

Tosca

User Manual



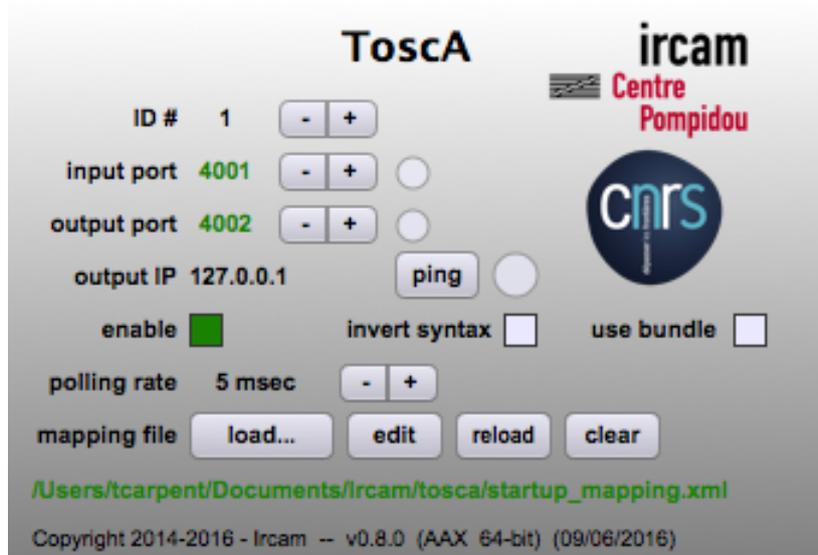
UMR 9912 STMS, Ircam – CNRS – Sorbonne Université
1 place Igor-Stravinsky,
75004, Paris, France
<http://www.ircam.fr>

Updated : June 13, 2018, Thibaut Carpentier

Contents

1	Description	3
2	Installation	4
2.1	Mac OSX	4
2.2	Windows	4
3	OSC mapping	5
4	OSC messages	5
5	Setup	6
6	Miscellaneous informations / Known bugs	7
7	References	9
8	Licenses	10
9	IRCAM Forum Software License Agreement	11

1 Description



TosCA stands for Thibaut's OpenSoundControl Automation.

TosCA plugin can be inserted into a DAW (Digital Audio Workstation) in order to send/receive parameters' automation. It is based on the OSC (Open Sound Control) protocol (<http://www.opensoundcontrol.org>). The plugin does not process any audio (the audio signals are just bypassed actually).

- "ID" : this is the ID of the current instance of the plugin. This determines the OSC pattern of incoming/outgoing OSC messages. (cf Section 4)
- "input port" : this is the (UDP) port for incoming OSC messages.
- "output port" : this is the (UDP) port for sending OSC messages.
- "output IP" : this is the IP address of the destination of the outgoing OSC messages. For local communication, you could use "127.0.0.1" or "localhost".
- "enable" : this toggle will enable or disable the OSC send/receive.
- "invert syntax" : this toggle will "invert" the OSC pattern of incoming/outgoing messages. e.g. "/1/azim" will be converted into "/azim/1". (cf Section 4)
- "use bundle" : when enabled, this packs synchronous OSC messages into a single OSC bundle.
- "polling rate" : this is the refresh rate of a background thread polling for incoming/outgoing messages.
- "mapping file" : this is a textual mapping file for parameters' names. (cf Section 3)

Multiple instances of the plugin can live in parallel into the DAW. The ID number is displayed in red when there is a conflict with another instance of the plugin having the same ID. It is displayed in

black otherwise.

The input port number is displayed in green when the plugin is properly bound to the port. It is displayed in red if something went wrong. There is also a green led that blinks when OSC messages are received.

The output port number is displayed in green when the plugin is properly connected to the destination (IP and port). It is displayed in red if something went wrong. There is also a green led that blinks when OSC messages are sent.

Please note that all plugin instances share the same input port, output port and output IP address, and mapping file. If you change the input port of a given instance, it will be changed accordingly in all other instances.

