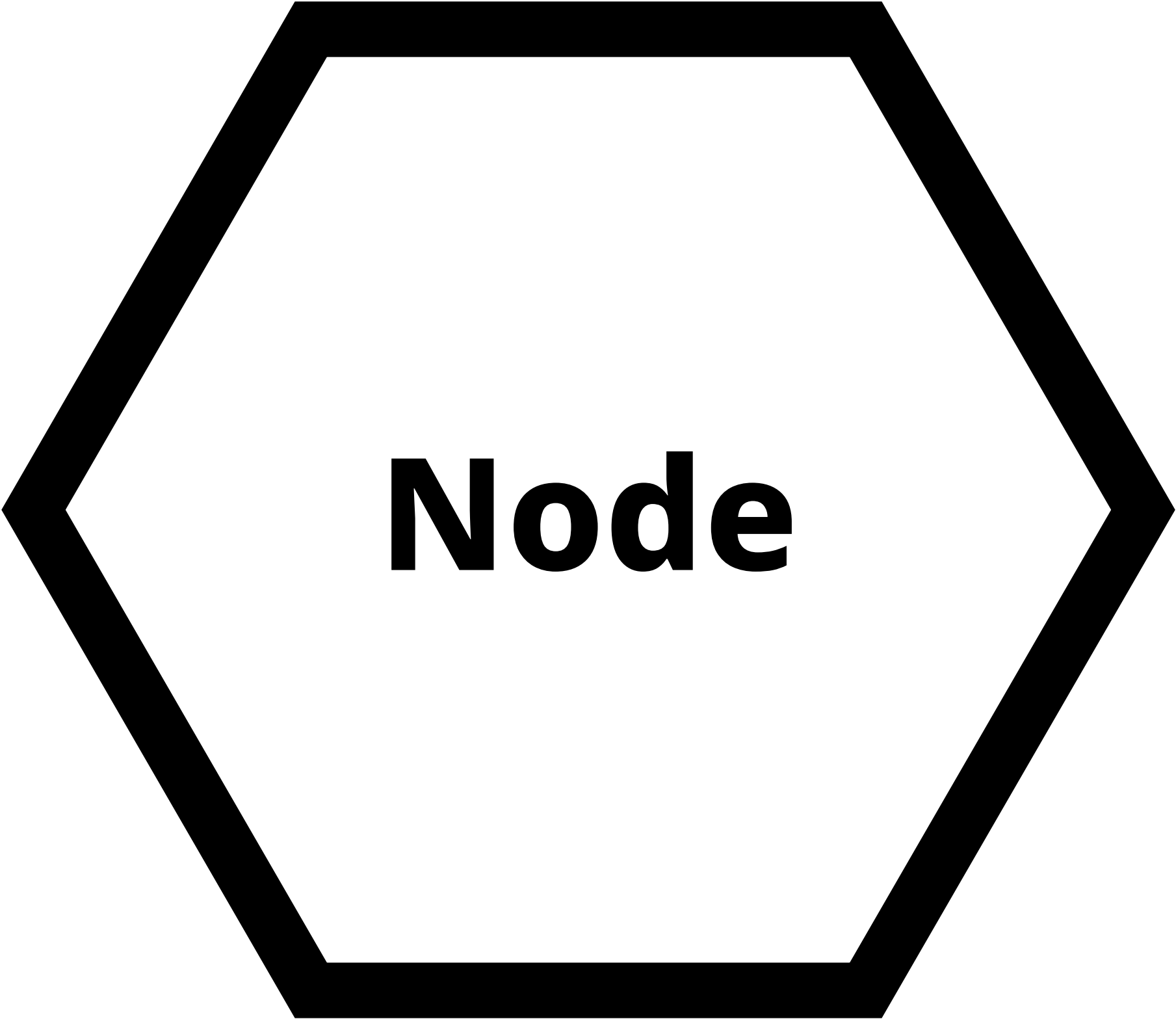


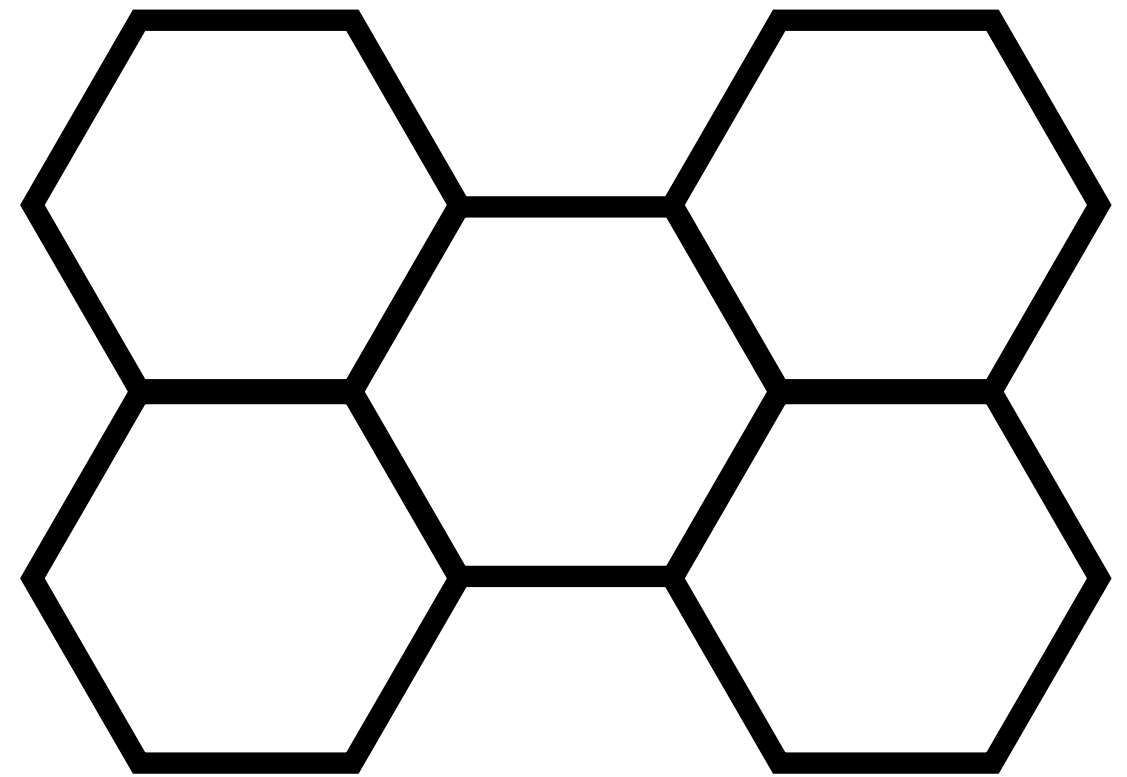
# HyperQueue

Ada Böhm

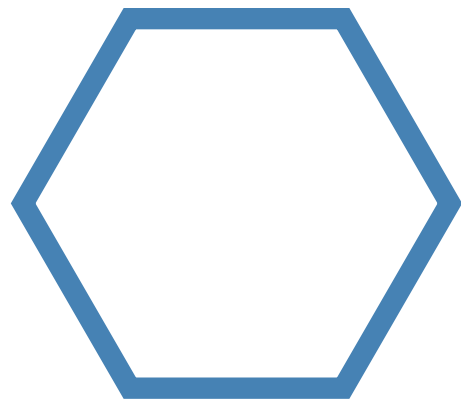




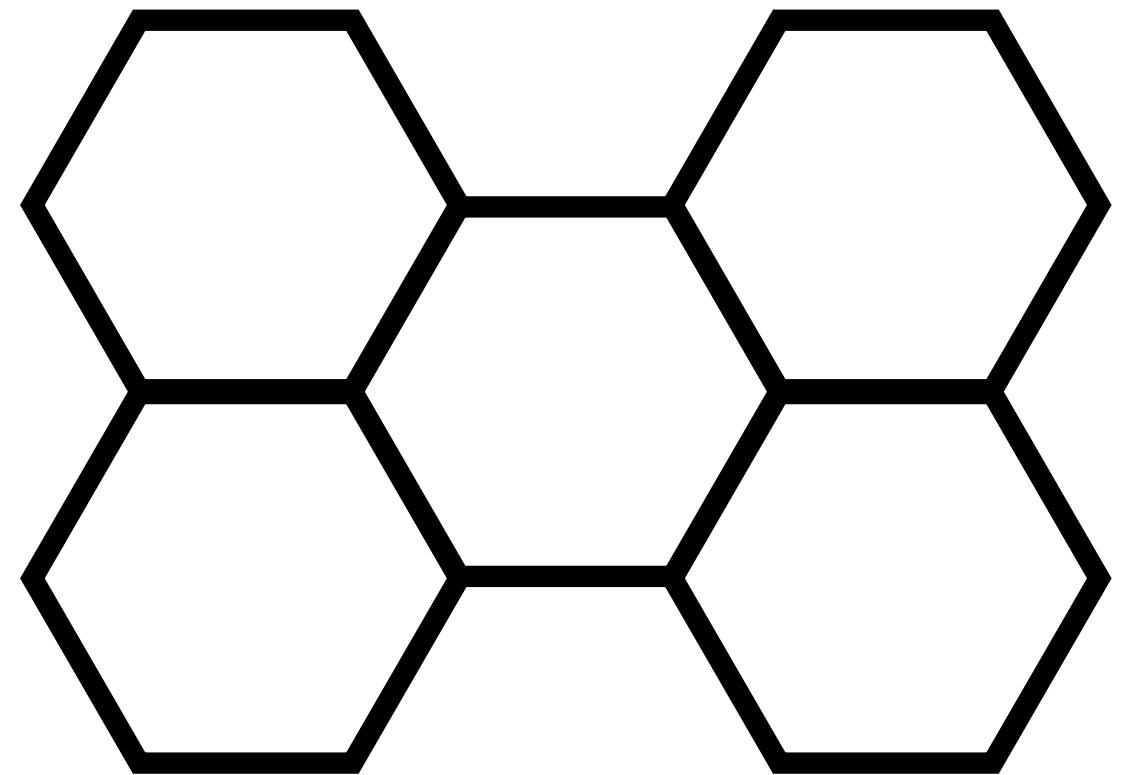
**Node**



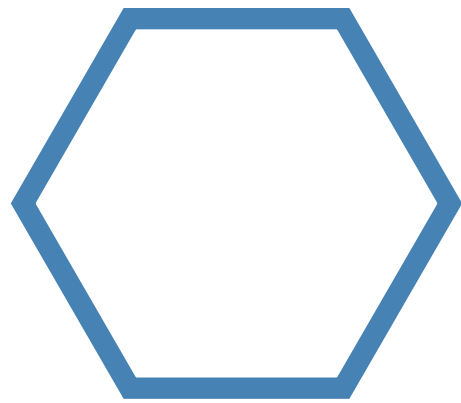
Compute nodes



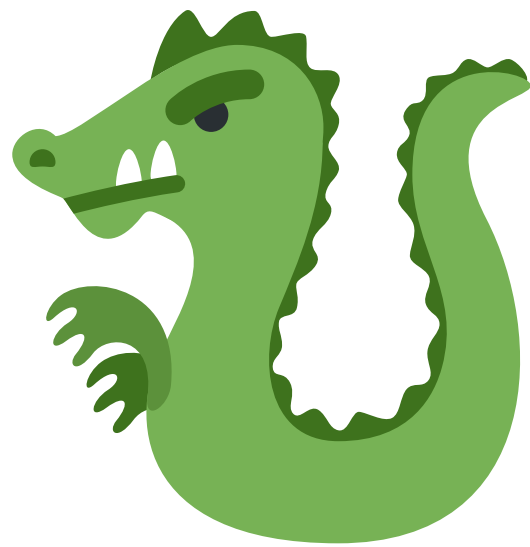
Login nodes



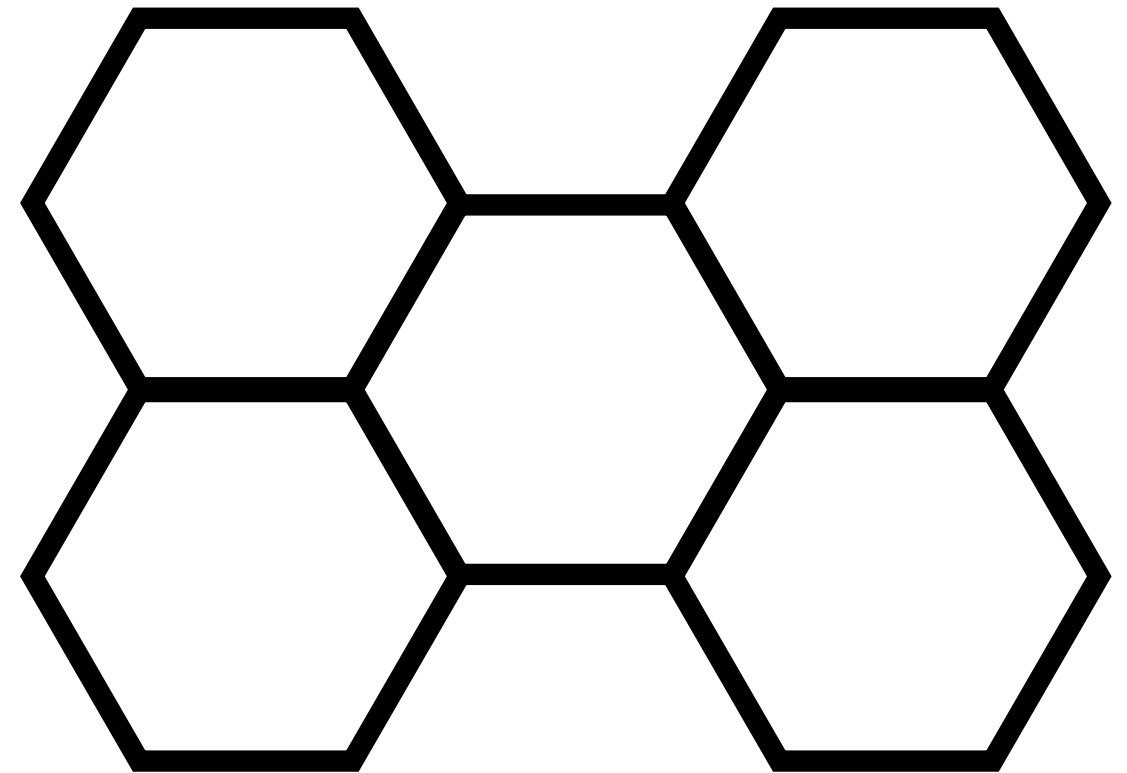
