



RStudio and R in different CSC platforms

Weekly CSC research user support coffee break 23.11.2022, Heli Juottonen



R on Puhti: module r-env

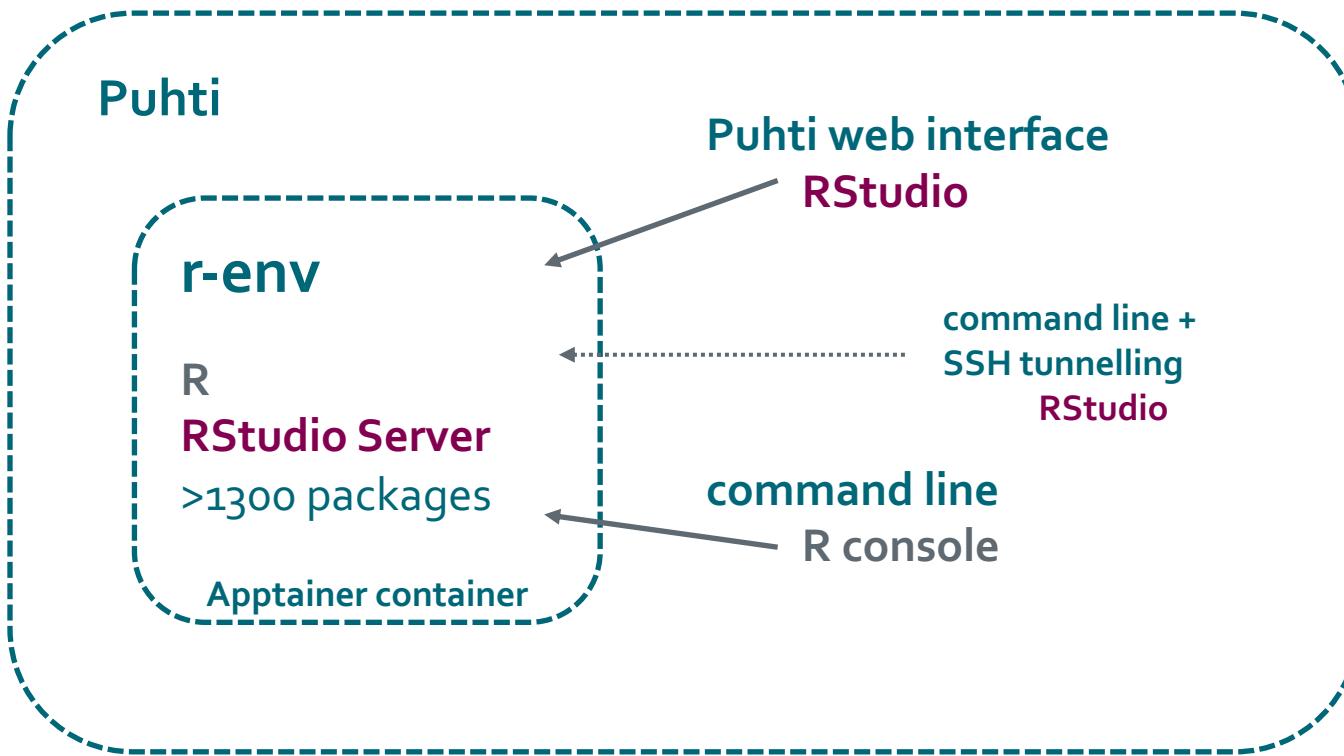
- current R version: 4.2.1
- R, RStudio
- > 1300 pre-installed packages

<https://docs.csc.fi/apps/r-env/>

r-env is an Apptainer container

- differs from desktop RStudio/R in
 - launching R
 - installing packages
- versions of pre-installed packages locked to a specific date

