



University of Colorado **Anschutz Medical Campus**

# The R guide on Alpine

*By AMC HPC and Research Computing*



# R cases on Alpine

There are 3 totally distinct ways to use R on Alpine

- Rstudio on Ondemand with versions **4.4.1** and **4.2.2**. The version **4.4.1** is strongly recommended.
- Under the Alpine shell, there is an R version 4.4.0 that is accessible by using **LMOD**, the modern environment module system for HPC.
- One may decide to install R through **miniforge** or **anaconda**. The latest version they can install is R **4.4.2**



RStudio Server

RStudio Server

This app will launch RStudio Server, an IDE for R on Alpine.

Before utilizing this application, please see the [RStudio Server](#) and [Configuring Open OnDemand interactive applications](#) sections in our documentation. This documentation includes important information regarding quitting an RStudio session. For more information on installing dependencies required by R packages, please see the [Installing dependencies for RStudio Server](#) section in our documentation.

RStudio Version

Rstudio 2024.04.2, R 4.4.1

Configuration type

Preset configuration

Preset configuration

4 cores, 4 hours

Launch

\* The RStudio Server session data for this session can be accessed under the [data root directory](#).



Currently Loaded Modules:

1) jdk/18.0.1.1 2) R/4.4.0

module load R/4.4.0

module list



module load miniforge



# I) Rstudio on Alpine

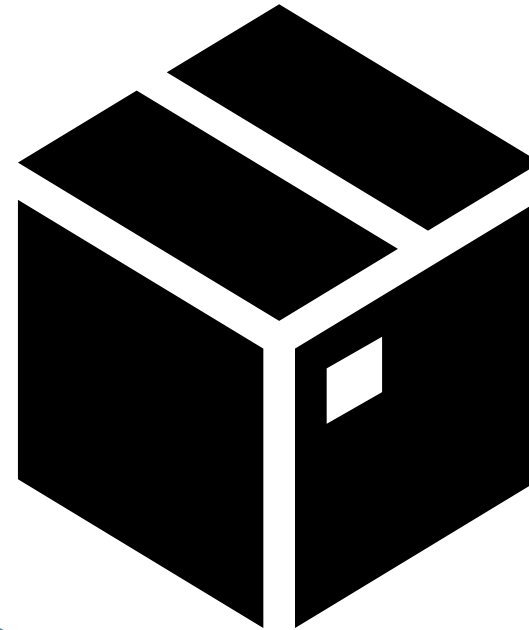
What is Ondemand Rstudio?

- It was built on top of an apptainer container image, thus, it runs on a different operating system than Alpine.
- A container is a tool that allows you to run different applications that were built on different operating systems on Alpine.
- The Rstudio .sif image is located at [/curc/sw/containers/open\\_ondemand/rstudio-server-4.4.1.sif](/curc/sw/containers/open_ondemand/rstudio-server-4.4.1.sif)

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Rstudio

Container



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# I) Rstudio on Alpine

Use Rstudio on Alpine if:

- If you are used to Rstudio outside of Alpine
- You will need access to a GUI.
- If you think that most of your pipelines will not require more than 16 cores or 60GB of RAM.
- **Note:** \* If you are new to Rstudio on Alpine, please refer to this guide: [https://github.com/kf-cuanschutz/CU-Anschutz-HPC-documentation/tree/main/Rstudio\\_related\\_scripts](https://github.com/kf-cuanschutz/CU-Anschutz-HPC-documentation/tree/main/Rstudio_related_scripts)

\* If you wish to run your Rstudio contained environment as a slurm batch script, please refer to this guide: [https://github.com/kf-cuanschutz/CU-Anschutz-HPC-documentation/blob/main/Rstudio\\_on\\_Slurm.md](https://github.com/kf-cuanschutz/CU-Anschutz-HPC-documentation/blob/main/Rstudio_on_Slurm.md)



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RStudio Version

Rstudio 2024.04.2, R 4.4.1

Configuration type

Custom configuration

Cluster

Alpine

Account

amc-general

Partition

ahub

QoS

interactive

Time

6

Number of cores

16

Reservation (default is None)

None

gres options (default is None)

None

Launch

\* The RStudio Server session data for this session can be accessed under the [data root directory](#).



# II) LMOD R

What is LMOD R?

- It is accessible through the use of **LMOD**, the modern environment module system for HPC.
- You need to be on a compute node interactively or you need to submit a slurm batch script.
- We only recommend to use the version **4.4.0** to install your packages!!!
- Note that some advance package installation might requires some dependencies. Please open a ticket at [hpcsupport@cuanschutz.edu](mailto:hpcsupport@cuanschutz.edu) if you are stuck!

```
acompile --ntasks=4 --time=12:00:00
```

← Compute  
node

```
module avail R
```

← Check for  
LMOD R

```
-----  
R/3.6.3  
R/4.2.2  
R/4.4.0
```

```
module load R/4.4.0  
which R  
/curc/sw/install/R/4.4.0/bin/R
```

← Load R/4.4.0  
and confirm



# II) LMOD R

Use LMOD R if:

- You will run heavy job on Alpine, such as high memory computation jobs.
- You will not need to use a GUI interactively.
- You need to run distributed computations, such as with gnu parallel.

```
#!/bin/bash
```

```
#SBATCH --partition=amilan          #
#SBATCH --job-name=Rscript_test
#SBATCH --output=Rscript_test.%j.out #
#SBATCH --error=Rscript_test.%j.err  #
#SBATCH --account=amc-general        # Account
#SBATCH --qos=normal                 # Quality of serv
#SBATCH --nodes=1                     # Total number of r
#SBATCH --ntasks=4                    # Total number of c
#SBATCH --mail-type=ALL               # Begin, End an
#SBATCH --mail-user=kevin.fotso@cuanschi
#SBATCH --time=00:00:01
```

```
# Load the compiler that R depends on.
module load R/4.4.0
```

```
# Run the R command
Rscript R_test.█
```



# III) Miniforge R

What is miniforge/anaconda R?

- It gives you the possibility to install many R related packages through miniforge.
- Note that your miniforge R located in your miniforge environment will be very distinct from LMOD R!!!



# III) LMOD R

Use LMOD R if:

- You are a frequent miniconda/anaconda user.
- If you have followed this guide already:  
[https://github.com/kf-cuanschutz/CU-Anschutz-HPC-documentation/blob/main/miniforge\\_migration.md](https://github.com/kf-cuanschutz/CU-Anschutz-HPC-documentation/blob/main/miniforge_migration.md)
- If you plan to share the environment you are using with the rest of your lab on Alpine. For example, one can export a miniforge environment as yml.
- Consider this r-irkernel guide if you plan on using Jupyterlab:  
[https://curc.readthedocs.io/en/latest/open\\_ondemand/jupyter\\_session.html](https://curc.readthedocs.io/en/latest/open_ondemand/jupyter_session.html)

```
acompile --ntasks=4 --time=12:00:00
```

← Compute  
node

```
module load miniforge
```

← Load  
miniforge

```
conda create --name r_test_miniforge  
r_test_mini r-base r-essentials
```

← Create  
ENV







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**THANK YOU**