Compute nodes



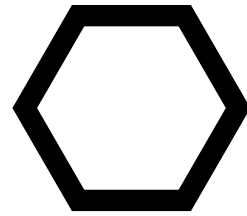
Login nodes

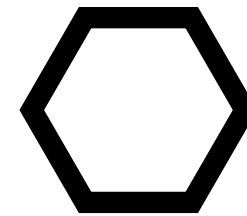
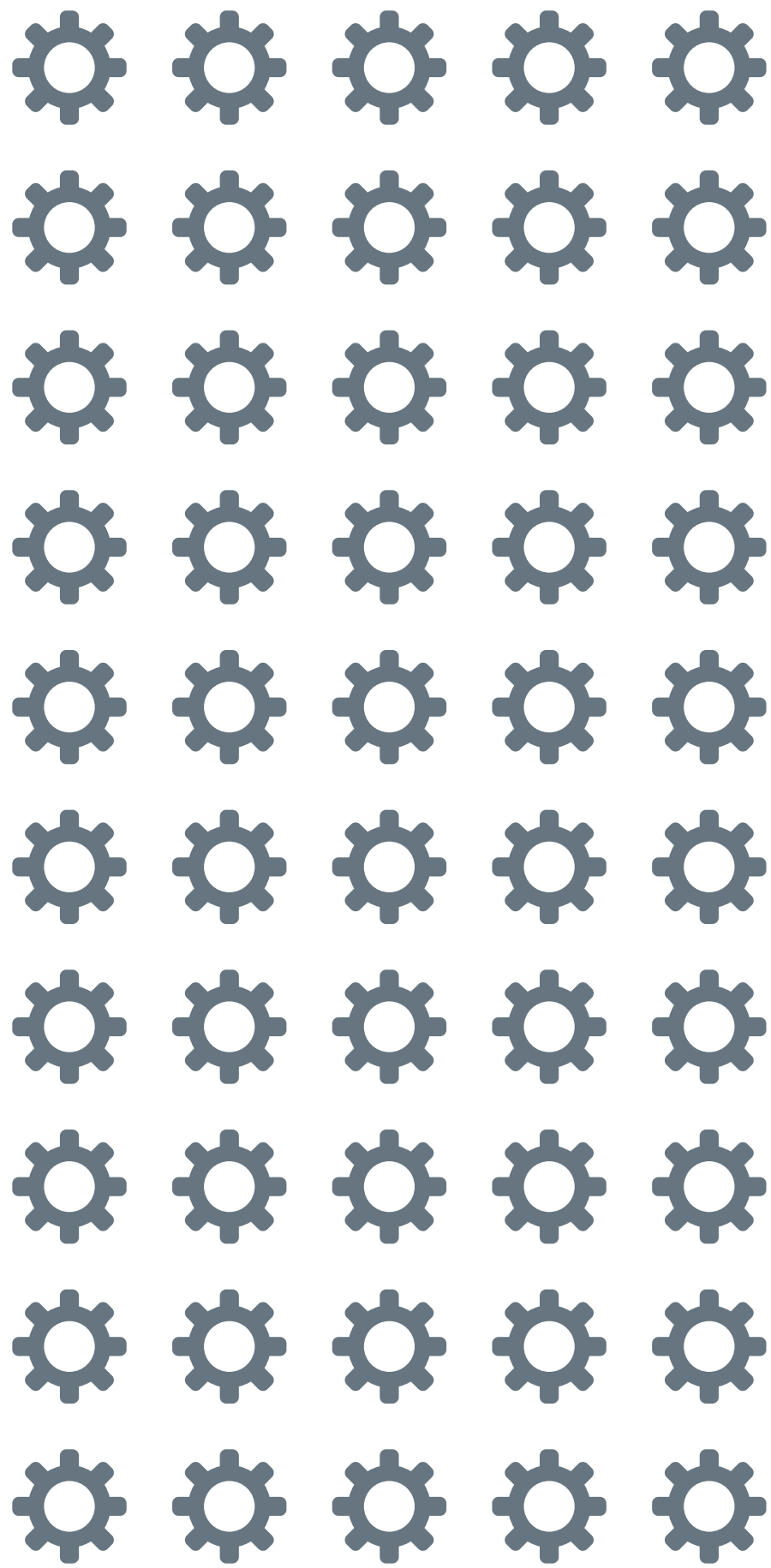


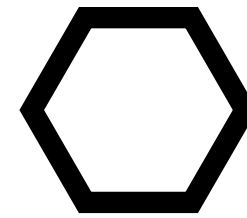
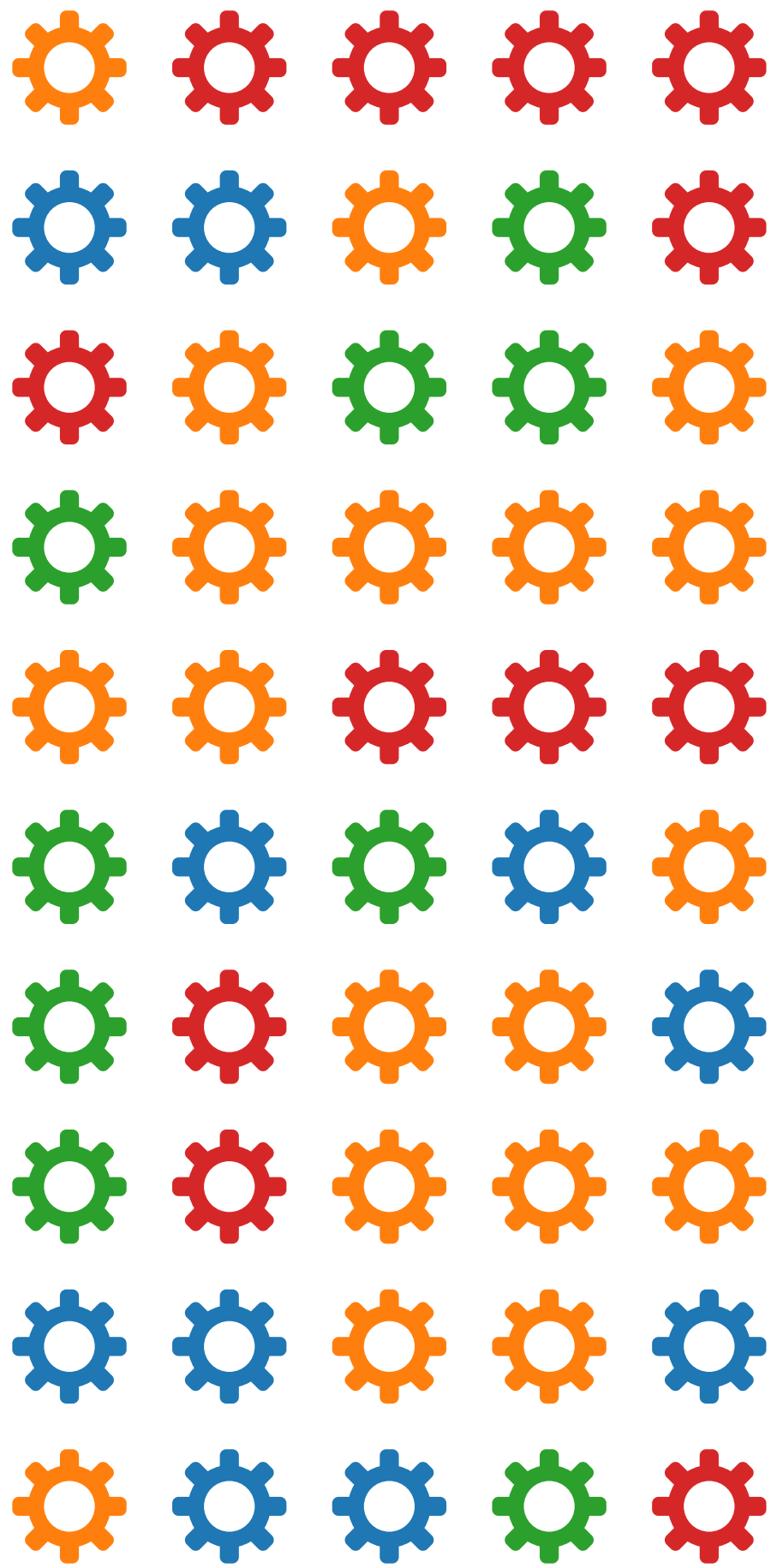
SLURM

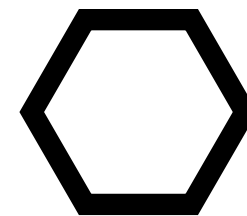
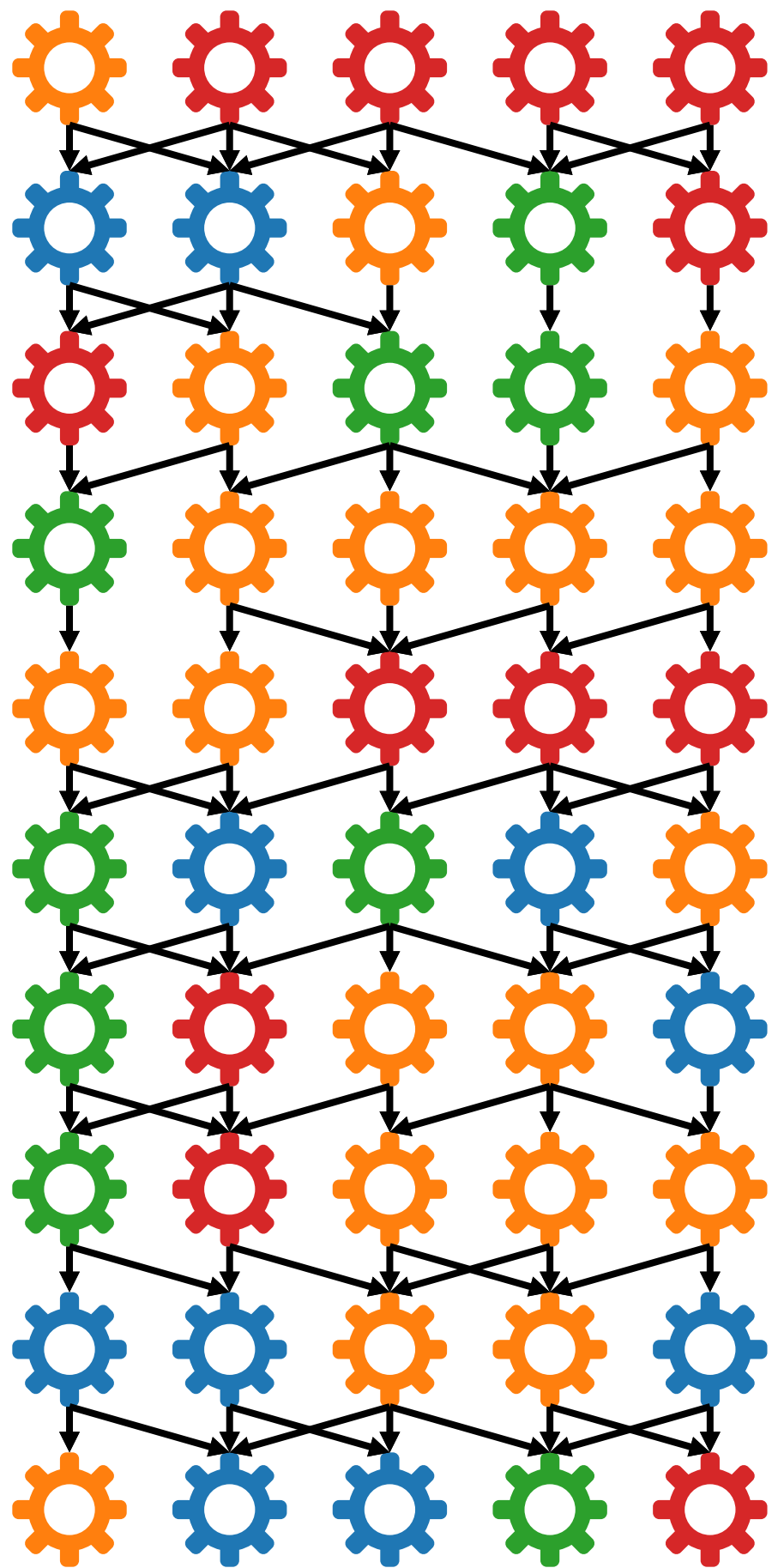


