

Linaro Forge Remote Client Walk-Through on Ookami

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Linaro Forge Remote Client

- The Forge suite consists of graphical and command-line tools for debugging and profiling parallel & sequential programs
 - **perf-report**
 - A high-level overview of the behavior of your program, so you can see where to look more closely with tools such as...
 - **ddt**
 - A parallel debugger (and C / C++ static code checker)
 - **map**
 - A parallel profiler (find hotspots in code as optimization candidates)

Linaro Forge Remote Client

- History
 - Forge was created by a company called Allinea
 - Which was acquired by ARM
 - Which was acquired by Linaro
 - (We'll see some of these various names during usage of the tools)
 - So Forge has no dependency on the ARM compilers
 - Current version of Forge has removed the old names
 - However, the configuration directory will still be called `~/.allinea` for compatibility reasons

<https://www.linaroforge.com/>

Linaro Forge Remote Client

- Using Forge `ddt / map` directly on ookami

```
ookami$ module avail linaro\*
----- /etc/modulefiles/aarch64 -----
linaro/forge/22.1.4  linaro/forge/23.0

ookami$ module load linaro/forge
ookami$ forge
```

- Forge also has the `perf-report` command to give a high-level overview

Linaro Forge Remote Client

- Run Forge on ookami directly
 - Have to log in over Secure Shell, which ...
 - Is often really slow for a GUI
 - Requires X11 forwarding to be set up
 - Or can use Forge from the command-line
 - Useful in batch jobs
- *Or ...* there's a remote client that you install on your laptop / desktop machine
 - The remote client means screen updates & interaction are local
 - And thus much faster
 - The program runs on ookami, though
- Both usages integrate cleanly with SLURM

Linaro Forge Remote Client

- Follow installation instructions from
 - <https://docs.linaroforge.com/23.0/html/forge/index.html>
- Follow remote client instructions from
 - https://docs.linaroforge.com/23.0/html/forge/forge/connecting_to_a_remote_system/index.html
- I have used the client successfully on Mac and Linux (Fedora)
- Someone else tried it successfully under Windows too
- Examples hereafter are from a Mac, but it's all the same really

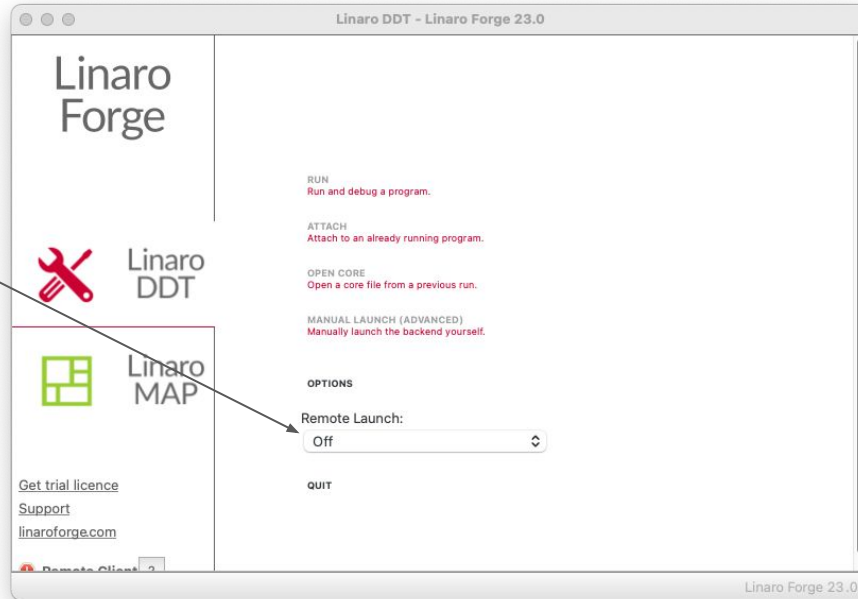
Linaro Forge Remote Client

- Caveat
 - No license required for *the remote client*
 - But there are license restrictions for Forge on ookami
 - E.g. size of programs, number of simultaneous users

Linaro Forge Remote Client

- Using the remote client with ddt / map

Choose “configure”



