**LISTSERV Maestro Admin Tech Doc 12**

# Adding Content to the Tomcat Server

This document is a LISTSERV Maestro Admin Tech Doc. Each admin tech doc documents a certain facet of the LISTERV Maestro administration on a technical level. This document is number 12 of the collection of admin tech docs and explains the topic "Adding Content to the Tomcat Server".

Last updated for LISTSERV Maestro 10.0-1 on October 21, 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 The information in this document also applies to later LISTSERV Maestro versions, unless a newer version of the document supersedes it.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 Adding the LISTSERV Web Interface (WA) to the Tomcat Server

The Tomcat server of LISTSERV Maestro can also be used to serve the LISTSERV Web Interface (WA) in case that LISTSERV itself is installed on the same server as LISTSERV Maestro, thus eliminating the need for an extra web-server for serving the web interface pages of LISTSERV.

If LISTSERV Maestro and LISTSERV were installed together via the Express Setup option of the LISTSERV Maestro Setup-Suite, then this integration of the LISTSERV Web Interface into the Tomcat server has already been performed by the setup procedure.

If LISTSERV Maestro and LISTSERV are installed independently (but on the same server), then it is still possible to use LISTSERV Maestro's Tomcat server to also serve the LISTSERV Web Interface pages. The necessary folders are already in place in the Tomcat installation folder, so the only additional configuration necessary is to tell LISTSERV about this and to prepare the `wa.exe`:

- Edit LISTSERV's `site.cfg` file and add (or edit) the following entries:

  `WWW_ARCHIVE_CGI=/scripts/wa.exe`

  `WWW_ARCHIVE_DIR=[maestro_install_folder]\webapps\archives`

  Where you replace `[maestro_install_folder]` accordingly.

- Put the `wa.exe` into a suitable location. You can either put it into LISTSERV Maestro's default location, or you can put it into any other location that better suits your local system.

  - To put the `wa.exe` into LISTSERV Maestro's default location, copy it from LISTSERV's `MAIN` folder to the following folder:

    `[maestro_install_folder]\webapps\scripts\WEB-INF\cgi\`

  - To put the `wa.exe` into a non-default location, simply copy it from LISTSERV's `MAIN` folder to whatever folder you prefer.

    Because the `wa.exe` is now in a non-default location, you also need to edit the following file:

    `[maestro_install_folder]\conf\tomcat.ini`

    and add an entry like this one:

    `WA-CGIRoot.null=PATH_TO_WA_FOLDER`

    where you replace `PATH_TO_WA_FOLDER` with the full path of the folder into which you copied the `wa.exe` file (only the pathname of the containing folder, not of the `wa.exe` itself). On Windows, remember that in the pathname, you cannot use the normal single backslash "\". Instead, either use double backslashes "\\" or a single forward slash "/".

  Also, verify that the account which is used to run LISTSERV Maestro (i.e. the account which is used to run the "L-Soft Tomcat" service) has execute rights on this `wa.exe` file. If not, add the execute right.

- Finally, restart LISTSERV to make the changes effective.

# 2 Adding Custom Content to the Tomcat Server

In LISTSERV Maestro, the various parts which are served by Tomcat are called "contexts". Each context is an entity of its own inside of the Tomcat server. Each context has a name which is also part of the URL that you use to access the context. More precisely, the context's name is the part which appears right after the server name. For example, for LUI the context name is (unsurprisingly) "`lui`", so the URL is "`http://yourhost/lui`". Other LISTSERV Maestro contexts are "`hub`", "`trk`", "`list`", "`archives`" and "`scripts`", with the respective URLs "`http://yourhost/hub`", "`http://yourhost/list`", etc.

If you enter a context's access URL (as above), what you actually get is the default page for that context (usually a page called `index.html`, or `index.jsp` or `default.htm` or something similar). So if you type "`http://yourhost/lui`", then what you actually get is "`http://yourhost/lui/index.jsp`", i.e. the default page for the `lui` context.

To add content of your own (for example HTML pages, images, downloadable files etc.) to the Tomcat installation of LISTSERV Maestro, you simply create a new context and put your files into that context. The files are then accessible via URLs in that context.

Out of the box, Maestro does not support content or pages which are not part of a context, i.e. URLs like "`http://yourhost`" (i.e. show me the default page of the no-context) or like "`http://yourhost/somepage.html`" (i.e. show me the page "`somepage.html`" in the no-context) are not possible, unless some additional configuration steps are taken (see section "2.2 Defining the Default Context").

