# Using VS Code and Jupyter Notebook at NSC

Xuan Gu

Application Expert

National Supercomputer Centre (NSC)

April 15, 2025





Using VS Code with Remote-SSH Using VS Code via ThinLinc Using VS Code Server via SSH Tunnel

## 2. Using Jupyter Notebook at NSC

Using Jupyter Notebook via ThinLinc





#### Using VS Code with Remote-SSH

Using VS Code via ThinLinc Using VS Code Server in via SSH Tunnel



- Need to install VS Code on your local computer
- Need to install Remote-SSH extension in VS Code

## 2. Using Jupyter Notebook at NSC

Using Jupyter Notebook via ThinLinc





#### Using VS Code with Remote-SSH:

A Quick Demo







#### Workflow:

- 1. Connect to Tetralith
- 2. Edit a file (coding)
- 3. Submit jobs in the built-in terminal



1. Using VS Code with Remote-SSH Using VS Code via ThinLinc

## 2. Using Jupyter Notebook at NSC

#### Using Jupyter Notebook via ThinLinc

Using Jupyter Notebook via SSH Tunnel

• • •	ThinLinc Client	
ThinLinc <sup>®</sup>		Version 4.12.1 Build 6733
Server:	tetralith.nsc.liu.se	
Username:	xuan	
Password:		
End existing session	n	Options
Exit	Advanced<<	Connect <=
Enter username and pa	ssword to connect.	

#### Workflow:

- 1. Connect to Tetralith via ThinLinc
- 2. Open a terminal
- 3. Launch VS Code / Jupyter Notebook



1. Using VS Code at NSC Using VS Code with Remote-SSH Using VS Code via ThinLinc Using VS Code Server in via SSH Tunne

## 2. Using Jupyter Notebook at NSO

Using Jupyter Notebook via ThinLinc





Using VS Code with Remote-SSH
 Using VS Code via ThinLinc
 Using VS Code Server via SSH Tunnel



## 2. Using Jupyter Notebook at NSC

Using Jupyter Notebook via ThinLinc





# Using VS Code with Remote-SSH Using VS Code via ThinLinc Using VS Code Server via SSH Tunnel

## 2. Using Jupyter Notebook

#### Using Jupyter Notebook via ThinLinc



- Use the --ip flag to specify the hostname
- The **port** 9988 is arbitrary. If it's already in use, try another (e.g., 9989, 9990, etc.).





# Using VS Code with Remote-SSH Using VS Code via ThinLinc Using VS Code Server via SSH Tunnel

### 2. Using Jupyter Notebook at NS

#### Using Jupyter Notebook via ThinLinc

2-	Terminal - xuan@n11	14:~	_ <b>_ ×</b>
File Edit \	iew Terminal Tabs Help		
[I 2025-0 [I 2025-0 0b0657c85 [I 2025-0	-12 20:45:22.548 ServerApp] Jupyto -12 20:45:22.548 ServerApp] http: bb0604fc65b6c9ca5d9549c52 -12 20:45:22.548 ServerApp] h	er Server 2.15.0 is running at: //n1114:9988/lab?token=8a458d0087 ttp://127.0.0.1:9988/lab?token=8a	72e2c a458d
00872e2c0 [I 2025-0 down all [C 2025-0	0657c85cb0604fc65b6c9ca5d9549c52 -12 20:45:22.548 ServerApp] Use C Kernels (twice to skip confirmati 1-12 20:45:22.552 ServerApp]	ontrol-C to stop this server and on).	shut
To ac f	ess the server, open this file in lle:///home/xuan/.local/share/jupy	a browser: ter/runtime/jpserver-1325519-oper	n.htm
0r co	y and paste one of these URLs:		
h 9c52	tp://n1114:9988/lab?token=8a458d0	08/2e2c0b065/c85cb0604†c65b6c9ca5	od954
h	tp://127.0.0.1:9988/lab?token=8a4	58d00872e2c0b0657c85cb0604fc65b60	9ca5
d9549c52	1-12 20.45.22 570 ServerAppl Skipp	ed non-installed server(s), hash.	lang
uage-serv	er, dockerfile-languade-server-nod	ejs, javascript-typescript-langse	erver
, jedi-la	nguage-server, julia-anguage-serv	er, pyright, python-language-serv	/er,
python-ls	-server, r-languages rver, sql-la	nguage-server, texlab, typescript	-lan
guage-ser 1-languag	server-bin, vscode-ison-languages	de-css-languageserver-bin, vscode erver-bin, vaml-language-server	e-num
	an@tetralith1.nsc.liu.se	- ThinLinc Client	04-12
plications = 🧧 J	pytercab — Mozilia Fir 🚬 Terminal - Xuan@n1114:~	20:	49 - Xuan (
C JupyterLal	× +	~	- • :
→ C	⑦ ℵ n1114:9988/lab	☆ (S)	ວ ≰າ ≡
Pocky Linux	Rocky Wiki 🔿 Rocky Forums 🔿 Rocky Mattermost 🔿 Ro	cky Beddit	
	v Due Kernel Take Cattings Hole	cky heddie	
rile Edit Vie	w run kennel labs settings melp		
+	J ± C ▼ Xuan@n1114:~ × +		0
<b>I</b>	[xuan@n1114 ~]\$ nvidia-smi		
Name	Modified Sat Apr 12 20:48:37 2025		
Desktop	last yr.   NVIDIA-SMI 570.86.15	Driver Version: 570.86.15 CUDA Version: 12.8	1
Documents	2y ago   GPU Name Persist	tence-M   Bus-Id Disp.A   Volatile Uncorr. ECC	1
Downloads	last yr.   Fan Temp Perf Pwr:Usa	age/Cap   Memory-Usage   GPU-Util Compute M.   MIG M.	
Music  Picturos	last yr.	00 L 0000000 30 00 0 0ff L	-
Pictures	last vr.   N/A 28C P8 9W /	/ 70W   1MiB / 15360MiB   0% Default	
Templates	last yr.	N/A   N/A	-+
Videos	last yr.		
🗅 commands	xt last yr.   Processes:		i i
🗅 conda_list.t	t last yr.   GPU GI CI PID	Type Process name GPU Memory	
🗅 matlab_cra		Usaue	
_	h_d last yr.		-
🗅 matlab_cra	h_d last yr.   h_d last yr.   No running processes found +	usaye	-+