All these attributes (ID, input port, output port, output IP, enable toggle, path to the mapping file) are saved with the plugin state i.e. they are stored with your DAW session. And they are automatically recalled when the session is restored.

2 Installation

2.1 Mac OSX

Copy the plugin bundle into your "plugin folder".

- "Tosca.component" is the AudioUnits version. You can copy it into : "`~/Library/Audio/Plug-Ins/Components`" or "`/Library/Audio/Plug-Ins/Components`"
- "Tosca.vst" is the VST version. You can copy it into : "`~/Library/Audio/Plug-Ins/VST`" or "`/Library/Audio/Plug-Ins/VST`"
- "Tosca.vst3" is the VST3 version. You can copy it into : "`~/Library/Audio/Plug-Ins/VST3`" or "`/Library/Audio/Plug-Ins/VST3`"
- "Tosca.aaxplugin" is the AAX version. You can copy it into : "`/Library/Application Support/Avid/Audio/Plug-Ins`"

2.2 Windows

Download and install "Visual C++ Redistributable Packages for Visual Studio 2015" from Microsoft website: <https://www.microsoft.com/en-us/download/details.aspx?id=48145>.

Select either "vc_redist_x86.exe" or "vc_redist_x64.exe" depending on your architecture.

Then copy the VST plugin "Tosca.dll" in your VST folder.

3 OSC mapping

- The plugin exposes 32 parameters to automation. The parameters' names and range can be tweaked thanks to mapping file.
- If no mapping file is provided, *Tosca* will use the default settings, i.e. the parameters' names will be "param1", "param2", "param3", etc, and their range will be [0.0 - 1.0].
- Mapping file should be a XML file with ".xml" extension.
- The same mapping file is used by all instances of the *Tosca* plugin.

Below is an example of a mapping file, setting up two parameters called "azim" and "elev". The range of each parameter is described by its "min" and "max" attributes. In the host DAW, the automation parameters are always stored in the range [0.0 - 1.0]; however *Tosca* plugin applies a scaling of the incoming/outgoing OSC messages such that "azim" parameter is scaled to [-180. 180.] and "elev" to [-90. 90.]. Currently only linear scaling is implemented.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<tosca version="0.9" prefix="">
  <parameter index="1" name="azim" min="-180" max="180" scaling="linear"/>
  <parameter index="2" name="elev" min="-90" max="90" scaling="linear"/>
</tosca>
```

The remaining parameters use their default values i.e. the next parameter is named "param3" with default range of [0.0 - 1.0].

- The mapping file can be loaded from the plugin's user interface, and the names of the automation parameters (in the DAW) will get updated accordingly.
- However, many DAWs have difficulties to dynamically update the parameters' names. As a workaround, *Tosca* will automatically search for a mapping file in a specific location, namely: "`~/Documents/Ircam/tosca/startup_mapping.xml`".
If your host exhibits difficulties with dynamic loading of mapping file, then create "`~/Documents/Ircam/tosca/startup_mapping.xml`" (create the folder if it does not exist), and restart the DAW. Upon instantiation of *Tosca*, the plugin will load this mapping file and the parameters' names should all be correct.

4 OSC messages

- The OSC mapping is used for determining the pattern of the OSC input/output messages. For instance the messages for the "y" parameter of the plugin with ID #3 are : "/3/y 0.0" where "0.0" is the current value of the "y" parameter.

- *Tosca* can be used for reading/writing automation from a remote controller. It can also be used for "touching" an automation track from a remote controller. To do so, the remote controller must notify the DAW host that the parameter is being touched. The OSC syntax for touching the "y" of the instance with ID #3 is : `"/3/y touch 1"` for beginning the touch. `"/3/y touch 0"` for ending the touch.
- It is further possible to specify an OSC "prefix" in the mapping file. The prefix must be a valid OSC string, and *Tosca* will prefix any incoming/outgoing OSC messages with this pattern. Considering for instance the following mapping file:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<tosca version="0.9" prefix="/track">
  <parameter index="1" name="azim" min="-180" max="180" scaling="linear"/>
  <parameter index="2" name="elev" min="-90" max="90" scaling="linear"/>
</tosca>
```

The incoming/outgoing OSC messages would be in the form:
`"/track/1/azim 0.0"`
`"/track/1/elev 0.0"`

5 Setup

- Install the plugin.
- Create your mapping file with a ".xml" extension.
- Make sure the plugin folder is properly set in your DAW search path.
- Insert the plugin onto an audio track. The track should be mono or stereo.
- Configure the input/output port and address.
- Load your mapping file.
- Edit the automation tracks and start the playback engine.
- Send or receive OSC data in a remote OSC-enabled application or device.