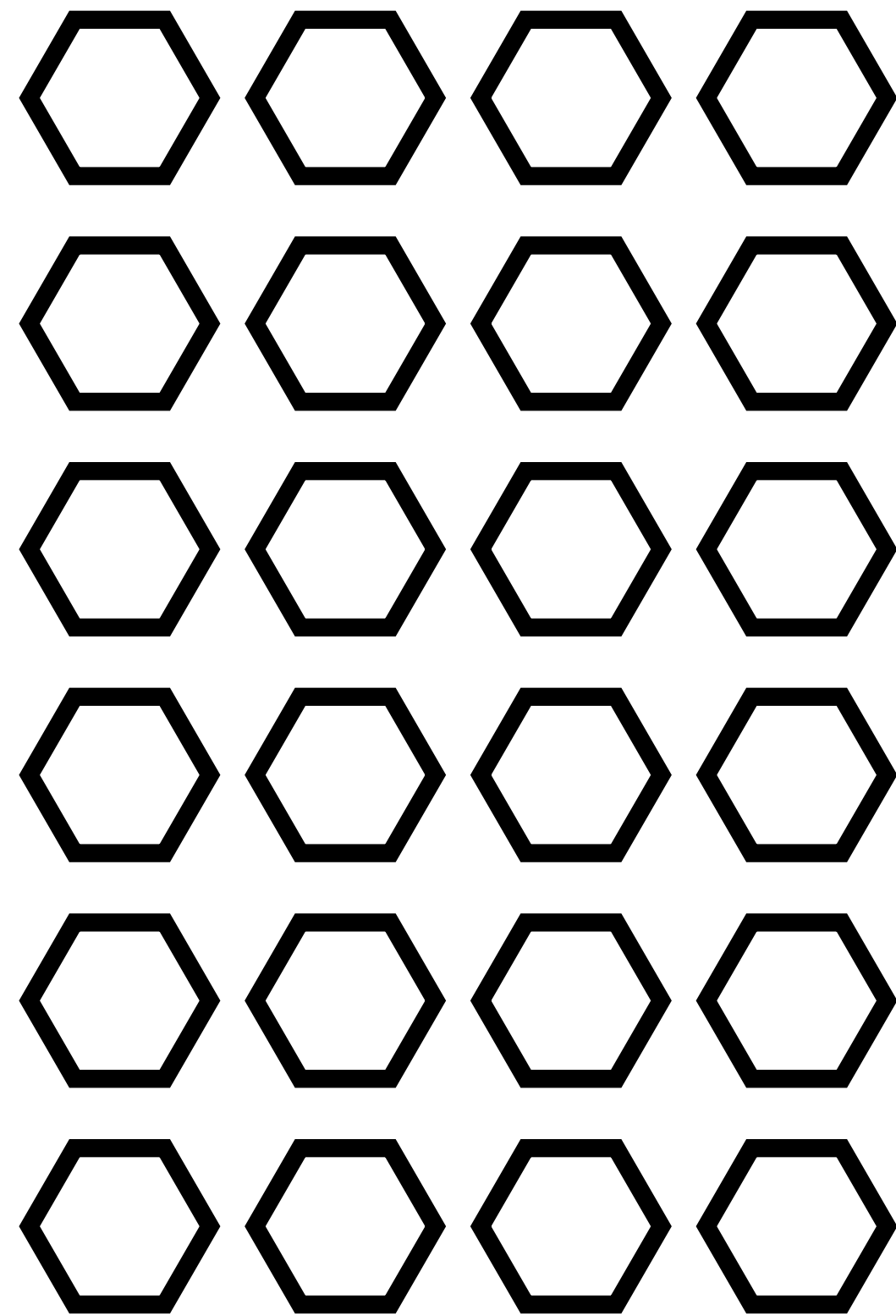
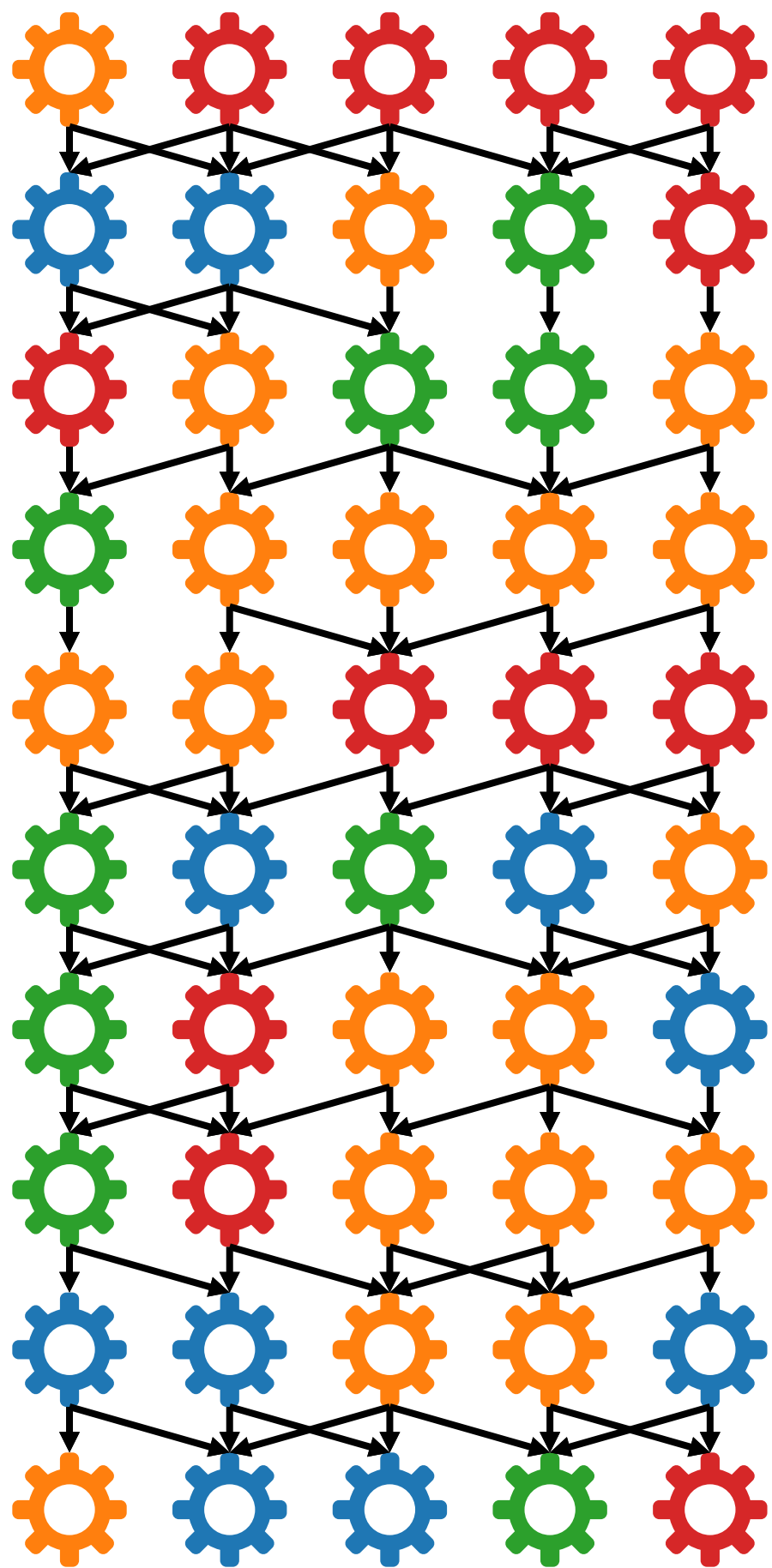
Compute nodes

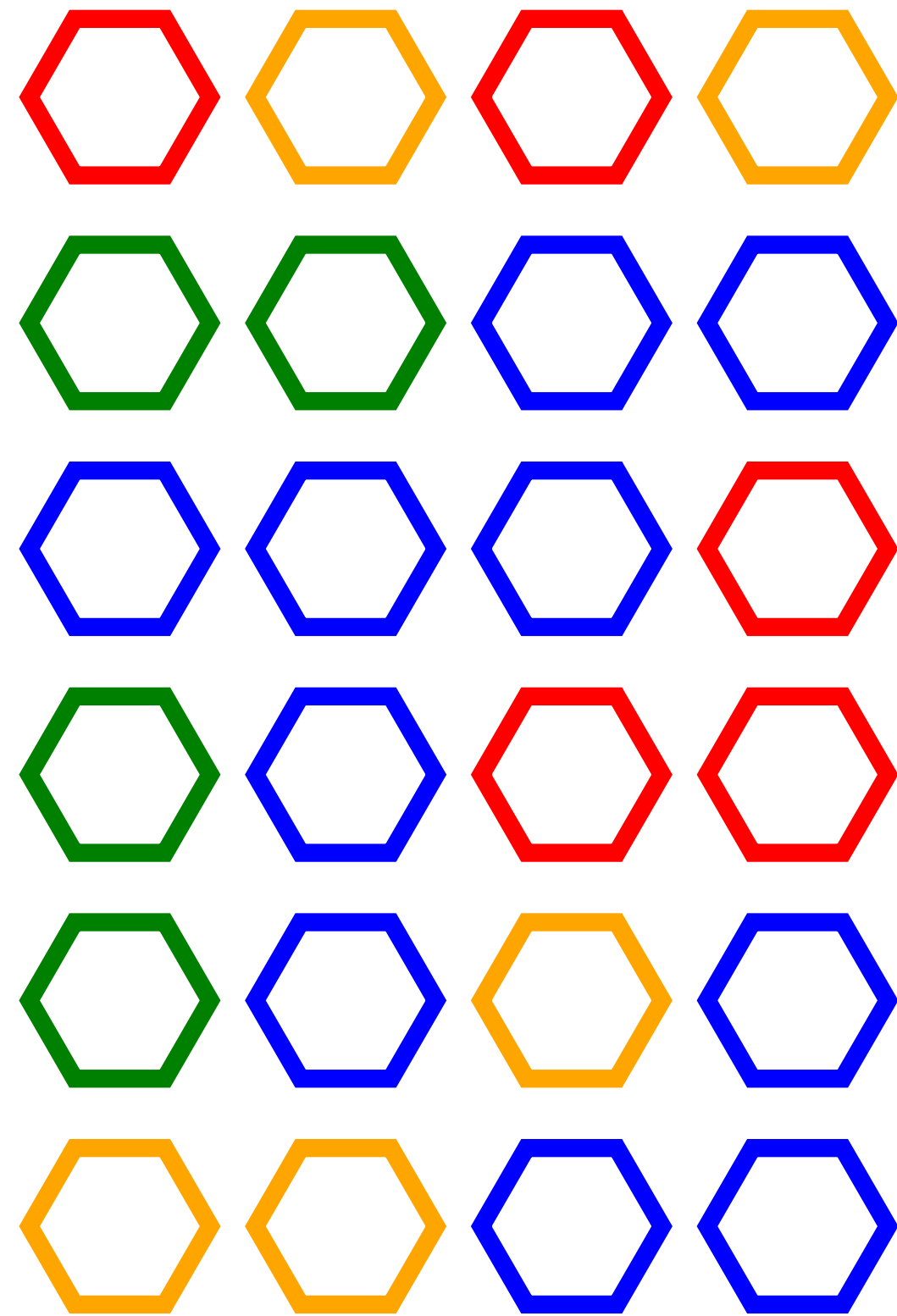
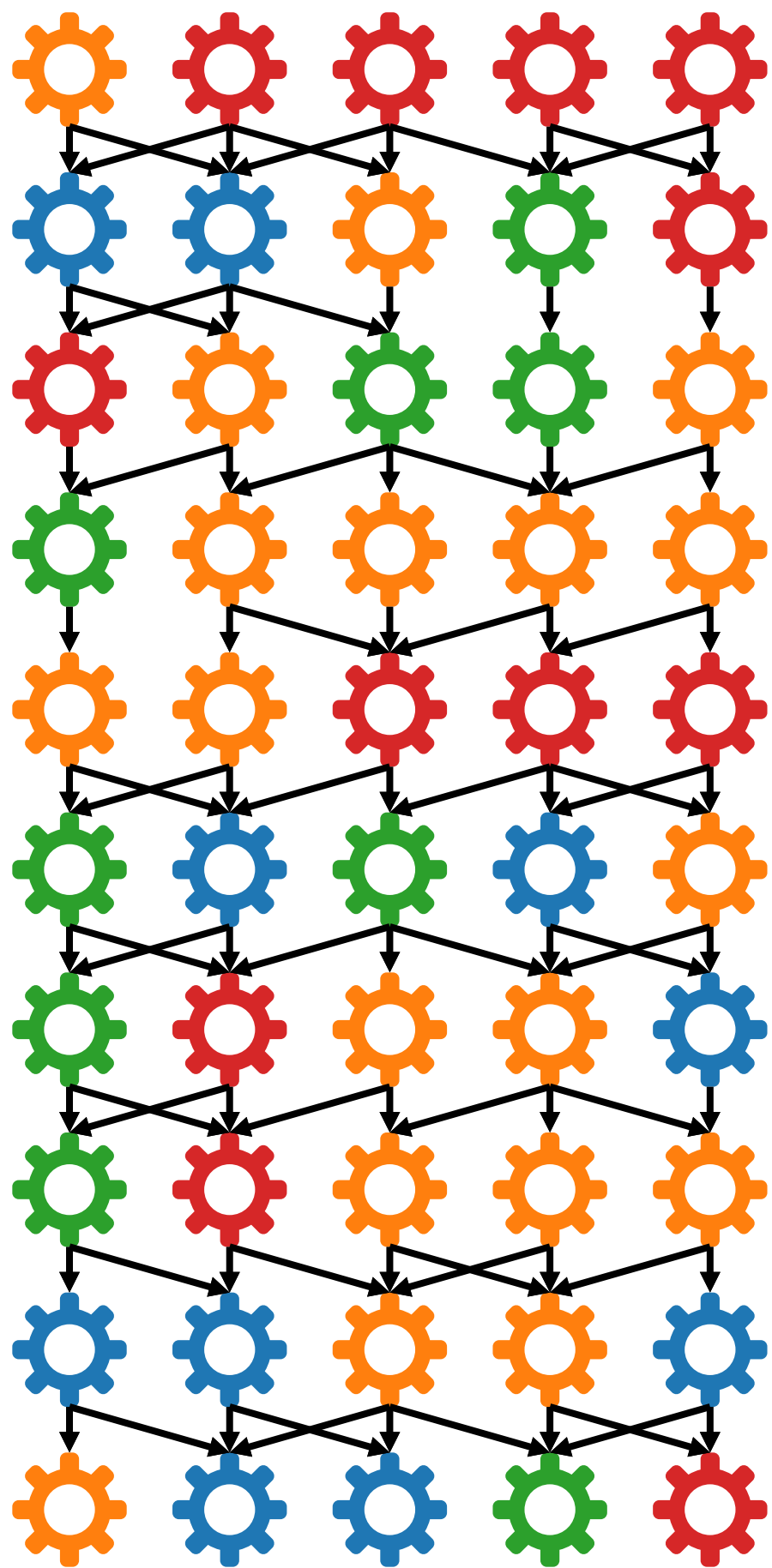