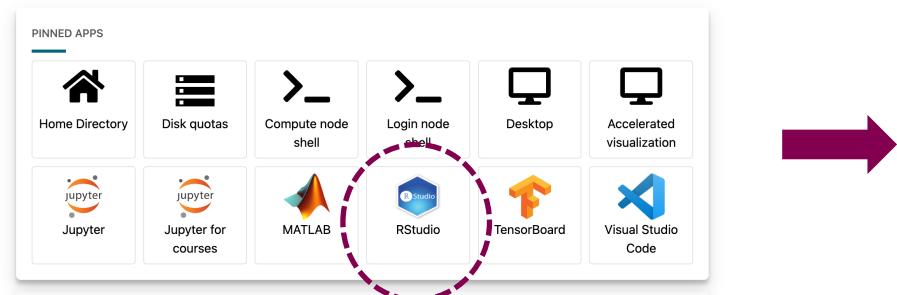
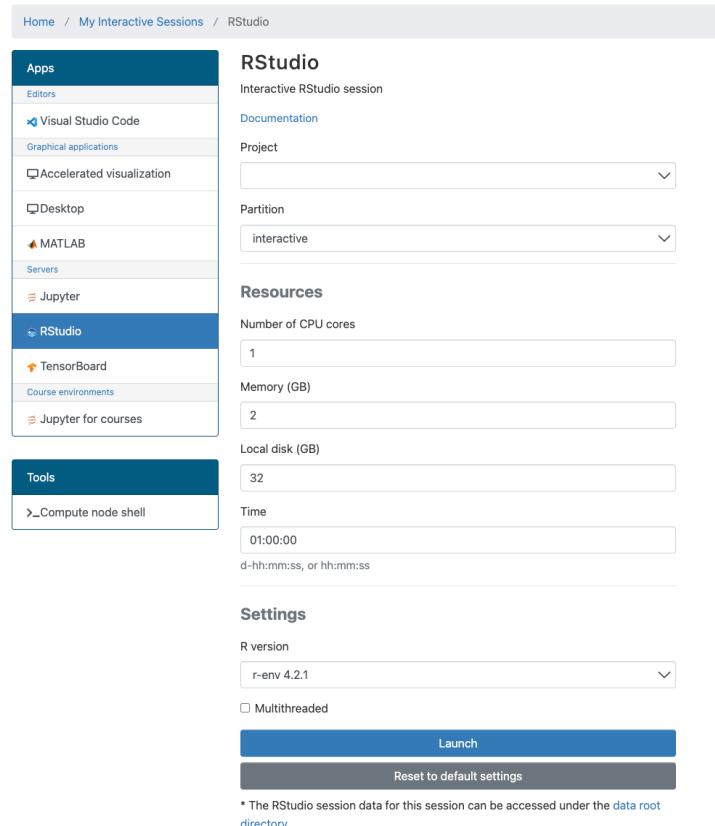
Ways to use RStudio/R on Puhti



1. RStudio via Puhti web interface

- interactive jobs (lighter jobs)
- the easiest way to use RStudio on Puhti

puhti.csc.fi

The screenshot shows the RStudio configuration page. At the top, it says "Home / My Interactive Sessions / RStudio". The main area is titled "RStudio" and contains sections for "Editors" (Visual Studio Code), "Graphical applications" (Accelerated visualization, Desktop), "MATLAB", "Servers" (Jupyter, RStudio, TensorFlow, Course environments, Jupyter for courses), and "Tools" (>Compute node shell). Below these are sections for "Resources" (Number of CPU cores: 1, Memory (GB): 2, Local disk (GB): 32, Time: 01:00:00, d-hh:mm:ss, or hh:mm:ss) and "Settings" (R version: r-env 4.2.1, Multithreaded checkbox, Launch button, Reset to default settings button). A note at the bottom states: "* The RStudio session data for this session can be accessed under the data root directory."