6 Miscellaneous informations / Known bugs

- In ProTools : multi-mono plugin format is not supported.
- In Digital Performer : you must disable the "Pre-gen mode when possible" option in the "Plug-in real-time preferences" menu of Digital Performer.
- In Apple Logic Pro : you should have some audio data on the track(s) otherwise the automation is treated in economy mode.
- In Ableton Live VST : the remote automation doesnt work. Use AU instead.
- In Cockos Reaper : you should change the parameter automation notifications to "Process all notifications" (under Preferences / Plug-Ins / VST). See Figure 1.
- In Nuendo : it seems like automation with VST3 is very jerky. Use VST instead.

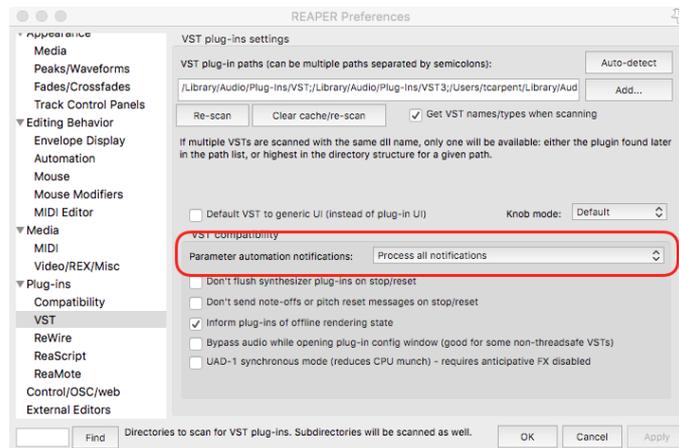


Figure 1: Parameter automation notifications in Reaper

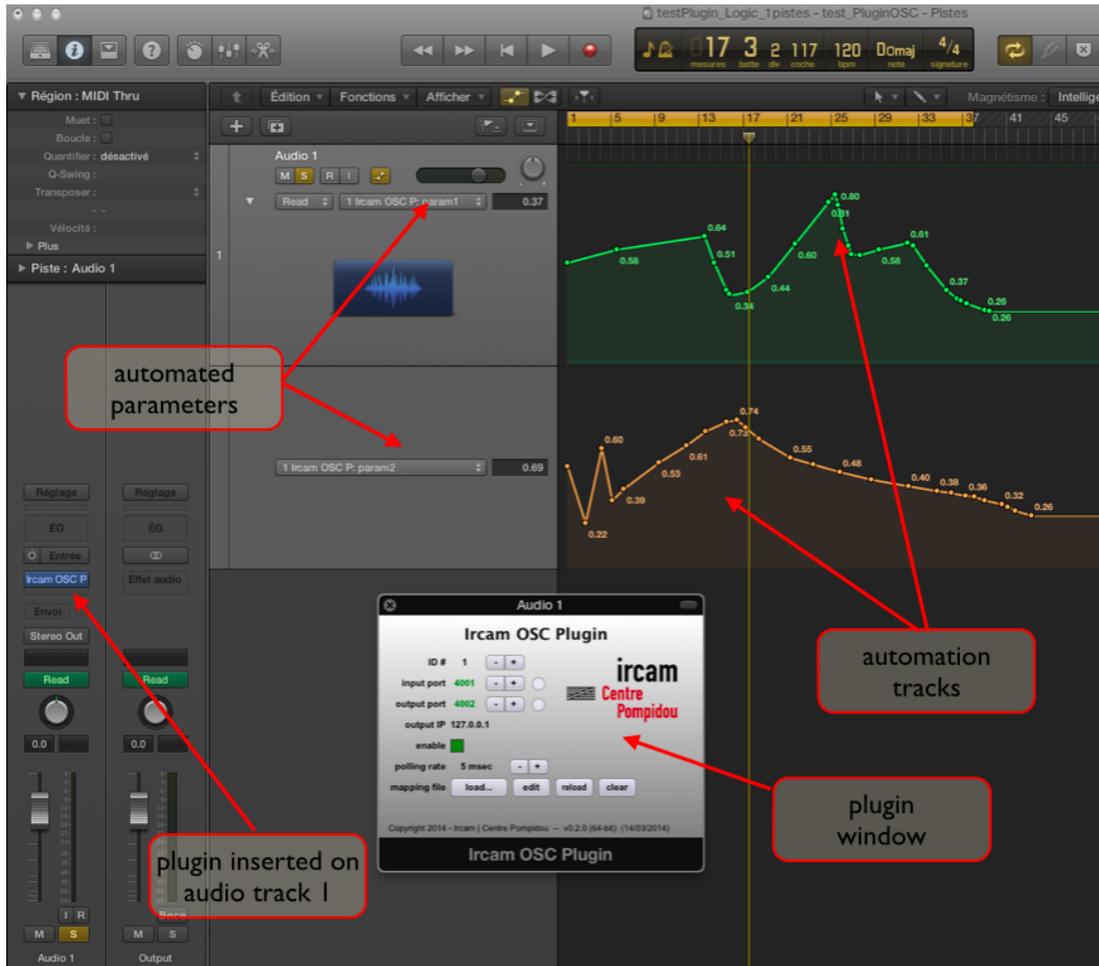


Figure 2: Example in Apple Logic

7 References

- T. Carpentier. Tosca: an OSC communication plugin for object-oriented spatialization authoring. In *Proc of 41st International Computer Music Conference (ICMC)*, Denton, TX, USA, pp 368 – 371, Sept 2015. <https://hal.archives-ouvertes.fr/hal-01247588v1>
- T. Carpentier. Tosca: un plugin de communication OSC pour le mixage spatialisé orienté objet. In *Proc of Journées d'Informatique Musicale (JIM)*, Montréal, May 2015. <https://hal.archives-ouvertes.fr/hal-01247477v1>

8 Licenses

Juce

Part of *ToscA* is built with the JUCE framework (<http://juce.com>).