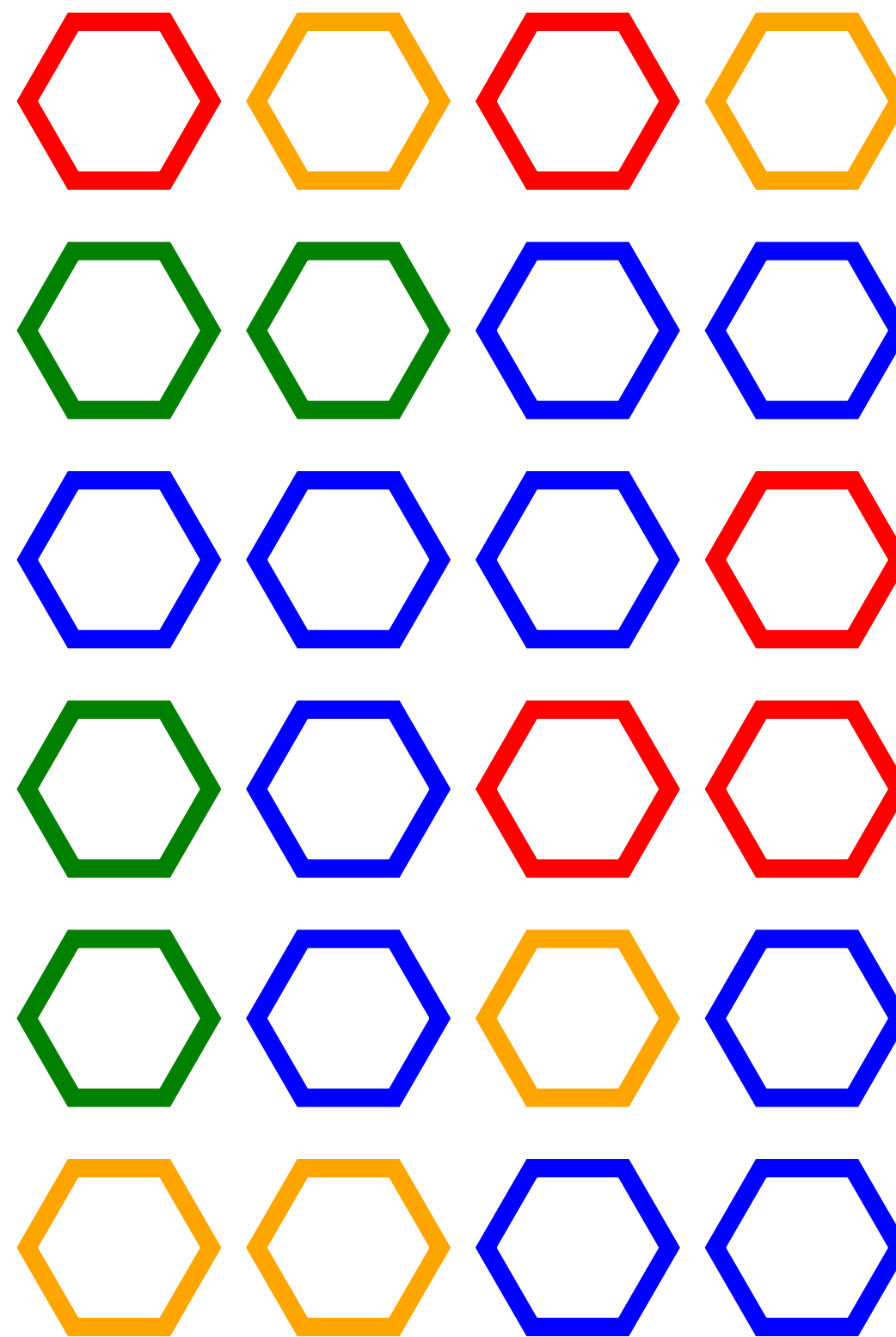
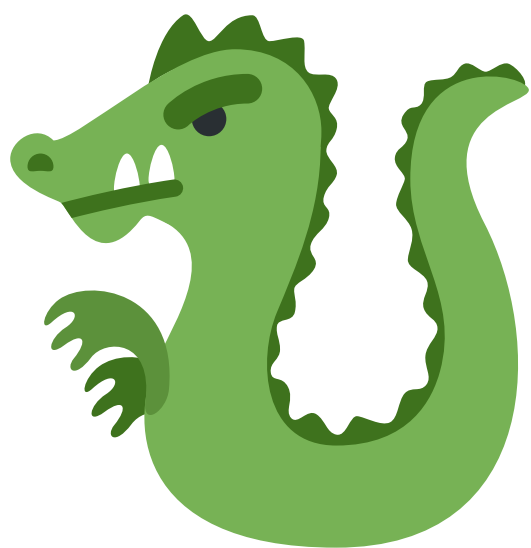
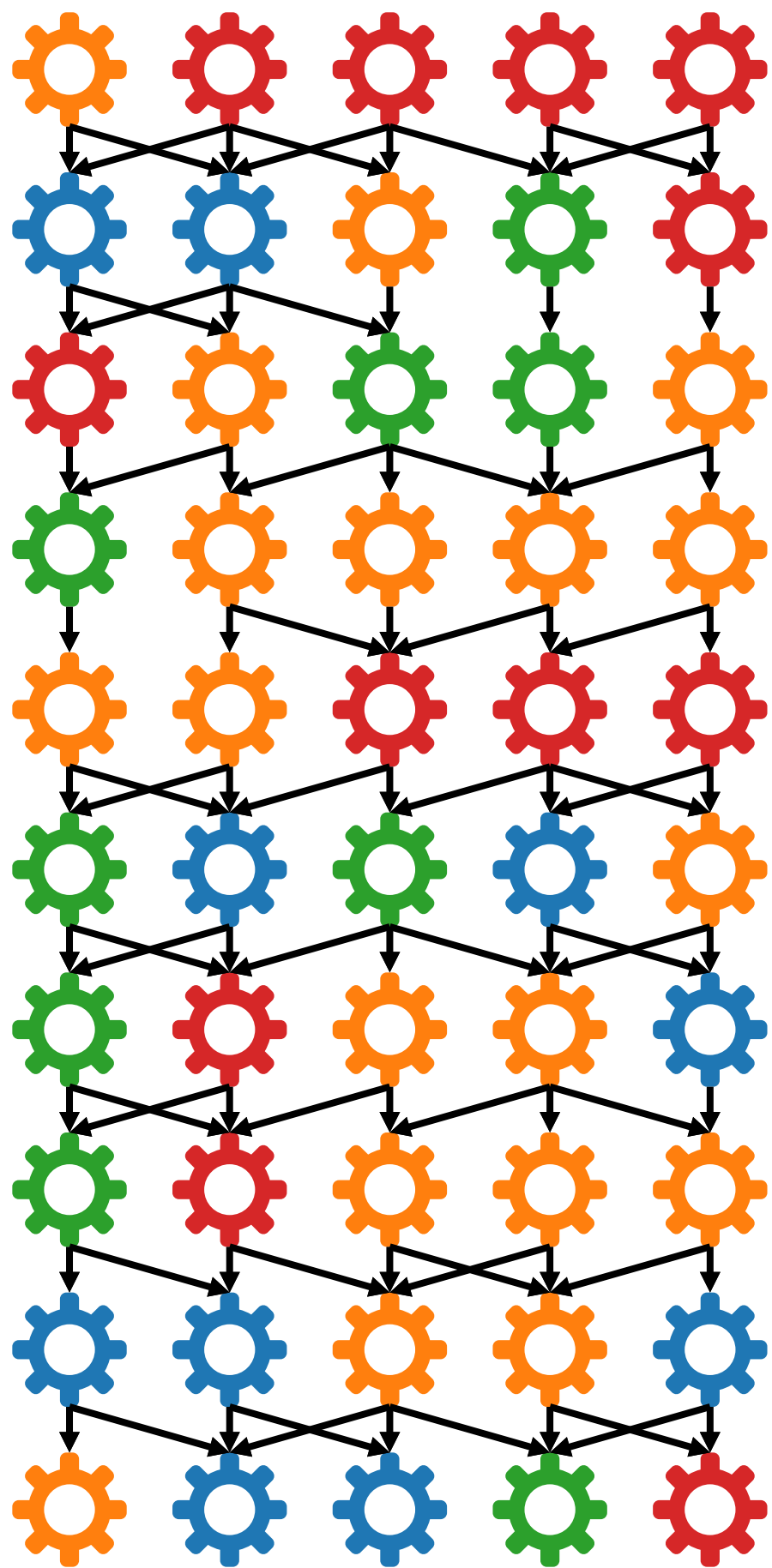




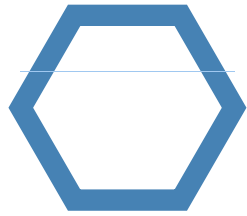




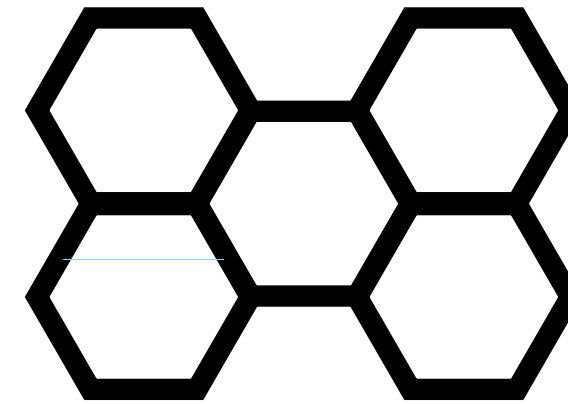




Login nodes

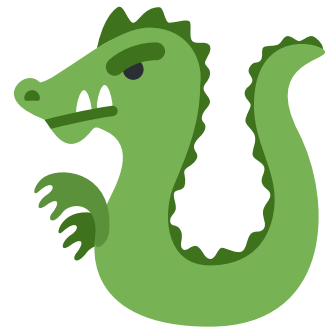
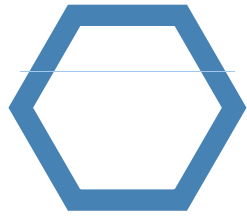


SLURM

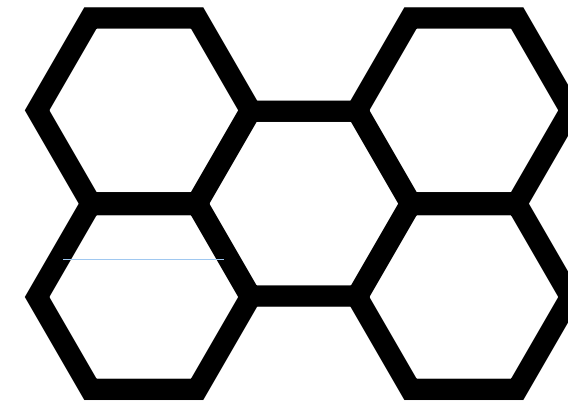


Compute nodes

Login nodes



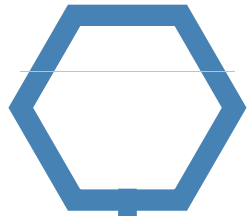
SLURM



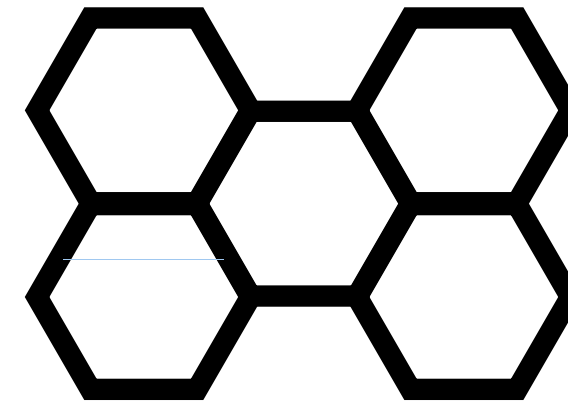
Compute nodes

```
$ ssh karolina.it4i.cz
```

Login nodes



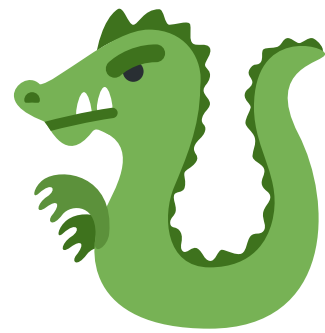
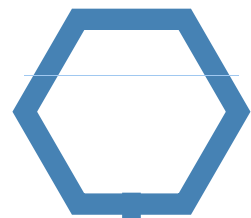
SLURM



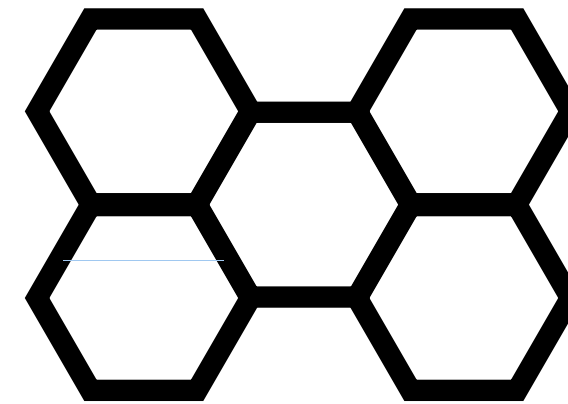
Compute nodes

```
$ ssh karolina.it4i.cz
```

Login nodes



SLURM

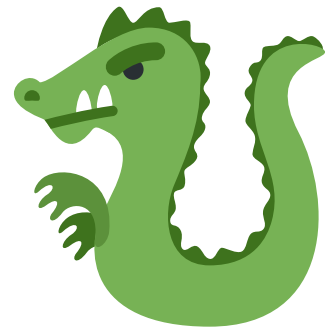
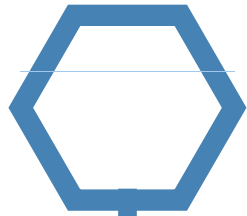


Compute nodes

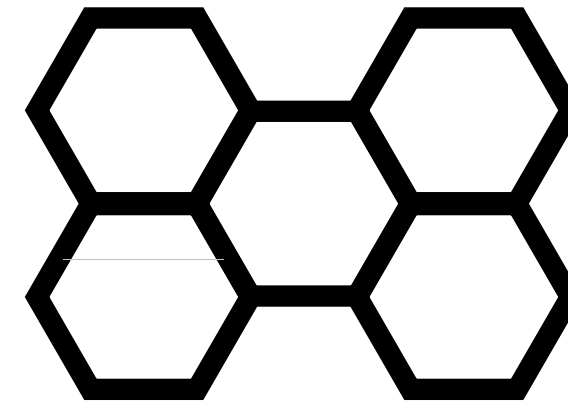
```
$ ssh karolina.it4i.cz
```

```
███(
███<
███(
███(
...running on Red Hat Enterprise Linux 7.x
```

