



Tango Distribution



- **Tango Source Distribution**
- **Windows installer**
- **Debian packages**
- **RPM packages**
- **Conda packages**
- **PyTango wheels**
- **macOS and PyTango demo**
- **Micromamba demo**

Easy way to install a collection of various Tango related software:

- ATK Panel
- ATK Tuning
- ATK
- AccessControl
- Admin
- Astor
- C++
- DBBench
- Database
- Documentation
- IDL
- JSSHTerminal
- JTango
- Jive
- LogViewer
- Pogo
- RestServer
- Starter
- Test

Several releases since last year, including release candidates:

- 9.4.0
- 9.4.1
- 9.3.6
- 9.4.2

<https://gitlab.com/tango-controls/TangoSourceDistribution/-/releases>

Notable new features:

- Move to cmake from automake/autotools
- Rework maintainership
- Windows installer

Was in beta last year.

Official installer released with 9.4.1!
Will now be released for every new 9.4 version.
Latest release 9.4.2.

Contains all TangoSourceDistribution components (except Admin and RestServer) including documentation and the source code for TangoTest.

Provides .bat scripts for launching device servers and Java applications. All you have to provide is the TANGO_HOST environment variable.

Includes debug info for the C++ device servers.

Download it from TangoSourceDistribution release page:
<https://gitlab.com/tango-controls/TangoSourceDistribution/-/releases>



Debian packages have been updated!

- TangoSourceDistribution 9.3.4 and pytango 9.3.6 available
- TangoSourceDistribution 9.4.2-rc2 and pytango 9.4.1 in debian experimental



RPMs are built using Copr from the TangoSourceDistribution

Spec files can be found under <https://gitlab.com/tango-controls/RPM>

Install from copr:

```
yum install -y epel-release yum-plugin-copr  
yum copr -y enable @tango-controls/tango
```

Or the MAX IV repo: http://pubrepo.maxiv.lu.se/rpm/el7/x86_64/
(http://pubrepo.maxiv.lu.se/rpm/el8/x86_64/)

9.3.6 available but no 9.4 yet

CONDA

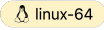
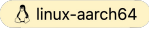
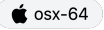
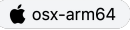
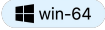





Package, dependency and environment management for any language—Python, R, Ruby, Lua, Scala, Java, JavaScript, C/ C++, Fortran, and more

More packages and more platforms available on conda-forge!

Packages on conda-forge: C++

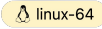
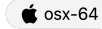

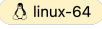
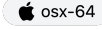

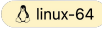
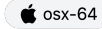

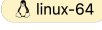
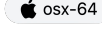
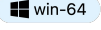
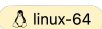
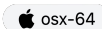
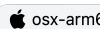
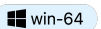
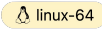
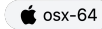
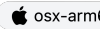

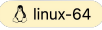
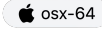

Packages	Linux	macOS	Windows
tango-idl	linux-64 linux-aarch64 linux-ppc64le	osx-64 osx-arm64	win-64
cpptango	linux-64 linux-aarch64 linux-ppc64le	osx-64 osx-arm64	win-64
cpptango-dbg	linux-64 linux-aarch64 linux-ppc64le		
tango-database	linux-64 linux-aarch64 linux-ppc64le	osx-64 osx-arm64	win-64
tango-admin	linux-64 linux-aarch64 linux-ppc64le	osx-64 osx-arm64	
tango-access-control	linux-64 linux-aarch64 linux-ppc64le	osx-64 osx-arm64	win-64
tango-starter	linux-64 linux-aarch64 linux-ppc64le	osx-64 osx-arm64	win-64
tango-test	linux-64 linux-aarch64 linux-ppc64le	osx-64 osx-arm64	win-64
libhdbpp	linux-64		
libhdbpp-timescale	linux-64		
libhdbpp-timescale-dbg	linux-64		
hdbpp-cm	linux-64		
hdbpp-es	linux-64		
hdbpp-es-dbg	linux-64		

Packages on conda-forge: Python

Packages	Linux	macOS	Windows
pytango	 linux-64  linux-aarch64	 osx-64  osx-arm64	 win-64
itango	 noarch		
dsconfig	 noarch		
taurus	 noarch		
• taurus-core			
• taurus-qt			
sardana	 noarch		
• sardana-core			
• sardana-qt			
• sardana-config			
tango-gateway	 noarch		

A “noarch” package doesn’t depend on a platform but its dependencies might.

Packages on conda-forge: Java

Packages	Linux	macOS	Windows	
jtango	 linux-64	 osx-64	 win-64	
tango-atk	 linux-64	 osx-64	 win-64	
tango-atk-panel	 linux-64	 osx-64	 win-64	
tango-atk-tuning	 linux-64	 osx-64	 win-64	
jive ¹	 linux-64	 osx-64	 osx-arm64	 win-64
tango-astor ^{1 2}	 linux-64	 osx-64	 osx-arm64	 win-64
pogo ¹	 linux-64	 osx-64	 win-64	

1: fat JAR

2: "astor" already taken by a Python package

pip install pytango

36 Python Wheels for Pytango 9.4.1 on <https://pypi.org/project/pytango/>

- Windows (12): Python 3.6 to 3.11 / win32 and win_amd64
- Linux (18): Python 3.6 to 3.11 / i686 x86_64 and aarch64
- macOS (6): Python 3.9 to 3.11 / x86_64 and arm64

A wheel is a zip file that bundles all binary dependencies

Pros:

- Easy and fast to install!