Please refer to the Juce Privacy Policy (<https://www.juce.com/juce-5-privacy-policy>) and the Juce 5 License (<https://www.juce.com/juce-5-license>).

VST 3 SDK License

Part of *ToscA* is built with the Proprietary VST 3 SDK from Steinberg (<https://sdk.steinberg.net>).

```
//-----  
// LICENSE  
// (c) 2017, Steinberg Media Technologies GmbH, All Rights Reserved  
//-----  
This license applies only to files referencing this license,  
for other files of the Software Development Kit the respective embedded license text  
is applicable. The license can be found at: http://www.steinberg.net/sdklicenses\_vst3
```

This Software Development Kit is licensed under the terms of the Steinberg VST3 License, or alternatively under the terms of the General Public License (GPL) Version 3. You may use the Software Development Kit according to either of these licenses as it is most appropriate for your project on a case-by-case basis (commercial or not).

a) Proprietary Steinberg VST3 License

The Software Development Kit may not be distributed in parts or its entirety without prior written agreement by Steinberg Media Technologies GmbH.

The SDK must not be used to re-engineer or manipulate any technology used in any Steinberg or Third-party application or software module, unless permitted by law.

Neither the name of the Steinberg Media Technologies GmbH nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

Before publishing a software under the proprietary license, you need to obtain a copy of the License Agreement signed by Steinberg Media Technologies GmbH.