The web interface has been updated to Release 12.
See what's new over at <https://docs.csc.fi/support/wn/comp-new/>

Session was successfully created. ×

Home / My Interactive Sessions

Apps

RStudio (14269895) 1 node 1 core | Running

Host: >_r18c02.bullx Delete

Created at: 2022-11-21 12:29:00 EET

Time Remaining: 4 minutes

Session ID: 53b82c74-ab41-43cf-9597-ebeb3aa0d2ff

If you run into issues, please include the following log file in the support ticket:
[output.log](#)

Project: dac
Partition: interactive
Cores: 1
Memory: 2048M
Local disk: 32 GB
Module: r-env/421

Connect to RStudio Server

Tools

>_Compute node shell

← → ⌂ 🔒 puhti.csc.fi/rnode/r18c02.bullx/5503/ Update

R File Edit Code View Plots Session Build Debug Profile Tools Help helijout

Console Terminal Jobs Addins

R 4.2.1 ~/ R

```
R version 4.2.1 (2022-06-23) -- "Funny-Looking Kid"
Copyright (C) 2022 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type 'license()' or 'licence()' for distribution details.

R is a collaborative project with many contributors.
Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.

Type 'demo()' for some demos, 'help()' for on-line help, or
'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.
```

> |

Environment History Connections Tutorial Import Dataset 151 MiB

R Global Environment List

Environment is empty

Files Plots Packages Help Viewer

New Folder New Blank File Upload Delete Rename More ...

	Name	Size	Modified
📁	.Renvironment	1.5 KB	Nov 21, 2022, 12:29 PM
📁	.Rhistory	559 B	Nov 18, 2022, 1:00 PM
📁	ondemand		
📁	privatemodules		
📁	test		

2. RStudio via SSH tunnelling

- a much more complicated way to access RStudio
- instructions: <https://docs.csc.fi/support/tutorials/rstudio-or-jupyter-notebooks/>

3. R console via Puhti command line – interactive jobs

- log into Puhti on a terminal
- start an interactive session (for lighter jobs):

```
sinteractive --account <project> --time 00:30:00
```

- load the r-env module and start R:

```
module load r-env  
  
start-r
```

More information: <https://docs.csc.fi/apps/r-env/#interactive-use-on-a-compute-node>

```
→ [helijuot@puhti-login14 ~]$ sinteractive --account dac --time 00:30:00
Launching a new interactive job

Interactive batch job is launched with following resources:
  Maximum run time (hours:min:sec): 00:30:00
  Maximum memory (MB): 2000
  $TMPDIR size (GB): 32
  Number of cores/threads: 1
  Accounting project: dac

srun: job 14335153 queued and waiting for resources
srun: job 14335153 has been allocated resources
→ [helijuot@r18c03 ~]$ module load r-env
-----
r-env 4.2.1
https://docs.csc.fi/apps/r-env
-----
→ [helijuot@r18c03 ~]$ start-r
Launching R...

R version 4.2.1 (2022-06-23) -- "Funny-Looking Kid"
Copyright (C) 2022 The R Foundation for Statistical Computing
Platform: x86_64-pc-linux-gnu (64-bit)

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'help.start()' for an HTML browser interface to help.
Type 'q()' to quit R.

> █
```

4. R console via Puhti command line – batch jobs

- heavier jobs (more memory, long)
- parallel computing jobs

- more information on
 - batch jobs:
<https://docs.csc.fi/apps/r-env/#serial-batch-jobs>
 - parallel batch jobs:
<https://docs.csc.fi/apps/r-env/#parallel-batch-jobs>
<https://docs.csc.fi/support/tutorials/parallel-r/>

```

#!/bin/bash -l
#SBATCH --job-name=r_serial
#SBATCH --account=<project>
#SBATCH --output=output_%j.txt
#SBATCH --error=errors_%j.txt
#SBATCH --partition=test
#SBATCH --time=00:05:00
#SBATCH --ntasks=1
#SBATCH --nodes=1
#SBATCH --mem-per-cpu=1000

# Load r-env
module load r-env

# Clean up .Renviron file in home directory
if test -f ~/.Renviron; then
    sed -i '/TMPDIR/d' ~/.Renviron
fi

# Specify a temp folder path
echo "TMPDIR=/scratch/<project>" >> ~/.Renviron

# Run the R script
srun apptainer_wrapper exec Rscript --no-save myscript.R