## 2.1 Adding Content as a New Context

To create a new context with your own content, the first question that you have to decide is the following:

Does the server where Tomcat is running have several different host names, and if yes, do you want your own content to show up for all of these host names or not?
Or in different words: Depending on which host name is used in the access URL when the user tries to access your content, is the content to show up for all host names in the URL, or only for specific ones?

The way that you proceed depends on how you answer this question:

- If the server has only a single host name anyway, or if you want your content to show up for all host names:

  Create a new folder inside of the "`webapps`" folder of LISTSERV Maestro, like this:

      [install_folder]/webapps/CONTEXT/

  where you replace "`CONTEXT`" with the name of your context, for example:

  `[install_folder]/webapps/sample/`

  Then proceed as described further below.

- If the server has several host names, and you want your content to show up not for all of them, but only for one (or several) specific host name(s):

  First you need to decide which one of the desired host names shall be the "main host name". All others will be aliases. If you have only one desired host name, then this will be the "main host name" and there are no aliases.

Then create a new folder like this one:

```
[install_folder]/webapps-MAIN_HOST_NAME/CONTEXT/
```

where you replace "`MAIN_HOST_NAME`" with the "main host name" and "`CONTEXT`" with the name of your context, for example:

```
[install_folder]/webapps-host.domain.com/sample/
```

Now, add an entry like the following to the `tomcat.ini` file:

```
AdditionalHost.N=MAIN_HOST_NAME,ALIASLIST
```

where you replace "`MAIN_HOST_NAME`" with the "main host name" and "`ALIASLIST`" with a comma-separated list of all aliases (or leave out the "`,ALIASLIST`" part if there are no aliases). Also you need to replace the "*N*" with a unique number, i.e. there must not be two "`AdditionalHost.N`" entries with the same "*N*". For example:

```
AdditionalHost.0=host.domain.com,alias.domain.com,alias.domain.
org
```

```
AdditionalHost.1=host-without-alias.domain.com
```

Note, that you can have several such "`AdditionalHost`" entries in the `tomcat.ini` file (as shown in the example above): Each of these entries defines one additional host, with a "main host name" and optionally a list of aliases for this host. The host names used by these entries must be unique, i.e. you must not use the same host name in two different "`AdditionalHost`" entries (neither as a "main host name" nor as an alias). Also, all host names that are used in these "`AdditionalHost`" entries must be real host <u>names</u>. Bare IP-addresses are not allowed.


As your next step, copy the following folder (and the files in it) from the "`archives`" context to your own freshly created context (the archives context is automatically installed with each Maestro Tomcat). Copy the following folder:

```
[install_folder]/webapps/archives/WEB-INF/
```

So that at the end you have something like this:

```
[install_folder]/webapps/CONTEXT/WEB-INF/
```

or (in case you have a specific "main host name"):

```
[install_folder]/webapps-MAIN_HOST_NAME/CONTEXT/WEB-INF/
```


In the "`WEB-INF`" folder that you just copied, edit the file "`web.xml`" and look for the entry that says "`<param-value>archives</param-value>`". Change the text "`archives`" as follows:

- If your context is in the default "`webapps`" folder, then change the text to your context name, like this:

```
<param-value>CONTEXT</param-value>
```

- If your context is in a specific "`webapps-MAIN_HOST_NAME`" folder, then change the text to the "main host name" plus the context name, separated by a dash "`-`", like this:

```
<param-value>MAIN_HOST_NAME-CONTEXT</param-value>
```

Now you can put whatever files you want into your "`CONTEXT`" folder (you can also create subfolders). Usually you may want to include a start page like "`index.html`" or similar, but you can also have other pages, even in subfolders. Also image files or other downloadable content if you want.

Restart Maestro to make it aware of the new context.

The files in the new context will then be accessed for example as follows:

| | |
|---|---|
| `http://HOST/CONTEXT` | access to the start page (if supplied) |
| `http://HOST/CONTEXT/` | also access to the start page (if supplied) |
| `http://HOST/CONTEXT/page.html` | access to page "`page.html`" |
| `http://HOST/CONTEXT/sub/other.html` | access to page "`other.html`" in subfolder "`sub`" |

where of course you have to replace "`CONTEXT`" with your own context name and "`HOST`" with the correct host name for this context:

- If your context is in the default "`webapps`" folder, then you can use any host name that is assigned for this server to access this context, **except** for any host names which are used as a "main host name" or as an alias host name, as described above (if any).

