tomcat.ini` file, the default port “443” will be used for HTTPS connections.

See “LMA Admin Tech Doc 9 – Securing Access with HTTPS” for more details about the HTTPS port configuration.

**Note:** If you have several LISTSERV Maestro components installed on the same server, then all of them will be affected by this change. E.g., it is **not** possible to use different HTTPS ports for each of the components, if the components are installed on the same server. However, if the components are installed on different servers, they can use different HTTPS ports.

**Important:** These changes will only be effective after a restart of the component in question.

When changing the HTTPS port, you need to be aware of the same issues (for example adjusting certain HUB settings), as when changing the HTTP port. Please see section “2.2.1 Configuring the HTTP Port” about what those issues are (only applied to HTTPS instead of HTTP).

## 2.2.3 Configuring the Internal Communication Port

This port can be configured independently for each component. However, if the components are installed on the same server, then you must configure them to use the same internal communication port.

**Important:** These changes will only be effective after a restart of the component in question.

- To configure the communication port for the **Administration Hub component**, you need to edit the following file:

```
[maestro_install_folder]/hub/hub.ini
```

Edit or add the entry “RMIPort” (if the entry is not present or is commented out, the component defaults to port 1099).

Example: `RMIPort=5310`

In addition, you need to edit the INI-file of each component that works together with this Administration Hub component (usually one Maestro User Interface and one Maestro Tracker component):

For the Maestro User Interface component, edit the file:

```
[maestro_install_folder]/lui/lui.ini
```

Edit or add the entry “HubRMIPort” (if the entry is not present or is commented out, it defaults to port 1099).

For the Maestro Tracker component, edit the file:

```
[maestro_install_folder]/trk/tracker.ini
```

Here too, edit the entry “HubRMIPort” in the same way as described above for the Maestro User Interface component.

- To configure the communication port for the **Maestro User Interface**, you need to edit the following file:

```
[maestro_install_folder]/lui/lui.ini
```

Edit or add the entry “RMIPort” (if the entry is not present or is commented out, the component defaults to port 1099).

Example:       RMIPort=5310

- To configure the communication port for **Maestro Tracker**, you need to edit the following file:

```
[maestro_install_folder]/trk/tracker.ini
```

Edit or add the entry “RMIPort” (if the entry is not present or is commented out, the component defaults to port 1099).

Example:       RMIPort=5310

In addition, you need to edit the INI-file of the Maestro User Interface component that works together with this Maestro Tracker component:

On the server where the Maestro User Interface component is installed, edit the file:

```
[maestro_install_folder]/lui/lui.ini
```

Edit or add the entry “TrackerRMIPort” (if the entry is not present or is commented out, it defaults to port 1099).

## 2.2.4 Configuring the Communications Port

This port is only used by the Maestro Tracker component. It can be easily configured via the Administration Hub: **Main Menu → TRK Settings → General Administration**.

Here you can edit the Communications Port you want to use. The change will be effective immediately.

## 2.2.5 Configuring the Internal Database Connection Port

This port is only used by the Maestro User Interface component. To configure it, you need to edit the following file:

```
[maestro_install_folder]/lui/database/my.ini
```

In this file, you will find the entry “port” both in the “[client]” and the “[mysqld]” section. Edit the value of **both** of these entries to change the database connection port.

**Important:** This change will only be effective after a restart of the Maestro User Interface component.

In this case, the LUI component will likely not start up and in the HUB, the database status will likely show up as “Connection Failure”, because LISTSERV Maestro can no longer connect to the internal database using the standard port.

Therefore, you need to login to the HUB and configure the new port in the system database connection settings, under **Main Menu → LUI Settings → System Database Status**.

To supply your custom port, you must supply the connection to the internal database as if it were an external database.

For the connection settings specify:

Database Plugin:	MySQL ConnectorJ Database Plugin
Database Name:	LUI
MySQL Username:	luiuser
Password:	lui
Database Host Name:	localhost
TCP/IP Port:	<YOUR_CUSTOM_PORT_HERE>
SSL:	Off

(A restart is not required after supplying the new connection settings.)

### 2.2.6 Configuring the Application Server Shutdown Port

To configure the Server Shutdown Port port, you need to edit the “ShutdownPort” entry in the file:

```
[maestro_install_folder]/conf/tomcat.ini
```

Example:       ShutdownPort=9100

If you leave out the entry from the `tomcat.ini` file, port 8007 will be used by default.