



Research Computing

ARC Centre of Excellence for Particle Physics at the Terascale

XPRA - X Persistent Remote Applications

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- **XPRA – X Persistent Remote Applications**
 - Emerged as a valid replacement of FreeNX which has become old and unmaintained.
 - Allows to run X programs, usually on a remote host, and direct their display to your local machine.
 - It is sometimes referenced as 'screen of X windows'.
 - “Rootless” or “seamless”.
 - Xpra adapts to bandwidth constraints and is fully open-source.

- **Both remote and local machines will need XPRA**

- The RC team will install it on all CoEPP UIs. You will need to install it on your local labtop or desktop machine.

- Available for all sorts of Linux distributions, for Apple MAC OS X (10.5 inwards) and for Microsoft Windows (XP onwards)

- <https://www.xpra.org/>

- For the XPRA Linux release:

- There is no explicit packaging for SL6 but it is possible to use the XPRA Centos6 release.

- Follow the instructions on how to setup the winswitch repo:

http://winswitch.org/downloads/rpm-repository.html?dist_select=CentOS

- **General Concepts**

- xpra works in a server / client base.
- The underlying idea is that an xpra server can be started on the remote host making available an application a specific DISPLAY.
 - The DISPLAY has to be unique of each user
- Once the xpra server is running, the xpra client (running on a local host) can be used to attach to that DISPLAY.
- The xpra client can detach from the DISPLAY, and attach again some time later.
- The xpra server will continue running until it is stopped.

- **Lanching simple applications with XPRA (ex:Firefox)**
 - If the application does not need any customization, you can lanch all xpra instructions directly from the local machine.

```
# Setup a random number to be used as DISPLAY since it has to be unique
[goncalo@localhost ~]$ ND=$RANDOM

# Start the xpra server, start the application and attach xpra client to DISPLAY $ND
# Firefox should shortly appear in your local machine
[goncalo@localhost ~]$ xpra start ssh:goncalo@syd4.syd.coepp.org.au:$ND \
--start-child=firefox &

# Detach from the DISPLAY $ND
# Firefox show dissappear from your local machine
[goncalo@localhost ~]$ xpra detach ssh:goncalo@syd4.syd.coepp.org.au:$ND

# Attach again to the DISPLAY $ND
# Firefox should reapper in your local machine in the same state has it was before
[goncalo@localhost ~]$ xpra attach ssh:goncalo@syd4.syd.coepp.org.au:$ND &

# Closing the application will not stop the xpra server. The xpra server has to be explicitly stopped.
[goncalo@localhost ~]$ xpra stop ssh:goncalo@syd4.syd.coepp.org.au:$ND
```

- **Lanching ROOT with XPRA**

- ▶ ROOT need a bit of customization from the user

- It is distributed through CVMFS, and made available by running *SetupATLAS / setupSW*
- Users may select different ROOT versions by running *localSetupROOT*

- ▶ For this reason, to use XPRA with ROOT, you have to:

- 1) Launch the XPRA server in the remote machine after you have customized your ROOT preferences.
- 2) attach to the display running XPRA in the local machine
- 3) Work as normal in the remote host
- 4) Attach/Detach at your will running XPRA in the local machine
- 5) Kill the XPRA server at the end

- **Launching XPRA server in the remote server**

```
# Login in the remote host, and setup ROOT
[goncalo@localhost ~]$ ssh -l goncalo sydui4.syd.coepp.org.au
[goncalo@sydui4 ~]$ setupATLAS; localSetupROOT

# Get a unique id for your DISPLAY (use $RANDOM for example)
[goncalo@sydui4 ~]$ ND=$RANDOM; echo $ND
100

# Start your xpra server which controls DISPLAY $ND. Export your DISPLAY afterwards
[goncalo@sydui4 ~]$ xpra start :$ND
[goncalo@sydui4 ~]$ export DISPLAY=:$ND

# Start ROOT
# Remember that the ROOT window will only be launched later, when the XPRA client attaches to the server
[goncalo@sydui4 ~]$ cd MyROOT/examples/tree/
[goncalo@sydui4 ~]$ root
root [0]
```

- **Attach to the DISPLAY via XPRA in local machine**

```
# Attach to the DISPLAY controlled by the XPRA server
[goncalo@localhost ~]$ xpra attach ssh:goncalo@sydui4.syd.coepp.org.au:100 &
```

- **Start working in the remote host**

- The ROOT windows should appear in the local host

```
# Run your macros or Browse your root file
```

```
root [0] new Tbrowser()
```

```
root [1] .x cernstaff.C
```

- **You can detach and attach at any time**

- ROOT X windows should disappear and appear respectively, in the exact same state.

```
# From the localhost, detach to the DISPLAY controlled by XPRA server
```

```
[goncalo@localhost ~]$ xpra detach ssh:goncalo@sydui4.syd.coepp.org.au:100
```

```
# From the localhost, attach to the DISPLAY controlled by XPRA server
```

```
[goncalo@localhost ~]$ xpra attach ssh:goncalo@sydui4.syd.coepp.org.au:100 &
```

```
# Detach and kill the XPRA server when done
```

```
[goncalo@localhost ~]$ xpra detach ssh:goncalo@sydui4.syd.coepp.org.au:100
```

```
[goncalo@localhost ~]$ xpra stop ssh:goncalo@sydui4.syd.coepp.org.au:100
```


- **CoEPP RC wiki**

- <https://rc.coepp.org.au/xpra>
- Links from
 - <https://rc.coepp.org.au/tier3/adl?>
 - <https://rc.coepp.org.au/tier3/mel?>
 - <https://rc.coepp.org.au/tier3/syd?>

- **Other references**

- <https://www.xpra.org/>
- <https://www.xpra.org/trac/wiki/Usage>
- <http://winswitch.org/downloads/>