Login nodes



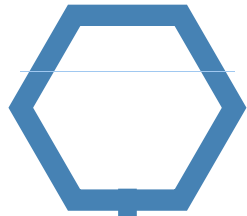
SLURM



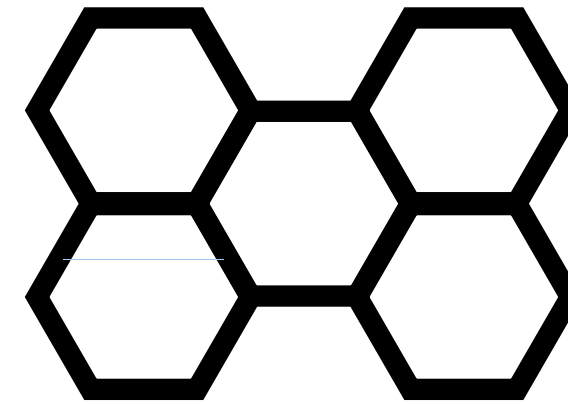
Compute nodes

\$

Login nodes



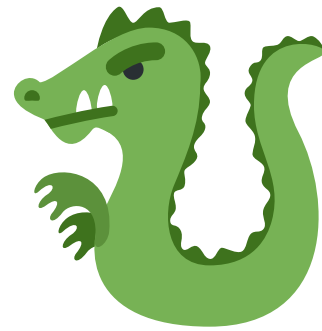
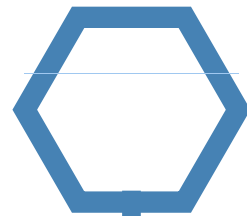
SLURM



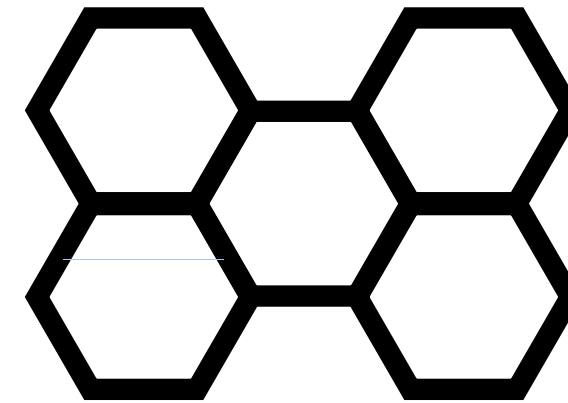
Compute nodes

```
$ hq server start
```

Login nodes



SLURM



Compute nodes

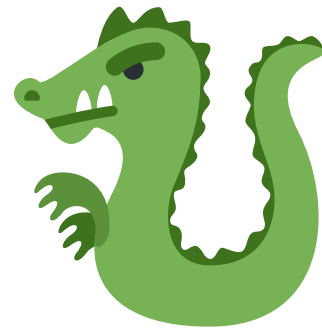
```
$ hq server start
```

```
INFO No online server found, starting a new server
```

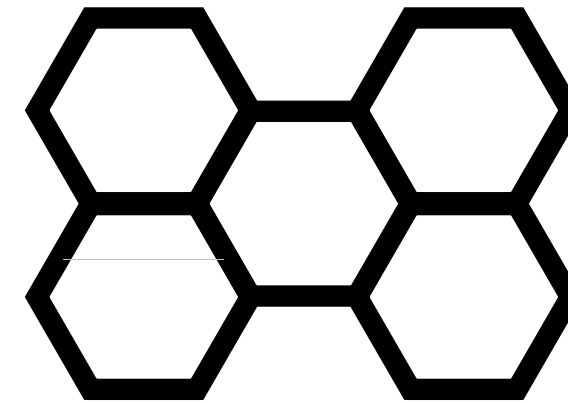
```
INFO Saving access file as '/home/boh126/.hq-server/046/access.json'
```

```
+-----+-----+
| Server directory | /home/boh126/.hq-server |
| Server UID      | xaTcNZ                   |
| Host            | login1.karolina         |
| Pid             | 51752                    |
| HQ port         | 44367                    |
| Workers port    | 44783                    |
| Start date      | 2024-04-30 12:05:00 UTC |
| Version         | 0.18.0                   |
+-----+-----+
```

Login nodes



SLURM



Compute nodes

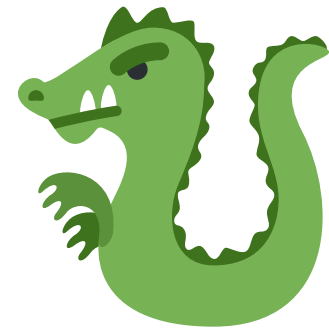
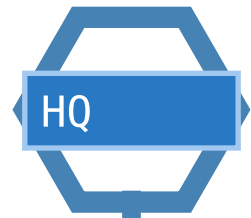
```
$ hq server start
```

```
INFO No online server found, starting a new server
```

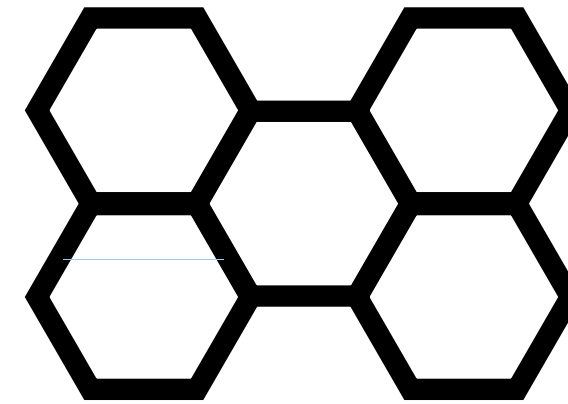
```
INFO Saving access file as '/home/boh126/.hq-server/046/access.json'
```

```
+-----+-----+
| Server directory | /home/boh126/.hq-server |
| Server UID      | xaTcNZ                   |
| Host            | login1.karolina         |
| Pid             | 51752                    |
| HQ port         | 44367                    |
| Workers port    | 44783                    |
| Start date      | 2024-04-30 12:05:00 UTC  |
| Version         | 0.18.0                   |
+-----+-----+
```

Login nodes



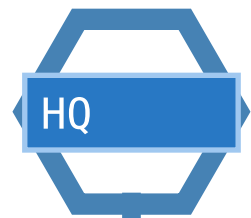
SLURM



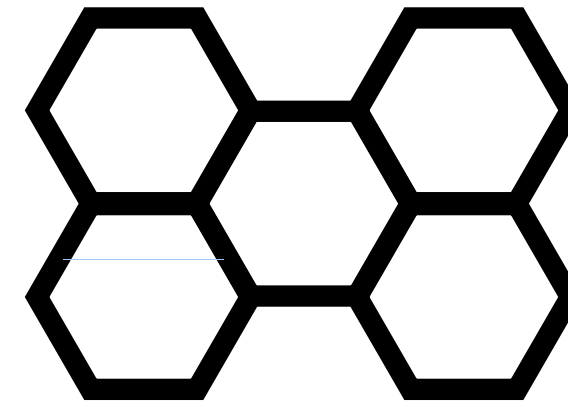
Compute nodes

\$

Login nodes



SLURM



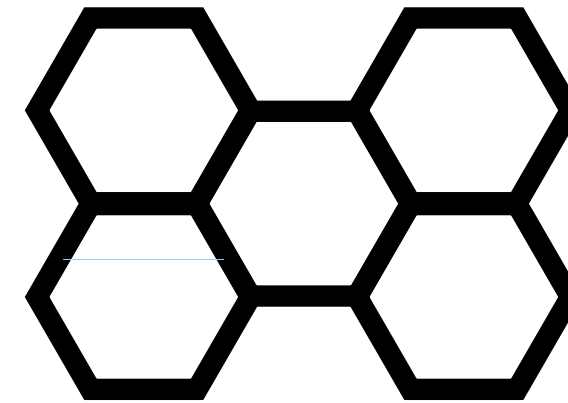
Compute nodes

```
$ hq submit -- ./my_computation
```

Login nodes



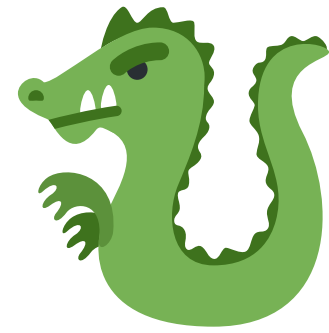
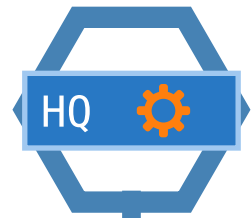
SLURM



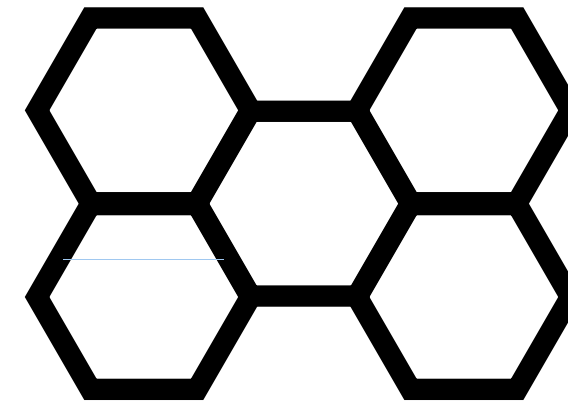
Compute nodes

```
$ hq submit -- ./my_computation
```

Login nodes

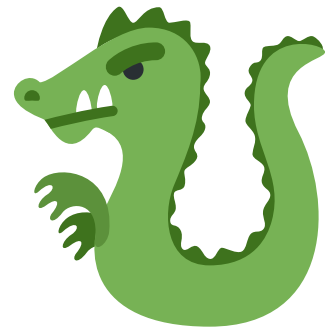


SLURM

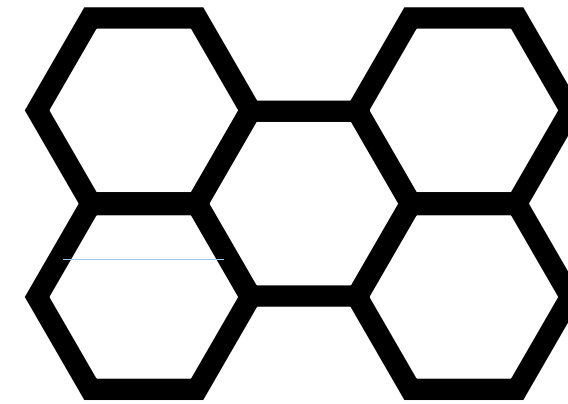


Compute nodes

Login nodes



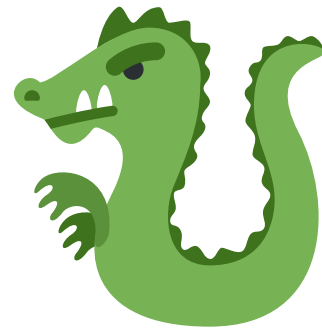
SLURM



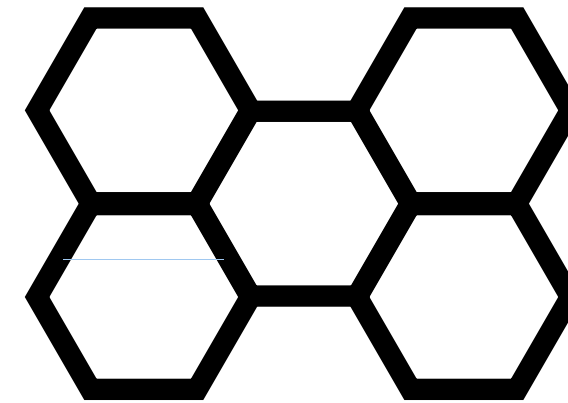
Compute nodes

```
$ hq job list
```

Login nodes



SLURM

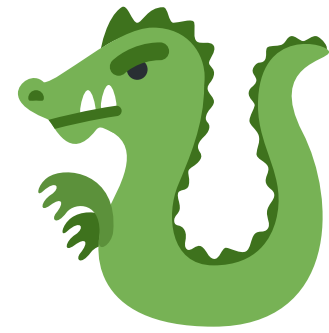
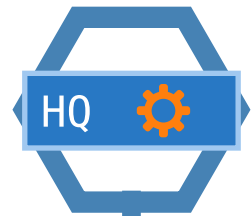


Compute nodes

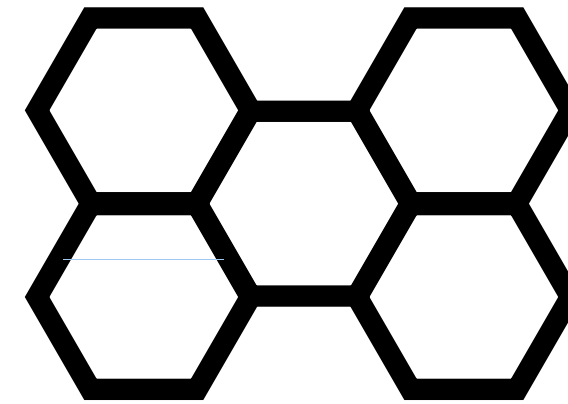
```
$ hq job list
```

ID	Name	State	Tasks
1	my-computation	WAITING	1

Login nodes

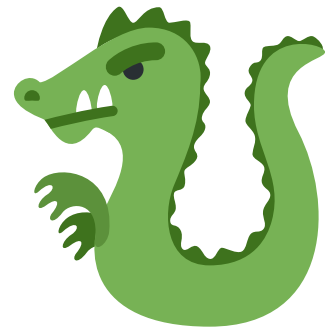


SLURM

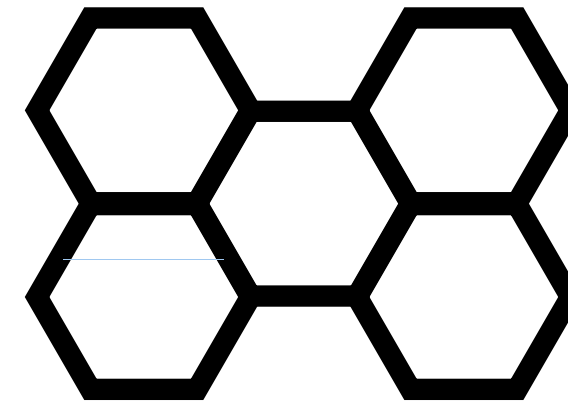


Compute nodes

Login nodes



SLURM



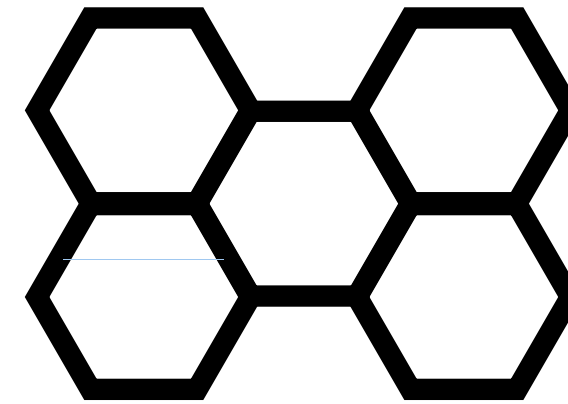
Compute nodes

```
$ hq alloc add slurm
```