- If your context is in a specific "`webapps-MAIN_HOST_NAME`" folder, then you can only use this "main host name" and its aliases to access this context. Also, you cannot use this "main host name" or any of its aliases to access any contexts in the default "`webapps`" folder (including the default Maestro contexts) or any contexts in other "`webapps-DIFFERENT_MAIN_HOST_NAME`" folders (if there are any).

**Notes:**

- In the default "`webapps`" folder, do not create custom contexts with one of the reserved names used by LISTSERV Maestro, i.e. do not call your context `lui`, `hub`, `trk`, `list`, `archives`, `scripts` or `z`. (Yes, the single letter "`z`" is also a reserved context name.)

- Do not put any files into the `WEB-INF` folder, as they would not be accessible via a URL!

- When creating subfolders in your context, do not create a folder called "`META-INF`", as this is a reserved name!

## *2.2 Defining the Default Context*

The default context is the context that is used if the user types the access URL **without** any context name, i.e. for example only "`http://yourhost`" or "`http://yourhost/`" or "`http://yourhost/somepage.html`".

As said above, this is not supported out of the box by Maestro but must be configured first.

**Note:** Do **not** define any of the reserved LISTSERV Maestro contexts as the default context (`lui`, `hub`, `trk`, `list`, `archives`, `scripts` or `z`)!

To define a default context, create a new context (with a new subfolder either in "`webapps`" or in "`webapps-MAIN_HOST_NAME`") as described above.

In addition, before restarting Maestro, include the following entry in the `tomcat.ini`:

- If your context is in the default "`webapps`" folder:

        DefaultContext=CONTEXT

- If your context is in a specific "`webapps-MAIN_HOST_NAME`" folder:

        DefaultContext.MAIN_HOST_NAME=CONTEXT

where you replace "`CONTEXT`" with the name of your context and, if applicable, "`MAIN_HOST_NAME`" with the corresponding "main host name".

For example for a context called "`sample`" you would have

        DefaultContext=sample

or

        DefaultContext.host.domain.com=sample


With this entry in the `tomcat.ini`, the specified default context can now be accessed in two ways:

- As before, you can still specify the context directly in the URL:

    `http://HOST/CONTEXT`                         access to the start page (if supplied)

    `http://HOST/CONTEXT/`                        also access to the start page (if supplied)

    `http://HOST/CONTEXT/page.html`              access to page "`page.html`"

    `http://HOST/CONTEXT/sub/other.html`  access to page "`other.html`" in subfolder "`sub`"

- In addition, you can leave out the context in the URL but will still see the same pages (but this works only for the default context, of course):

    `http://HOST`                          access to the start page of the default context (if supplied)

    `http://HOST/`                         also access to the start page of the default context (if supplied)

    `http://HOST/page.html`               access to page "`page.html`" in the root folder of the default context

    `http://HOST/sub/other.html`          access to page "`other.html`" in subfolder "`sub`" of the default context

# 3 Enabling Access Logging for Added Content

If you add your own content to be served by the Tomcat server, then you might also want to enable the usual web server logging for this content.

With enabled access logging, Tomcat will create log files in the same format as those created by standard web servers. These logs can later be analyzed by standard log analysis tools to track page hit counts, user session activity, and so on. The log files are created separately (under different names) for all contexts for which access logging is enabled and are rolled over nightly at midnight. All access log files are created in the following folder:

`[install_folder]/logs`

## 3.1 Enabling Access Logging for WA

To enable access logging for the WA component itself, edit the following file:

`[install_folder]/conf/maestro/localhost/scripts.xml`

and/or to enable access logging for the WA archives, edit the following file:

`[install_folder]/conf/maestro/localhost/archives.xml`

In this file, add a "`<Valve>`" tag similar to the following, just before the closing "`</Context>`" tag, so that the resulting XML file looks similar to this (the part that you are supposed to add is marked with red):

```
<Context>
    <Manager className="org.apache.catalina.session.StandardManager" pathname=""/>
    <Valve prefix="YOURNAME_access_log."
           className="org.apache.catalina.valves.AccessLogValve"
           directory="logs" suffix=".log" pattern="common" resolveHosts="false"/>
</Context>
```

In this tag, replace "`YOURNAME`" with a name that uniquely identifies the context for which you are enabling the logging, for example "`WA`" or "`Archives`" (this will become part of the log file name).