Linaro Forge Remote Client

- Remote Installation Directory of Forge on ookami
 - You can find this by e.g.

```
ookami$ module load linaro/forge
ookami$ which forge
/lustre/software/linaro/23.0/bin/forge
```

- So the location for this version is

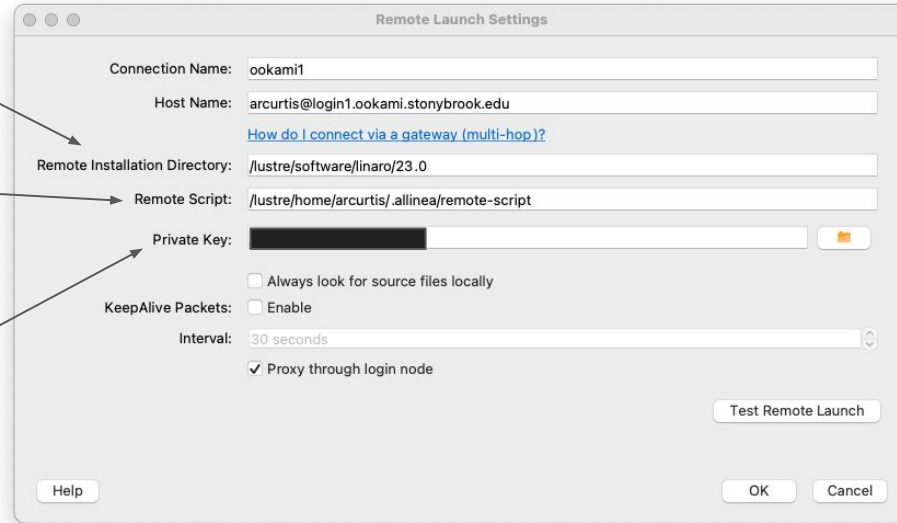
```
/lustre/software/linaro/23.0
```

Linaro Forge Remote Client

From previous slide

See next slide

N.B. everything goes through ssh and DUO like other logins



The screenshot shows a 'Remote Launch Settings' dialog box with the following fields and options:

- Connection Name: ookami1
- Host Name: arcurtis@login1.ookami.stonybrook.edu
- Remote Installation Directory: /lustre/software/linaro/23.0
- Remote Script: /lustre/home/arc Curtis/.allinea/remote-script
- Private Key: [Redacted]
- Always look for source files locally:
- KeepAlive Packets: Enable
- Interval: 30 seconds
- Proxy through login node:

Buttons: Help, Test Remote Launch, OK, Cancel

Linaro Forge Remote Client

- Remote script(s)
 - They pretend to be a login session
 - You can have any number of them
 - No fixed directory location
 - The client can have any number of configs pointing to different hosts and remote scripts
 - Next slide shows example of what worked for me

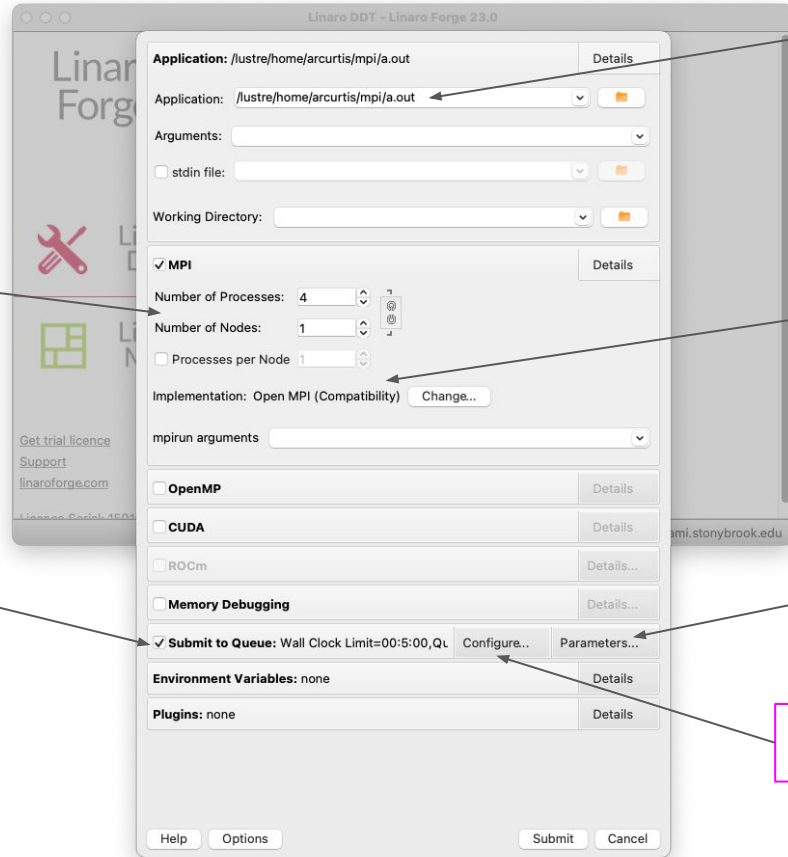
Linaro Forge Remote Client

```
ookami$ cat ~/.allinea/remote-script
#
# set up global & personal login environments
#
source /etc/profile
source $HOME/.bash_profile

#
# at this point, it's like we just logged in to ookami
#

#
# set up extra environment for this job
#
module load fujitsu/compiler
module load linaro/forge
```

