

Cluster

HPC infrastructure overview

IVI Cluster

↳ Owned and managed by IVI, [for access ask Dennis](#)

DAS(4/5/6)

↳ Distributed **ASCI Supercomputer**

Each participating university hosts a part of it, [for access ask Dennis](#)

Snellius

↳ Managed by SURF, can request credits up to 1M directly through SURF

1M credits is one GPU node with **4xA100** for 81 (!) days



Dennis Koelma

God of clusters

*accurate job description
borrowed from CVlab website*

General points

You can see usage with Dennis' very own **mywatch**

Wraps around SLURM's squeue and other things

`/home/dkoe1ma1/bin/mywatch` on `ivi-h0` or `/home/koe1ma/bin/mywatch` on `fs4.das6`

Don't stay idle on nodes (the cluster police WILL come for you)

12 booked GPUs, not one in use 😞

ivi-cn014	all	0.00	mixed	4/4	40/48	160/258	gpu:pascal:4 1080Ti
ivi-cn015	all	0.00	mixed	4/4	40/48	80/258	gpu:ampere:4 3090
ivi-cn016	all	0.00	mixed	4/4	40/48	120/258	gpu:ampere:4 A5000
ivi-cn017	all	0.00	mixed	4/4	40/48	120/258	gpu:pascal:4 1080Ti

Use non-interactive jobs as much as possible!

You'll probably get assigned a job a lot sooner and you'll be using resources efficiently 😊

~/.ssh/config opinionated bit

I have this in my ~/.ssh/config for convenience (and using ssh keys)

```
Host ivi-h0
  HostName ivi-h0.science.uva.nl
  User username
```

```
Host ivi-cn
  User username
  ProxyCommand ssh ivi-h0 "nc \$(queue --user username --name=tunnel --states=R -h -O NodeList) 2222"
```

```
Host das6-fs4
  HostName fs4.das6.science.uva.nl
  User username
```

```
Host das6-fs4-node
  User username
  ProxyCommand ssh das6-fs4 "nc \$(queue --user username --name=tunnel --states=R -h -O NodeList) 2222"
```

```
Host workstation
  HostName your-machine-hostname.science.uva.nl
  User username
```

(I'll talk about this in a sec but the bits in orange find the node where we have the ssh daemon running and nc's into it)

How can you debug things on the cluster all from the
comfort of your IDE?

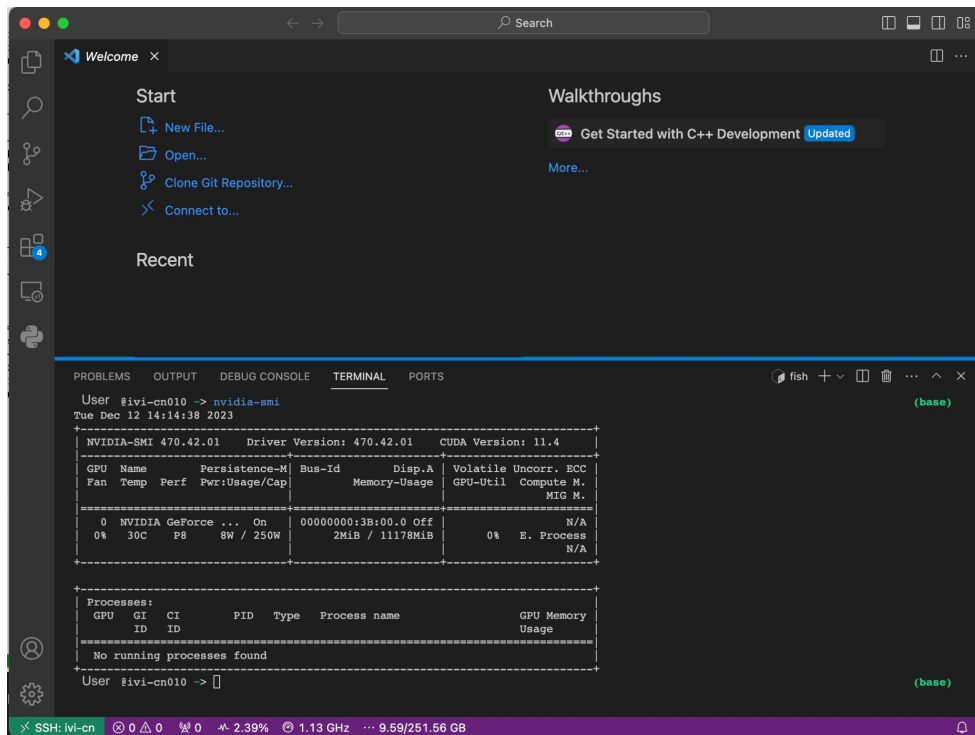
IDE debugging on a compute node - what NOT to do

- When you get a reservation you are assigned a compute node
- However, you can't normally ssh into this compute node

IDE debugging on a compute node

So, with our tunnel job running an SSH daemon, and the ~/.ssh/config setup, we can now just connect to a compute node through VSCode using SSH.

We then have get access to our reservation within the compute node aka respecting the rules 😇



The screenshot shows the VS Code interface with a terminal window open. The terminal displays the output of the `nvidia-smi` command, showing GPU information and process details. The terminal output is as follows:

```
User @ivi-cn010 -> nvidia-smi
Tue Dec 12 14:14:38 2023
-----
NVIDIA-SMI 470.42.01 Driver Version: 470.42.01 CUDA Version: 11.4
-----
GPU Name Persistence-M Bus-Id Disp.A Volatile Uncorr. ECC
Fan Temp Perf Pwr:Usage/Cap Memory-Usage GPU-Util Compute M.
MIG M.
-----
0 NVIDIA GeForce ... On 00000000:3B:00.0 Off N/A
0% 30C P8 8W / 250W 2MiB / 11178MiB 0% E. Process N/A
-----

Processes:
GPU GI CI PID Type Process name GPU Memory
ID ID ID
-----
No running processes found
-----
User @ivi-cn010 -> |
```

The terminal window also shows the status bar at the bottom with system information: SSH: ivi-cn, 0% CPU, 0% RAM, 2.39% disk, 1.13 GHz, 9.59/251.56 GB.