

Using VS Code on RCAC Community Clusters

Visual Studio Code (VS Code) is a widely used, lightweight IDE that supports remote development via SSH. This makes it a convenient option for researchers less comfortable with terminal-only editors like Vim, especially when developing code or managing data on RCAC resources.

Steps overview:

1. Install [VS Code](#) locally.
2. Install the [Remote - SSH](#) extension.
3. [Set up SSH keys](#) on your local machine and upload your public key to the cluster
4. Modify your SSH config file (`~/.ssh/config`) to include the RCAC cluster details
5. [Connect to the RCAC cluster](#) using VS Code's Remote - SSH

SSH keys for password-less login

1. Generate a key pair consisting of a private and a public key (on your local machine)

```
ssh-keygen -t ed25519 -C "USERNAME@cluster.rcac.purdue.edu"
```

copy contents from ~/.ssh/id_ed25519.pub file

2A. Copy the public key to the cluster (Mac/Linux)

```
ssh-copy-id -i ~/.ssh/id_ed25519.pub USERNAME@cluster.rcac.purdue.edu
```

enter password and DFA (DUO)

2B. If copy command not available (Windows)

```
ssh USERNAME@cluster.rcac.purdue.edu
```

enter password and DFA (DUO)

```
echo "<<id-ed25519.pub file contents>>" >> ~/.ssh/authorized_keys
```

append keys file with contents from ~/.ssh/id_ed25519.pub file

3. Fix permissions if necessary (on the HPC cluster)

```
chmod 700 ~/.ssh
```

```
chmod 600 ~/.ssh/authorized_keys
```

<https://www.rcac.purdue.edu/knowledge/scholar/accounts/login/sshkeys>

provides guidance for other programs

SSH configuration file setup for VSCode

Create or edit your `~/.ssh/config` file - add following lines; replace with your boiler ID

```
Host scholar
  HostName scholar-fe02.rcac.purdue.edu
  User purdue.pete
  ServerAliveInterval 60
  ServerAliveCountMax 3
```

Note: Connect to the same login node each time to keep your VSCode server consistent and avoid multiple instances on different nodes

Recommended Extensions



Remote - SSH

Microsoft [microsoft.com](#) | 29,472,030 | ★★★★★ (203)
Open any folder on a remote machine using SSH and take advantage of VS Cod...

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Python

Microsoft [microsoft.com](#) | 186,468,836 | ★★★★★ (618)
Python language support with extension access points for IntelliSense (Pylance), ...

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Pylance

Microsoft [microsoft.com](#) | 154,322,846 | ★★★★★ (263)
A performant, feature-rich language server for Python in VS Code

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Jupyter

Microsoft [microsoft.com](#) | 96,293,723 | ★★★★★ (340)
Jupyter notebook support, interactive programming and computing that suppor...

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R

REditorSupport | 2,807,255 | ★★★★★ (43)
R Extension for Visual Studio Code

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GitLens — Git supercharged

GitKraken [gitkraken.com](#) | 44,269,824 | ★★★★★ (877)
Supercharge Git within VS Code — Visualize code authorship at a glance via Git ...

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Markdown All in One

Yu Zhang | 11,739,030 | ★★★★★ (164)
All you need to write Markdown (keyboard shortcuts, table of contents, auto pre...

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Nextflow

Nextflow [nextflow.io](#) | 46,878 | ★★★★★ (5)
Nextflow language support

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ShellCheck

Timon Wong | 1,695,287 | ★★★★★ (42) | Sponsor
Integrates ShellCheck into VS Code, a linter for Shell scripts.

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YAML

Red Hat [redhat.com](#) | 23,446,598 | ★★★★★ (71)
YAML Language Support by Red Hat, with built-in Kubernetes syntax support

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Running Jupyter Notebooks on VSCode (cluster setup)

First, load the conda module

module load conda

Create a new environment with the necessary packages

We include ipykernel so VSCode can communicate with our notebook

conda create -n jupyter-demo python=3.10 numpy pandas ipykernel -y

Activate the environment

conda activate jupyter-demo

Running R code on VSCode (cluster setup)

First, load the R module

module load r/4.4.1

which R

copy the path

Append these lines to .bashrc

```
if [[ "$TERM_PROGRAM" == "vscode" ]]; then
    module load r/4.4.1
```

```
fi
```

add this block to ~/.vscode-server/data/Machine/settings.json

```
{
  "python.defaultInterpreterPath": "/bin/python"
  "r.rterm.linux": "/copied/path/to/R",
  "r.bracketedPaste": true,
  "r.alwaysUseActiveTerminal": true
}
```