Caveats:

- All dependencies are bundled and can't be updated without creating a new wheel.

With conda/yum, you can update cpptango to 9.4.2 without having to re-compile / re-install pytango 9.4.1

```
pytango-9.4.1-cp311-cp311-manylinux_2_17_x86_64.manylinux2014_x86_64.whl
├── PyTango.py
├── pytango-9.4.1.dist-info
│   ├── LICENSE.txt
│   ├── METADATA
│   ├── RECORD
│   ├── WHEEL
│   └── top_level.txt
├── pytango.libs
│   ├── libC0S4-b4544fb9.so.2.5
│   ├── libboost_python311-37ccfef4.so.1.80.0
│   ├── libjpeg-43389f7a.so.62.3.0
│   ├── libomniDynamic4-9edc765d.so.2.5
│   ├── libomniORB4-4725824d.so.2.5
│   ├── libomnithread-99f9d0d3.so.4.1
│   ├── libtango-f73b8bf1.so.9.4.1
│   └── libzmq-ca87552a.so.5.2.4
└── tango
    ├── __init__.py
    ├── _tango.cpython-311-x86_64-linux-gnu.so
    ├── api_util.py
    └── asyncio.py
```

macOS & PyTango: The past

- Over the last year it has been like this:

```
git clone https://gitlab.com/tjuerges/build\_tango.git  
rm -rf build ${TANGO_INSTALLATION_DIR}  
./build.sh
```

Time passes... 🤔 🤔

Then at some point:

```
**** build_tango: Building and installing pytango_dist done.
```

```
real 2m2.628s  
user 6m29.172s  
sys 0m38.488s
```

macOS & PyTango: The present

- **Now it is like this:**

```
python3 -m venv --upgrade-deps cm
```

```
. cm/bin/activate
```

```
python3 -m pip install itango
```

```
[...]
```

```
Successfully installed IPython-8.14.0 appnope-0.1.3 asttokens-2.2.1 backcall-0.2.0  
decorator-5.1.1 executing-1.2.0 itango-0.1.9 jedi-0.18.2 matplotlib-inline-0.1.6  
numpy-1.25.0 packaging-23.1 parso-0.8.3 pexpect-4.8.0 pickleshare-0.7.5  
prompt-toolkit-3.0.38 psutil-5.9.5 ptyprocess-0.7.0 pure-eval-0.2.2 pygments-2.15.1  
pytango-9.4.1 six-1.16.0 stack-data-0.6.2 traitlets-5.9.0 wcwidth-0.2.6
```

```
real 1m49.401s
```

```
user 6m29.524s
```

```
sys 0m38.842s
```

- **Installation is easy**
- **Wheel built by Tango Controls**
- **→ Reliable source, not some distribution** 🤪
- **TC updates the wheels asap**
 - **Faster than distributions**

And now: Very low entry threshold

→ Install, try out & put PyTango to good use



You know conda, maybe mamba. What about micromamba?

micromamba is a tiny version of the **mamba** package manager:

- Statically linked C++ executable
- No need for a base environment as there is no default version of Python
- Subset of conda and mamba commands

https://mamba.readthedocs.io/en/latest/user_guide/micromamba.html

Micromamba docker image

Based on debian:bullseye-slim

\$ docker images | grep mamba

mambaorg/micromamba	latest	04d63c84bb5f	6 days ago	94.5MB
condaforge/mambaforge	latest	cb335729b259	4 weeks ago	396MB

<https://asciinema.org/a/592851>

Great for CI

See <https://github.com/mamba-org/micromamba-docker>


```
# Install micromamba
```

```
curl micro.mamba.pm/install.sh | zsh
```

```
# Create the tango env
```

```
micromamba create -y -n tango -c conda-forge tango-admin tango-database \  
tango-test tango-starter jive tango-astor
```

```
# Start mysql with docker
```

```
docker run --rm -d --name tango-mysql \  
-e MYSQL_ROOT_PASSWORD=root \  
-p 3306:3306 \  
registry.gitlab.com/tango-controls/docker/mysql:5
```

```
# Start Tango Database
```

```
export MYSQL_HOST=127.0.0.1:3306  
export MYSQL_USER=tango  
export MYSQL_PASSWORD=tango  
export MYSQL_DATABASE=tango  
~/micromamba/envs/tango/bin/Databaseds 2 -ORBendPoint giop:tcp:0.0.0.0:10000
```

```
# Activate the tango env  
micromamba activate tango
```

```
export TANGO_HOST=127.0.0.1:10000
```

```
# Create the tango device  
tango_admin --add-server Starter/$(hostname -s) Starter tango/admin/$(hostname -s)  
tango_admin --add-property tango/admin/$(hostname -s) startDsPath  
    ${CONDA_PREFIX}/bin
```

```
# Run Starter  
Starter $(hostname -s)
```

```
# Run jive and astor  
micromamba run -n tango jive  
micromamba run -n tango astor
```