Login nodes



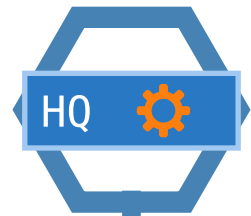
SLURM



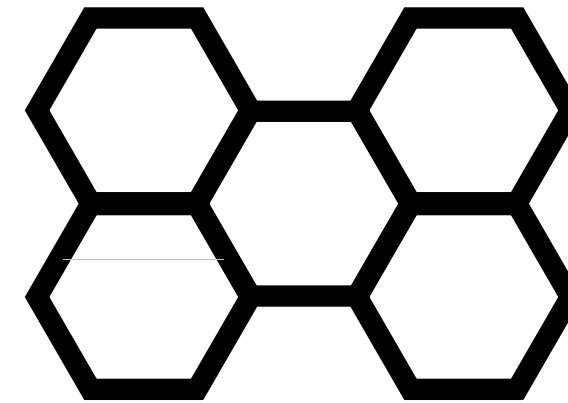
Compute nodes

```
$ hq alloc add slurm --time-limit=1h
```

Login nodes



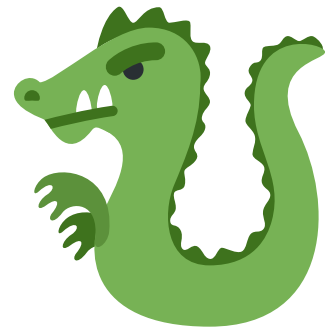
SLURM



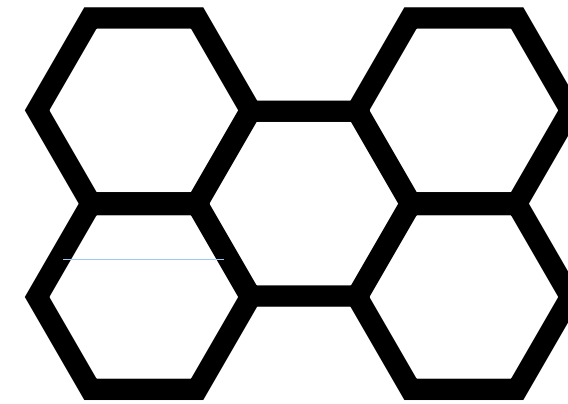
Compute nodes

```
$ hq alloc add slurm --time-limit=1h -- -pstandard
```

Login nodes



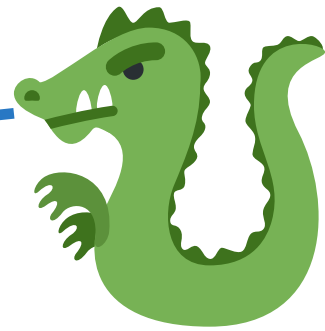
SLURM



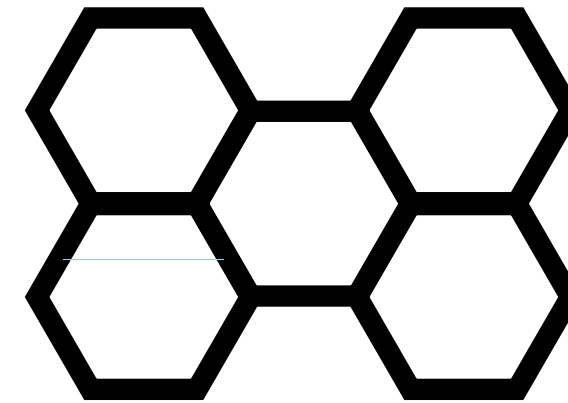
Compute nodes

```
$ hq alloc add slurm --time-limit=1h -- -pstandard
```

Login nodes



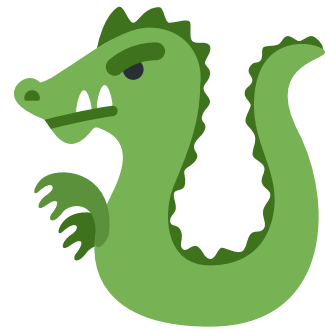
SLURM



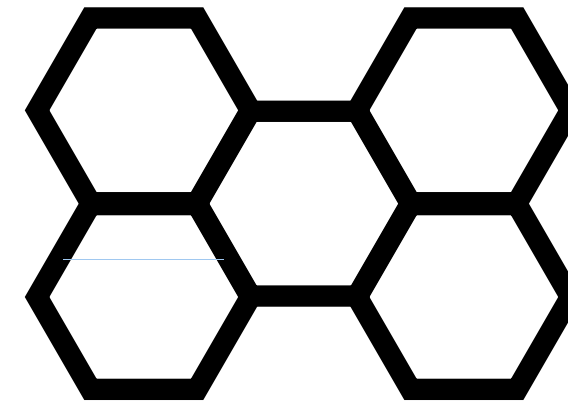
Compute nodes

```
$ hq alloc add slurm --time-limit=1h -- -pstandard
```

Login nodes



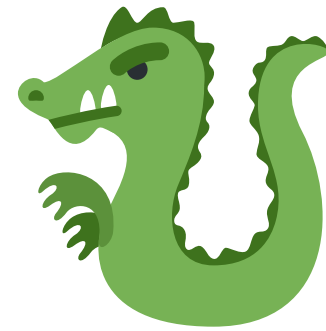
SLURM



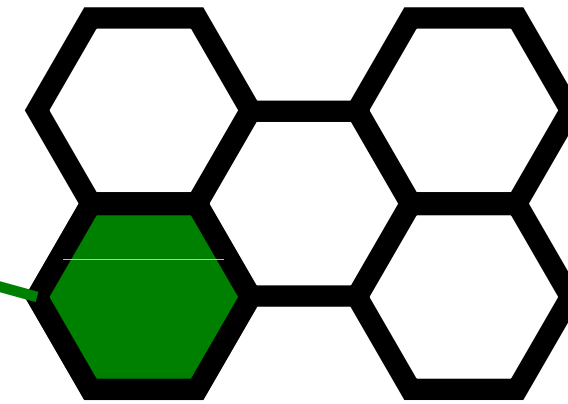
Compute nodes

```
$ hq alloc add slurm --time-limit=1h -- -pstandard
```

Login nodes



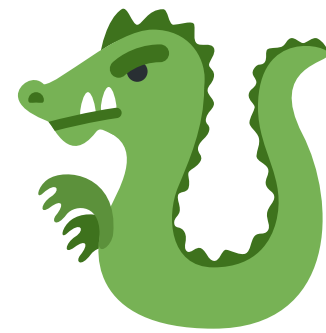
SLURM



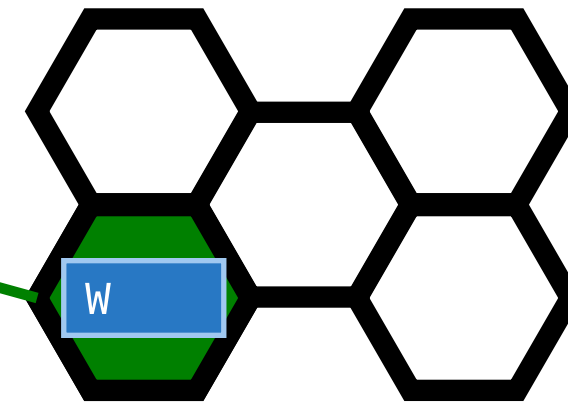
Compute nodes

```
$ hq alloc add slurm --time-limit=1h -- -pstandard
```

Login nodes



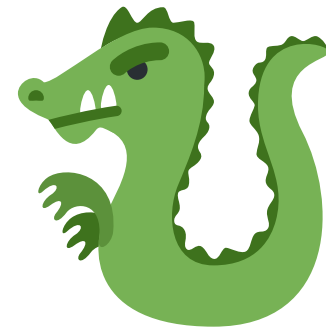
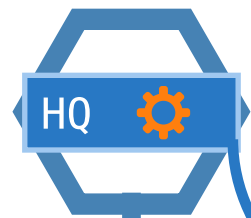
SLURM



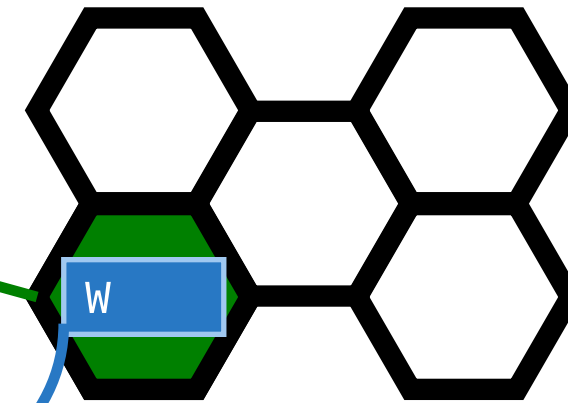
Compute nodes

```
$ hq alloc add slurm --time-limit=1h -- -pstandard
```

Login nodes



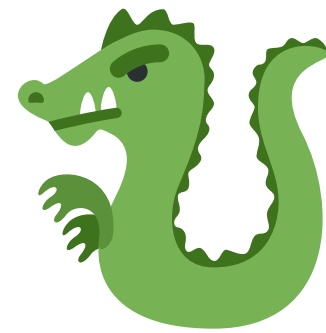
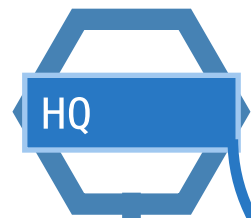
SLURM



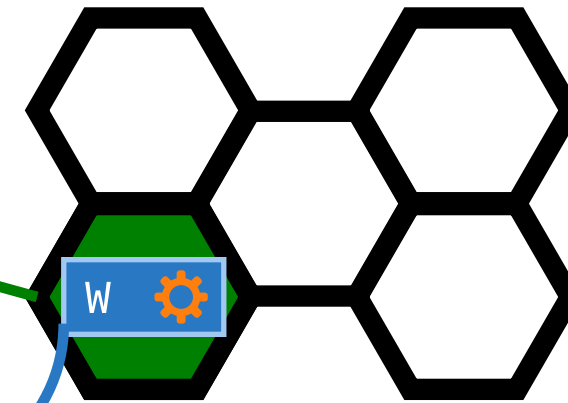
Compute nodes

```
$ hq alloc add slurm --time-limit=1h -- -pstandard
```

Login nodes



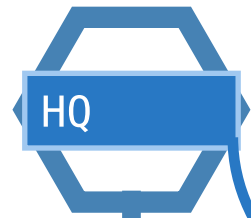
SLURM



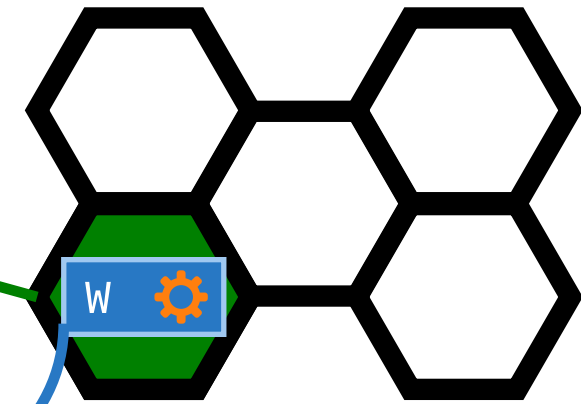
Compute nodes

```
$ hq alloc add slurm --time-limit=1h -- -pstandard
```

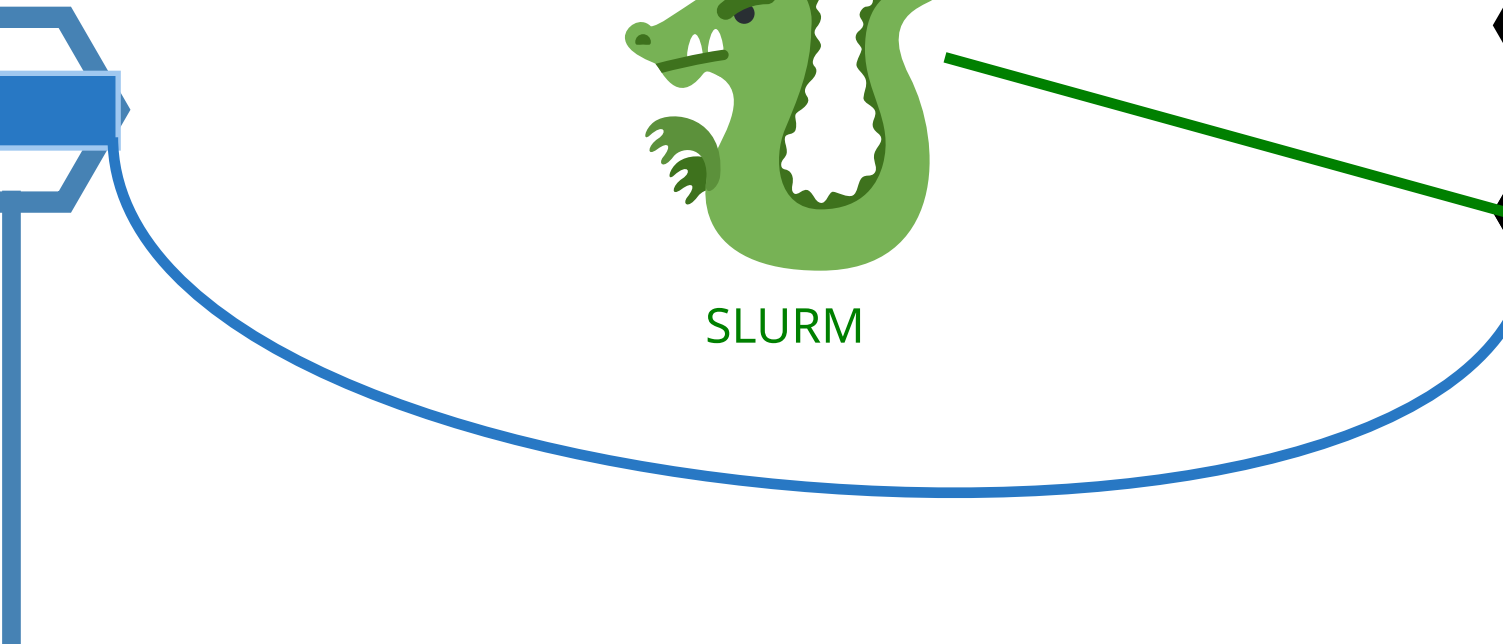
Login nodes



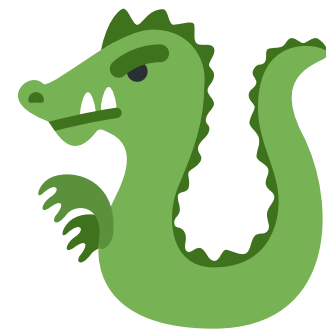
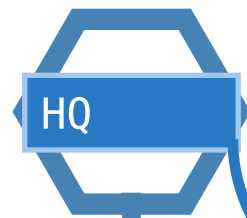
SLURM