The Steinberg VST SDK License Agreement can be found at:
<http://www.steinberg.net/en/company/developers.html>

THE SDK IS PROVIDED BY STEINBERG MEDIA TECHNOLOGIES GMBH "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL STEINBERG MEDIA TECHNOLOGIES GMBH BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

b) General Public License (GPL) Version 3

Details of these licenses can be found at: <http://www.gnu.org/licenses/gpl-3.0.html>

Avid AAX

Part of *ToscA* is built with the AAX SDK from Avid Technology, Inc. (<https://www.avid.com>).

9 IRCAM Forum Software License Agreement

Definitions

Article 1

IRCAM hereby grants you a license to use the software and documentation identified below only upon the condition that you accept all of the terms contained in this license Agreement. The media on which the software covered by this Agreement is installed or downloaded is your property, however IRCAM retains ownership of the software programs covered by this Agreement. The license defined in this Agreement includes all corrections, enhancements, and/or updates provided by IRCAM unless these corrections, enhancements, and/or updates are the object of an independent Agreement between you and IRCAM.

Article 2 – Forum Software

The IRCAM Forum offer includes all IRCAM software programs that can be downloaded from the ForumNet website, be they free or of charge.

This agreement applies to all IRCAM Forum software programs acquired by the user as of the date of purchase and/or download during the period of maintenance and service. In this agreement, both the terms “Software” and “Forum Software” refer to all IRCAM Forum software programs.

Article 3 – Maintenance and Services

You are granted a one-year license to use the aforementioned software as a part of your IRCAM Forum membership. Past this date, you must renew your membership according to the terms in Section III. The Forum’s objective is to develop a large community of computer music software users by offering tools and services and promoting dialogues among these users (social website, Forum workshops, etc.).

Forum members are encouraged to share the applications they create with the software.

Authorized Usage of IRCAM Forum Software

Article 4 – Authorized Usage

Holders of Premium memberships (Individual or Institutional) have the right to use the software provided by IRCAM on several computers, in the domain of research, educational activities, and musical production. Software programs may not be installed or copied on computers not intended for the uses listed above.

Holders of Individual Premium memberships may install and use software on a maximum of four (4) computers limited to the uses set forth herein.

Any development or services that uses IRCAM software or the distribution of IRCAM software requires prior consent from IRCAM or a license from IRCAM.

Article 5 – Ownership and Commercial Distribution

All software programs, elements of any software programs, and documents copyrighted by IRCAM and distributed via the IRCAM Forum remain the property of IRCAM. These software programs cannot be rented, sold, or exchanged without prior consent from IRCAM.

Article 6 – Copyright

The user is not authorized to modify or remove the names of the authors or the IRCAM copyright or the names of members present in any programs or documentation. The user is required to cite IRCAM during any presentation of any IRCAM software programs or their extensions.

Article 7 – Disclaimer of Warranty

The software programs provided by IRCAM Forum are provided without warranties of any kind. IRCAM disclaims all warranties, express or implied. In no event will IRCAM be liable for damages, including any general, special, incidental or consequential damages arising out of the use or inability to use the program. The entire risk as to the quality and performance of the program is with the user.

Article 8 – Unauthorized Editions

Any independent development of IRCAM software programs that consist of a reproduction of a software program, or an element of any IRCAM software program will be considered counterfeit and any commercial distribution of any counterfeit version(s) will be considered an act of plagiarism.

Article 9 – Cession

It is forbidden to copy any of the software programs provided to you by IRCAM, except for personal use. In this case, one copy of the software program(s) may be made.

Article 10 – Legal Identity

An “individual” membership is provided only to a user that certifies that the IRCAM Forum software programs will be used only on his/her personal computer. You guarantee the precision of the information provided on your registration form. All registrations paid by an organization will pay the “organization” membership fee.

Article 11 – Termination

This Agreement is effective until terminated. This Agreement will terminate immediately with notice from IRCAM if you fail to comply with any provision of this Agreement.

Maintenance and Service

Article 12 – Definition of Provisions of Services

Software Programs – Documentation – Technical Support

Beginning on the date of your membership, you will receive, for twelve months, software programs and documentation developed by IRCAM. These software programs are protected by a personal code (necessary for downloading and installing the software programs). This code is personal and may not be given to a third party.