Using VS Code with Remote-SSH

Using VS Code via ThinLinc

Using VS Code Server via SSH Tunnel

## 2. Using Jupyter Notebook at

Using Jupyter Notebook via ThinLinc





Using VS Code with Remote-SSH Using VS Code via ThinLinc

Using VS Code Server via SSH Tunnel

#### Workflow:

- 1. Connect to Tetralith from your local terminal
- 2. Start VS Code / Jupyter Notebook on Tetralith

#### gotetralith0

<pre>[xuan@n185 ~]\$ module load VSCode-Server/latest-bdist</pre>
<pre>[xuan@n185 ~]\$ code-serverbind-addr n185:9988 .</pre>
[2025-04-12T21:01:50.0972] info code-server 4.99.0 53722c53619727600
5f68a7fb174d9ab15afc63b
[2025-04-12T21:01:50.098Z] info Using user-data-dir /home/xuan/.loca
l/share/code-server
[2025-04-12T21:01:50.115Z] info Using config file /home/xuan/.config
/code-server/config.yaml
[2025-04-12T21:01:50.115Z] info HTTP server listening on http://10.2
4.1.85:9988/
[2025-04-12T21:01:50.115Z] info - Authentication is enabled
[2025-04-12T21:01:50.115Z] info - Using password from /home/xuan
/.config/code-server/config.yaml
[2025-04-12T21:01:50.115Z] info - Not serving HTTPS
[2025-04-12T21:01:50.115Z] info Session server listening on /home/xu
an/.local/share/code-server/code-server-ipc.sock



2. Using Jupyter Notebook at NS

Using Jupyter Notebook via ThinLinc



Using VS Code with Remote-SSH Using VS Code via ThinLinc

Using VS Code Server via SSH Tunnel

## 2. Using Jupyter Notebook at NSC

Using Jupyter Notebook via ThinLinc

Using Jupyter Notebook via SSH Tunnel

#### Workflow:

- 1. Connect to Tetralith from your local terminal
- 2. Start VS Code / Jupyter Notebook on Tetralith
- 3. Establish SSH tunnel from your local computer

ssh -N -L localhost:9988:n185:9988 xuan@tetralith1.nsc.liu.se
(xuan@tetralith1.nsc.liu.se) Verification code:



Using VS Code with Remote-SSH Using VS Code via ThinLinc

Using VS Code Server via SSH Tunnel

# 2. Using Jupyter Notebook at NSC

Using Jupyter Notebook via ThinLinc

Using Jupyter Notebook via SSH Tunnel

#### Workflow:

- 1. Connect to Tetralith from your local terminal
- 2. Start VS Code / Jupyter Notebook on Tetralith
- 3. Establish SSH tunnel from local computer
- 4. Open your local browser and connect

http://localhost:9988







- Using VS Code with Remote-SSH
  - You only connect to **login nodes**
- Using VS Code Server via SSH Tunnel
  - You can directly connect to **compute nodes**

Use cases:

- Real-time debugging on a compute node
- Running Jupyter Notebooks in VS Code on a compute node



#### User Support: Create a Ticket in SUPR

#### (supr.naiss.se)



Rounds

Login Your are not logged in.

Resources Support Start

#### SUPR - Swedish User and Project Repository

SUPR is the NAISS database used to keep track of persons, projects, project proposals and more. To use most SUPR functions you need to be logged in.







## **Thanks for listening!**