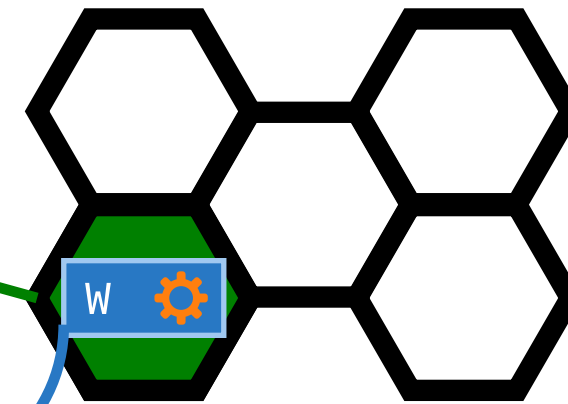
Compute nodes



Login nodes



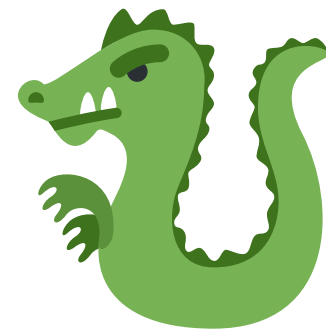
SLURM



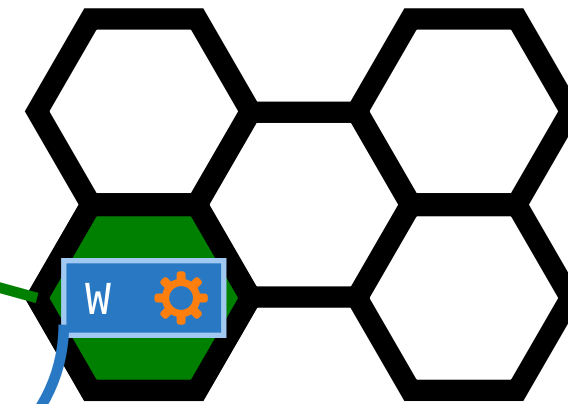
Compute nodes

```
$ hq job list
```

Login nodes



SLURM

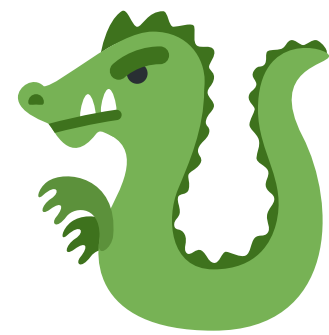


Compute nodes

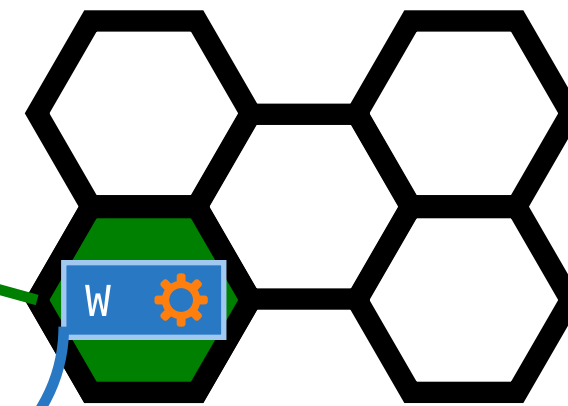
```
$ hq job list
```

ID	Name	State	Tasks
1	my-computation	RUNNING	1

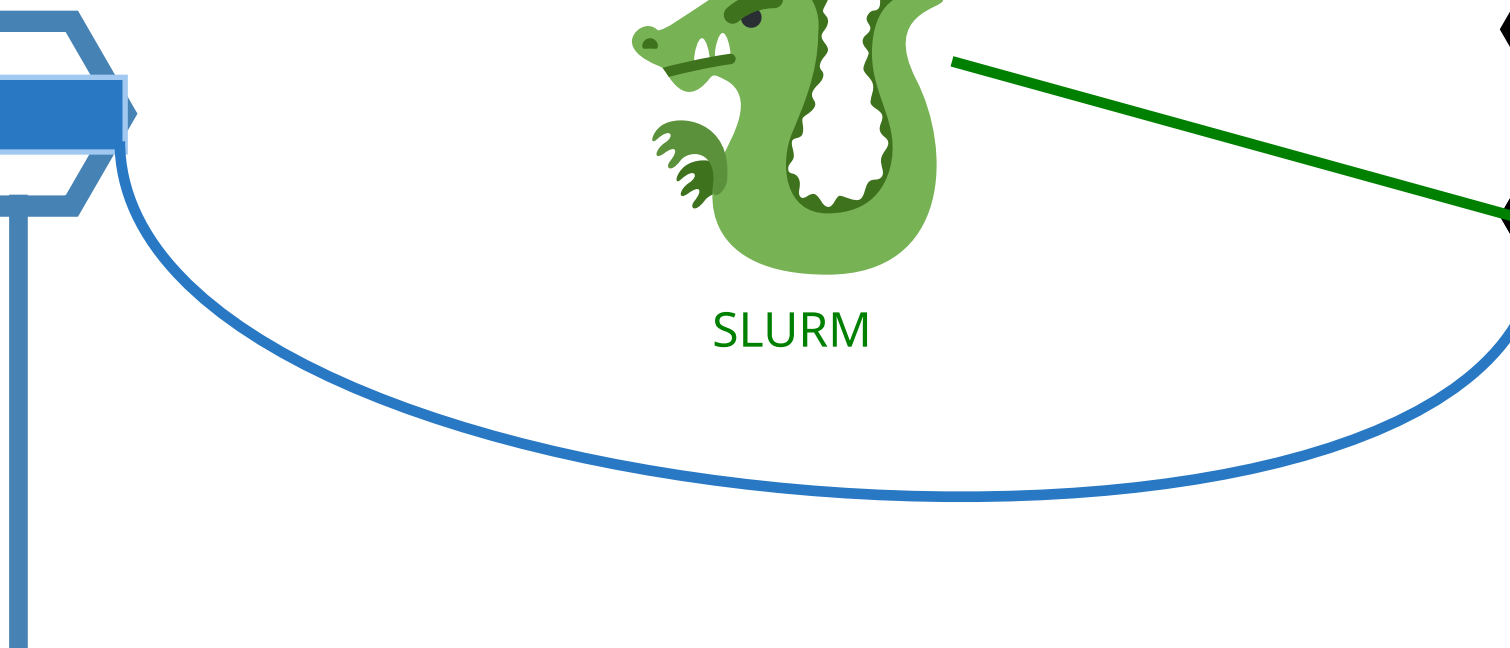
Login nodes



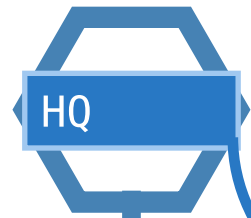
SLURM



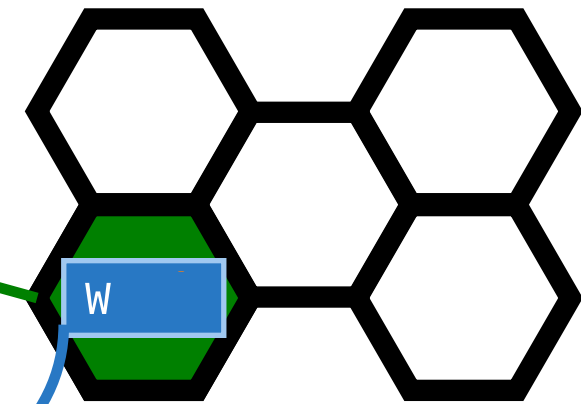
Compute nodes



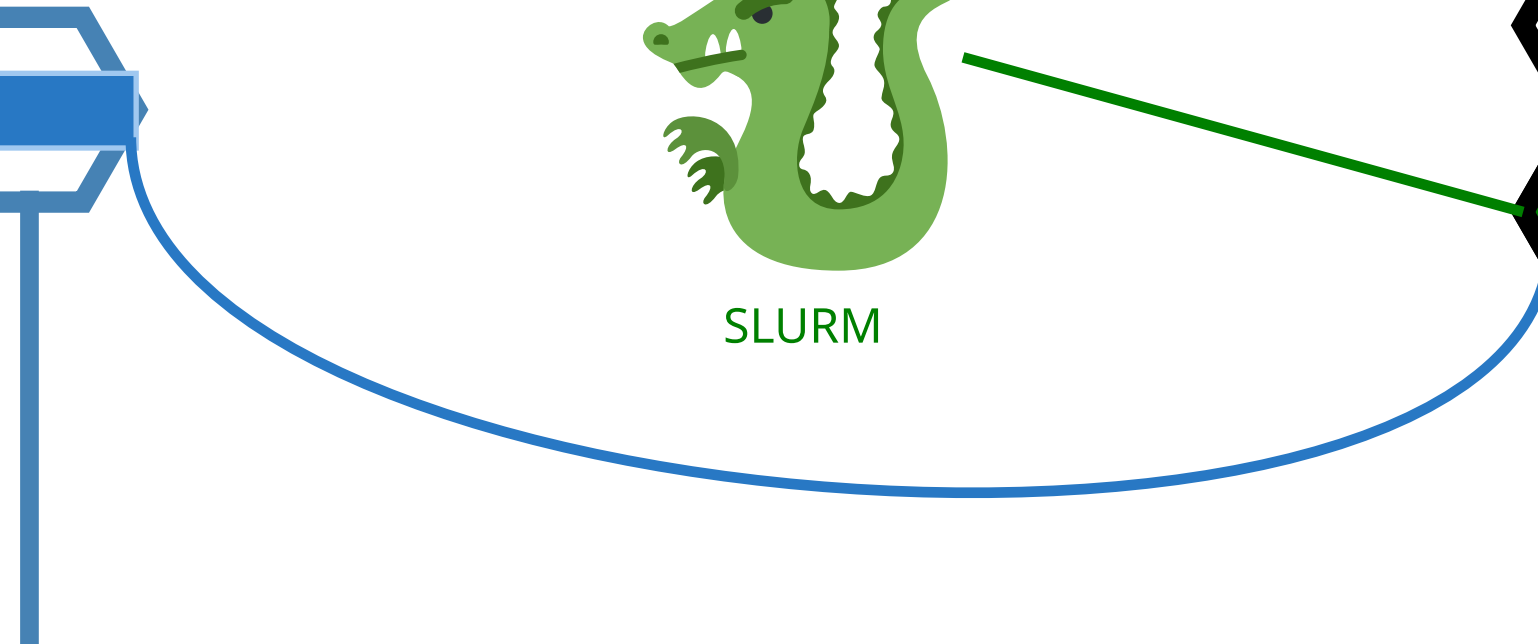
Login nodes



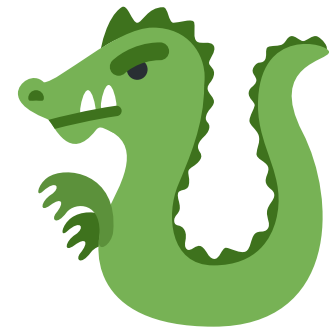
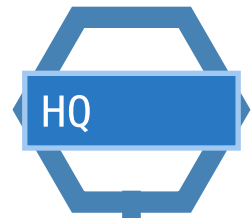
SLURM