Unless you renew your membership, when your one-year membership period expires, you no longer have access to the IRCAM Forum services or software programs. You do maintain, however, the right to use the elements received during your membership.

Once the one-year subscription date has passed, the software remains active and usable. However, IRCAM is not responsible of the loss of the authorization in the case of machine or HD change. In this case the subscriber is invited to renew their subscription to take advantage of any technical support (updates, forum-support, etc.)

Exchanges – Training – Information

User subscribed to Premium Forum enjoys a reduced price to IRCAM Forum Workshops (Paris and hors les murs), and also entitled to a discount on IRCAM training programs held by the IRCAM department of education and cultural outreach.

Additional Services – Discounts

You are entitled to discounts on tickets for the IRCAM concert season and the annual IRCAM ManiFeste Festival as well as free access to the IRCAM multimedia library.

Article 13 – Domains of Use of Applications

The applications created by an IRCAM Forum member and made available to other Forum members can be used free of charge by IRCAM or by other IRCAM Forum members in the domains of research, teaching and educational activities, and musical production. Any use of the applications created by an IRCAM Forum member in any other domain, or any commercial distribution or redistribution of these applications requires authorization.

Article 14 – Members' Obligations

Relations with IRCAM

You can propose developments to the IRCAM Forum team that will communicate these ideas to the development groups at IRCAM. IRCAM can distribute your developments as are, without any support. IRCAM can also decide, with your accord, to further develop your developments and to assure the documentation and support. IRCAM cannot guarantee the finalization of the developments proposed by users.

Relations with Other IRCAM Forum Members

IRCAM Forum members are encouraged to share their developments among themselves. These developments should be made known to IRCAM who will then pass them along to other IRCAM

Forum members. You remain owner of the applications you have created. These applications, like all IRCAM software programs, may be used by IRCAM or by IRCAM Forum members only in the domains of research, teaching and educational activities, and musical production.

The user releases IRCAM from any appeals or actions that could arise (notably acts of infringement, eviction, personality rights, and image rights) on any basis for any author or copyright holder, performer or producer of pre-existing works, notably musical, intellectual, or graphical works, connected to the production of these applications or educational supports.

Responsibility for Publications in the Forum

ForumNet/IRCAM offers the possibility of writing articles and news, publishing events, videos, sharing critiques and commentaries in discussion groups. Users grant the right to IRCAM to publish these comments in any support, in any language, worldwide. It is understood that users' comments are written free of charge and IRCAM can use them free of charge.

Hence, you represent and warrant that you own all rights concerning the reproduction of medias used and release IRCAM from any unspecified claim by a third person, in particular concerning any and all copyrights.

Article 15 – Ownership and Commercial Distribution

The extensions or developments you carry out on any IRCAM software programs remain your property, whether or not they were carried out with the assistance of IRCAM.

Article 16 – Confidentiality and Exchanges of Information

You may not reveal or share any information marked “confidential” distributed by IRCAM. You authorize IRCAM to share your personal contact information with other IRCAM Forum members. IRCAM is not authorized to share your personal contact information with any other person or organization in accordance with the rules and regulations of the Commission Nationale de l'Informatique et des Libertés (CNIL), an independent French administrative authority whose mission is to ensure that data privacy law is applied to the collection, storage, and use of personal data.

Article 17 – Term and Termination

Your membership to the IRCAM Forum is valid for twelve months beginning with your date of registration. If you choose not to renew your membership, or you cancel your membership, you lose all rights acquired during your membership although the conditions defined in articles 4, 5, 6, 7, 8, and 9 remain unchanged.

Article 18 – Membership Fees

Membership fees and conditions may be revised at any time. Membership fees are identical in France and abroad.

IRCAM Forum Free Freeware License Agreement

Article 19 – Conditions for Distribution and Use

The software programs covered by this Agreement are distributed in binary form only and are accompanied by examples. The user is free to create their own non- commercial applications for scientific research, educational activities, and musical production.

Any applications that result in a commercial product or service require separate written Agreement with IRCAM

The articles 4, 5, 6, and 7 apply to the Software Programs found in the Forum Free Package.

October 2016.