```

Installing R packages on Puhti yourself

- user-installed packages are specific to your project and to the current R version
 - installed in the **projappl** directory:
`/projappl/<project>/<your_Rpackage_folder>`

- instructions:

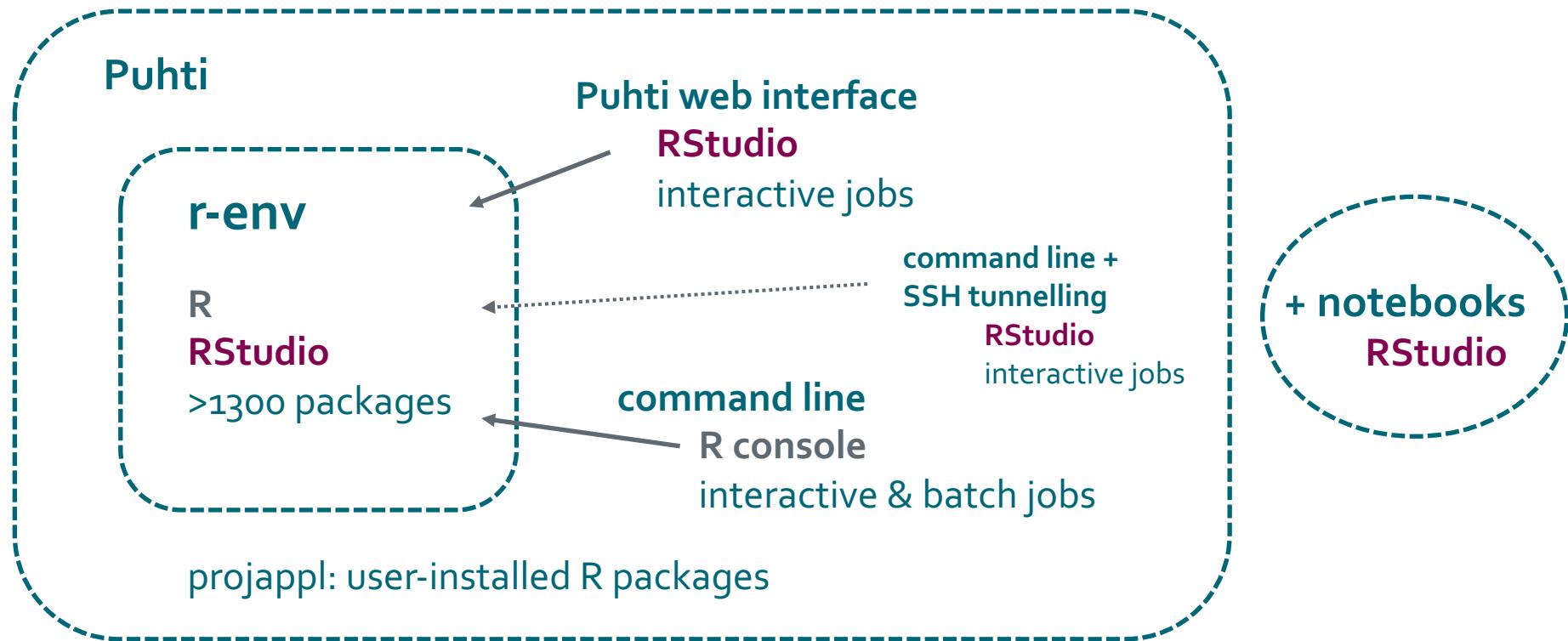
<https://docs.csc.fi/apps/r-env/#r-package-installations>

5. RStudio on notebooks.csc.fi

- easy-to-use web application run on CSC cloud : notebooks.csc.fi
 - participating in courses and self-learning
 - hosting courses
 - collaboration platform
- things to note: session life time, data storage, limitations on memory and storage space

More information: https://docs.csc.fi/cloud/csc_notebooks/

Wrap-up





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**For R support on CSC platforms,
contact servicedesk@csc.fi**



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