Then restart LISTSERV Maestro.

## 3.2 Enabling Access Logging for Custom Content

To enable access logging for a given custom content that you have added to Tomcat, do so here:

Copy the following file:

`[install_folder]/conf/maestro/localhost/archives.xml`

to create this file:

`[install_folder]/conf/maestro/localhost/CONTEXT.xml`

or (in case you have a specific "main host name") to create this file:

`[install_folder]/conf/maestro/MAIN_HOST_NAME/CONTEXT.xml`

(where "`CONTEXT`" stands for the name of your context).

Edit the XML file that you just copied and look for the "`<Valve>`" tag. If one already exists, edit the value of its "`prefix`" attribute. If no such "`<Valve>`" tag exists, add a new one similar to the following, just before the closing "`</Context>`" tag. The resulting XML file should then look similar to this (the part that you are supposed to add is marked with red):

```
<Context>
    <Manager className="org.apache.catalina.session.StandardManager" pathname=""/>
    <Valve prefix="CONTEXT_access_log."
          className="org.apache.catalina.valves.AccessLogValve"
          directory="logs" suffix=".log" pattern="common" resolveHosts="false"/>
</Context>
```

In this tag, replace "`CONTEXT`" with the name of your context, or in case that you have a specific "main host name", replace it with the "main host name" and the context name, separated by a dash "`-`" (this prefix will become part of the log file name).

Then restart LISTSERV Maestro.

Example for the context "sample" in the default folder "`webapps`":

```
<Context>
    <Manager className="org.apache.catalina.session.StandardManager" pathname=""/>
    <Valve prefix="sample_access_log."
          className="org.apache.catalina.valves.AccessLogValve"
          directory="logs" suffix=".log" pattern="common" resolveHosts="false"/>
</Context>
```

Example for the context "sample" in the specific folder "`webapps-host.domain.com`":

```
<Context>
    <Manager className="org.apache.catalina.session.StandardManager" pathname=""/>
    <Valve prefix="host.domain.com-sample_access_log."
          className="org.apache.catalina.valves.AccessLogValve"
          directory="logs" suffix=".log" pattern="common" resolveHosts="false"/>
</Context>
```

## 3.3 Enabling Access Logging for the Default Context

If you have configured one of your additional content contexts to also serve as the default context (as described in section "2.2 Defining the Default Context"), then it is possible to access this context in two ways: Either with the full context URL or with the default URL that omits the context part. For example, if "sample" has been defined as the default context, then both of the following URLs will access the same page from that context:

`http://hostname/sample/page.html`          (= access via full context URL)

`http://hostname/page.html`                       (= access via default URL, without context part)

But even though both the full context URL and the default URL will access the same page, there is still a difference between the two when it comes to logging this access:

If you enable access logging for the context as described above, then only requests that use the full context URL will actually be logged. Requests that use the default URL will not be logged.

If you also want to log all access that goes via the default URL, then in addition to enabling the access log for the context itself (as described above), you also need to edit the following file:

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

- If your context is in the default "`webapps`" folder, add this entry:

```
DefaultContextAccessLog=true
```

- If your context is in a specific "`webapps-MAIN_HOST_NAME`" folder, add this entry:

```
DefaultContextAccessLog.MAIN_HOST_NAME=true
```

So actually, if you have a context that also serves as the default context, then you have four choices regarding the access logging of this context:

1. No access logging at all. This is simple: Do not configure access logging for the context and also do not add the new entry to the `tomcat.ini`.

2. Full access logging, no matter if access happens via the full context URL or the default URL: Configure access logging for the context **and** add the new entry to the `tomcat.ini`.

3. Access logging only for access via the full context URL (but not for access via the default URL): Only configure access logging for the context but do not add the new entry to the `tomcat.ini`.

4. Access logging only for access via the default URL (but not for access via the full context URL): Only add the new entry to the `tomcat.ini` but do not configure access logging for the context itself.

Note, that if you enable access logging both for access via the full context URL and via the default URL (option 2 of the above), then both access types will be logged into the same log file.