Linaro Forge Remote Client



Program to run

This example is a trivial MPI program
4 ranks, on 1 node

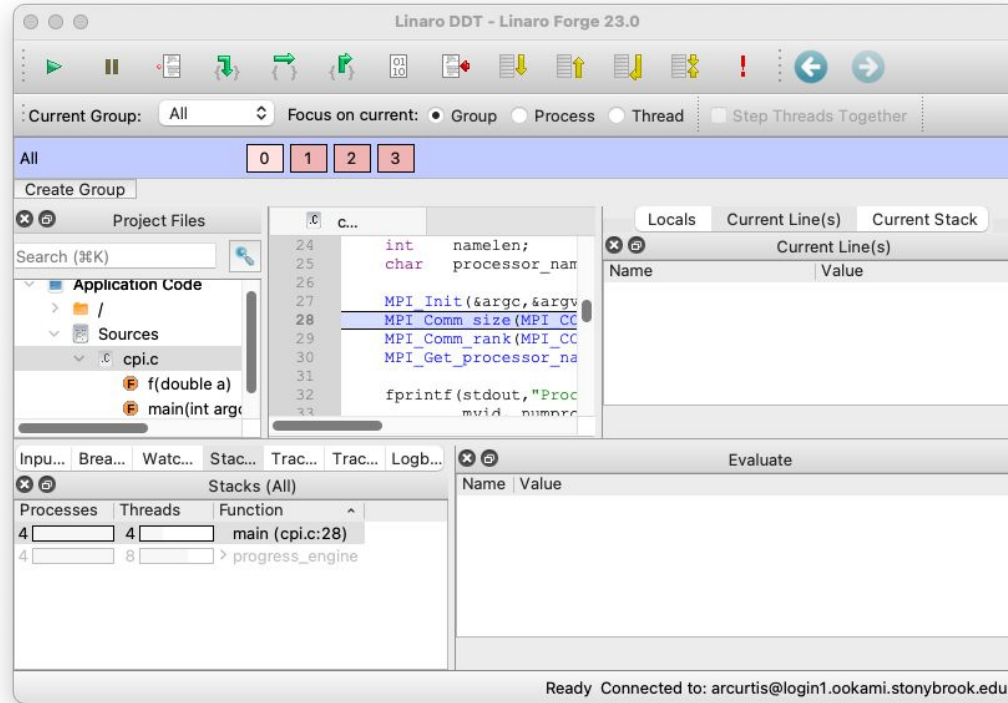
For Fujitsu MPI

Go through SLURM

Queue == SLURM partition, e.g. "short"

Select slurm.qtf template

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Linaro Forge Remote Client

- Configuration notes for MPI implementations
 - Fujitsu compiler / MPI
 - Choose “Open-MPI (compatibility)”
 - On command-line this is (dash dash mpi=....)

`-mpi=openmpi-compat`
 - Any MVAPICH2
 - Choose “SLURM (generic)”