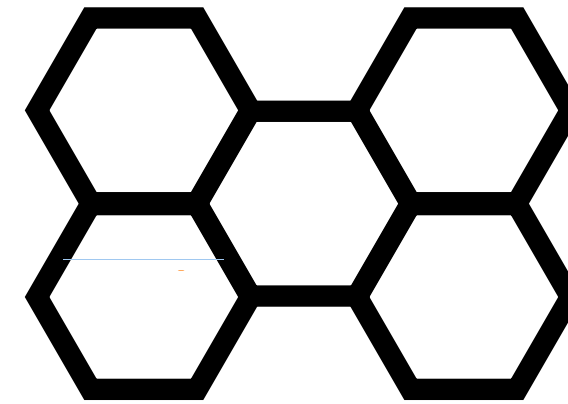
Compute nodes



Login nodes



SLURM



Compute nodes

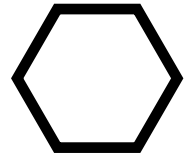
cpus=2

cpus=2 + gpus=2

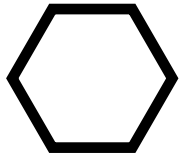
cpus=2.5 + gpus=2

cpus=2.5 + gpus=2 **OR** cpus=32

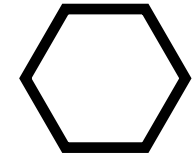
cpus=8



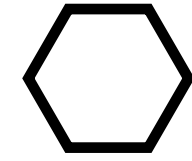
cpus=8



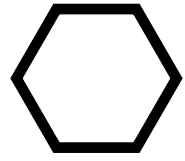
cpus=16



cpus=12



cpus=8



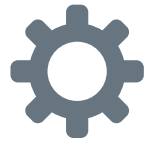
cpus=2



cpus=1

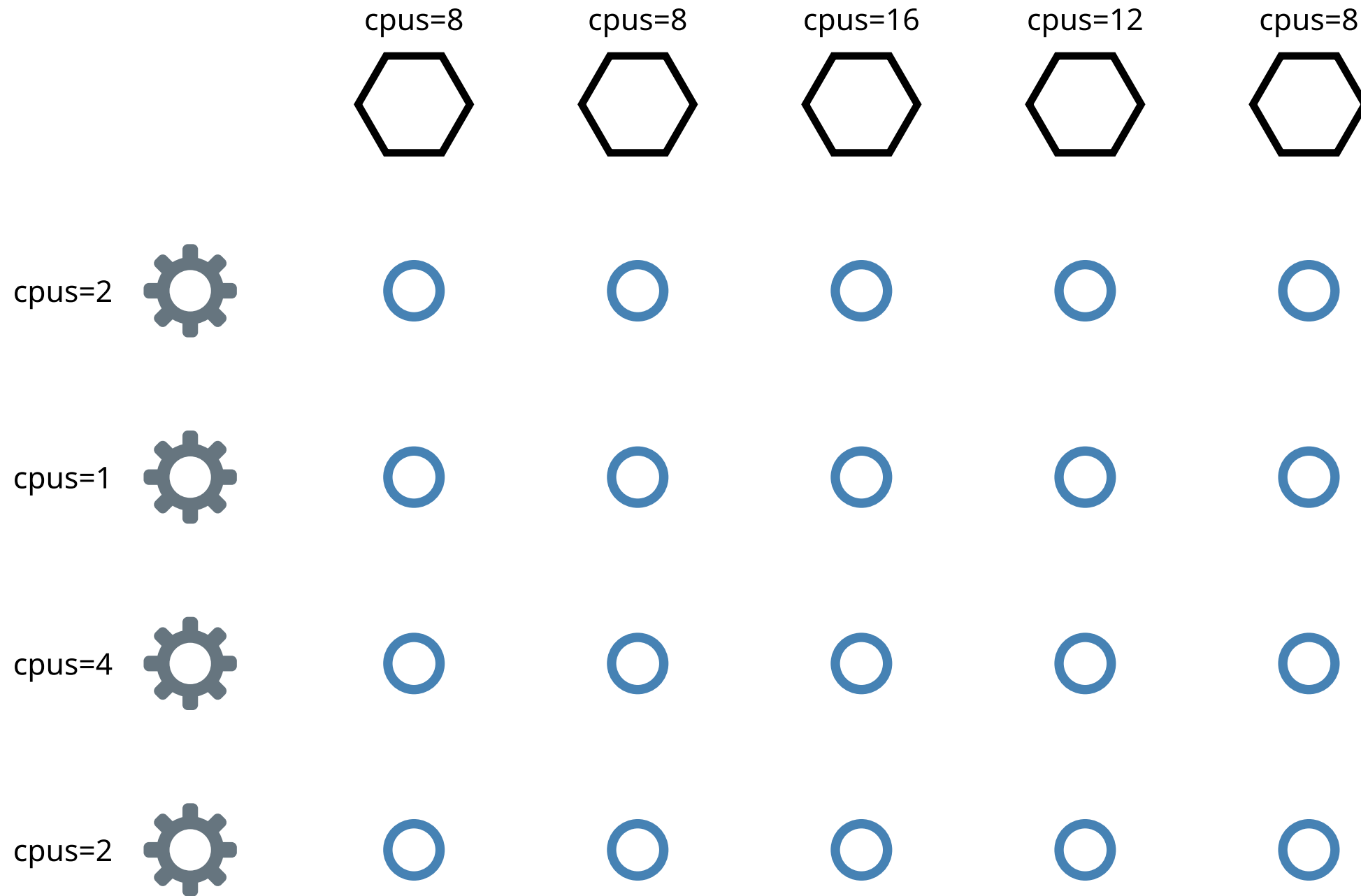


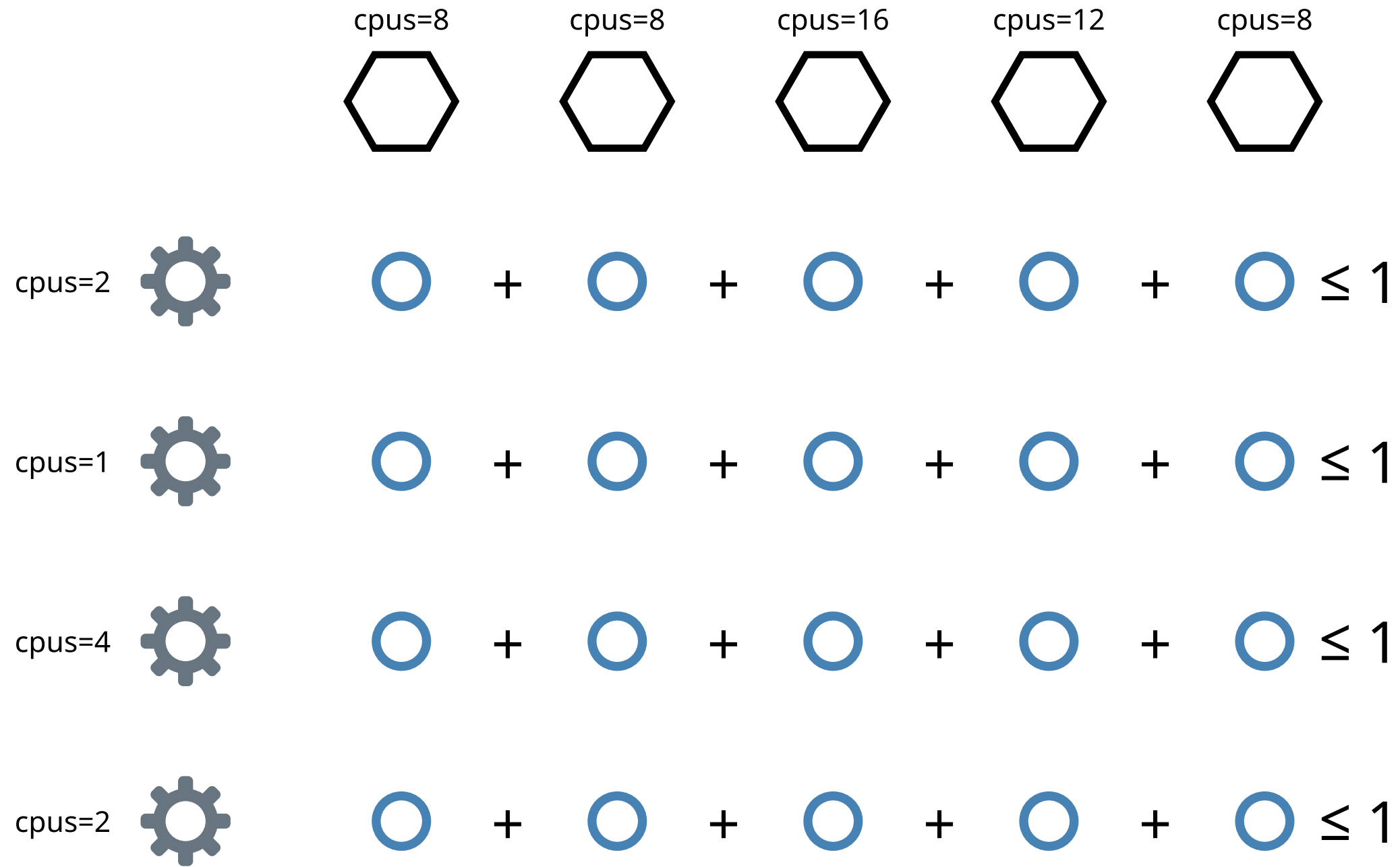
cpus=4

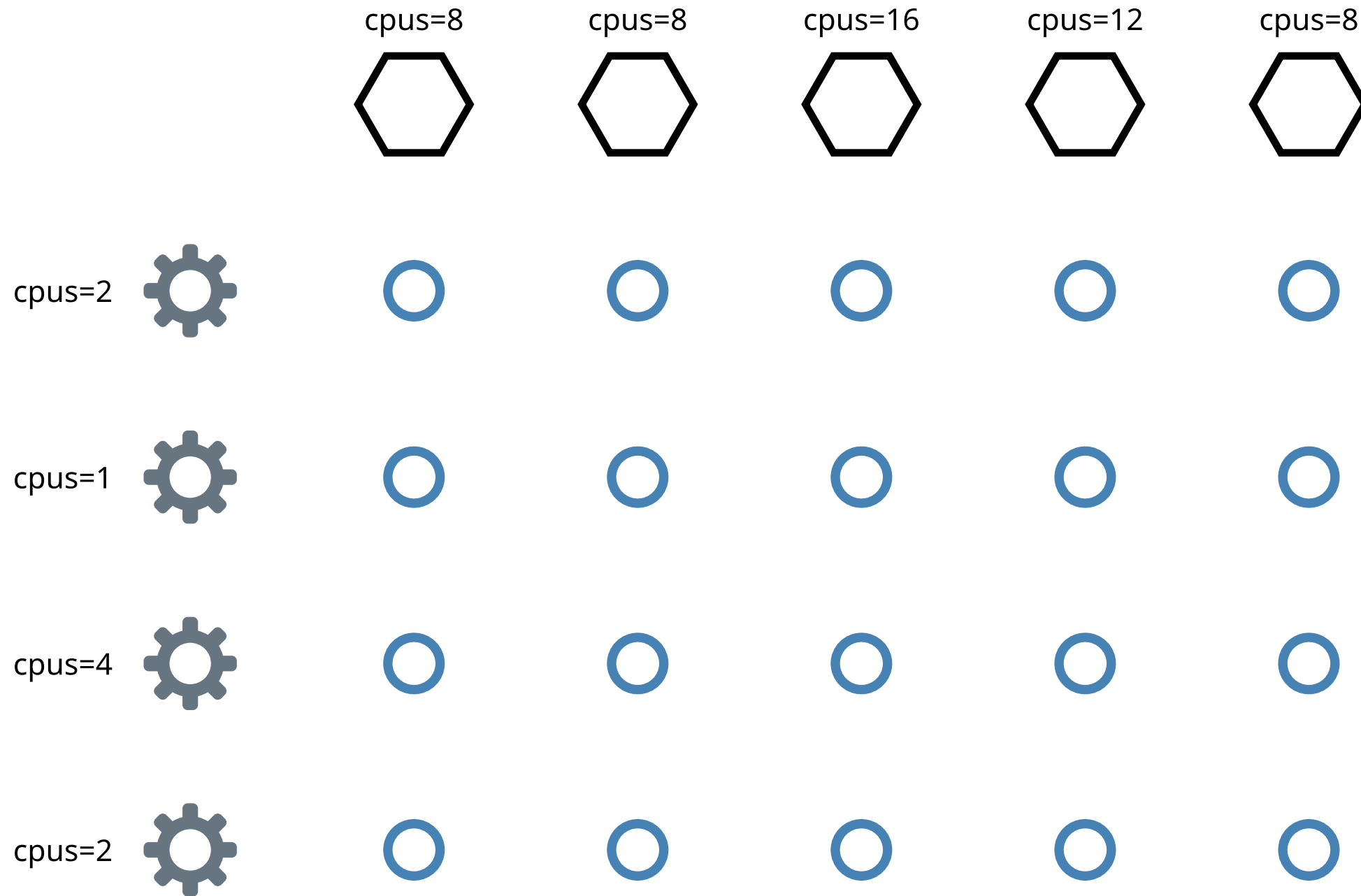


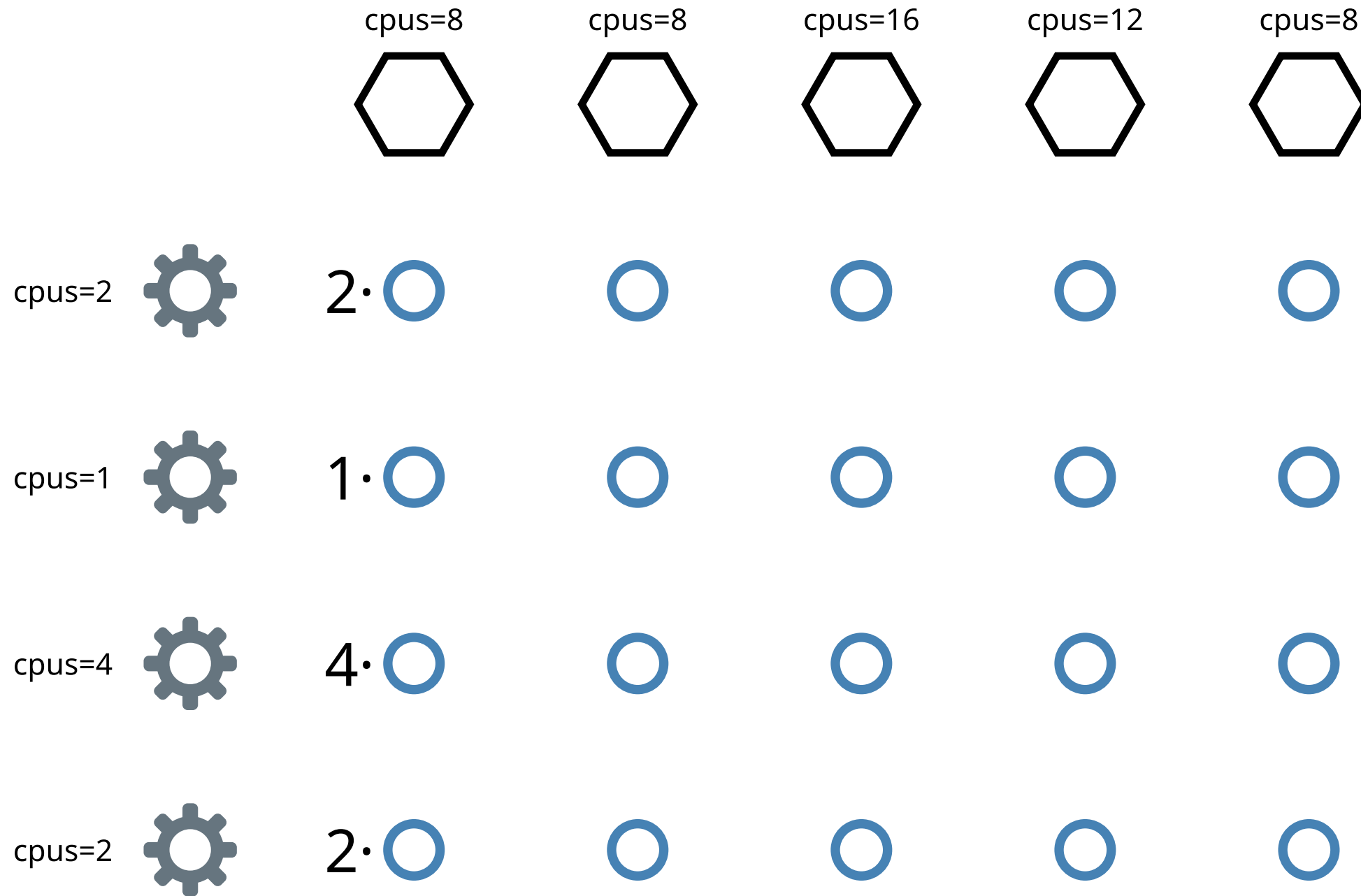
cpus=2

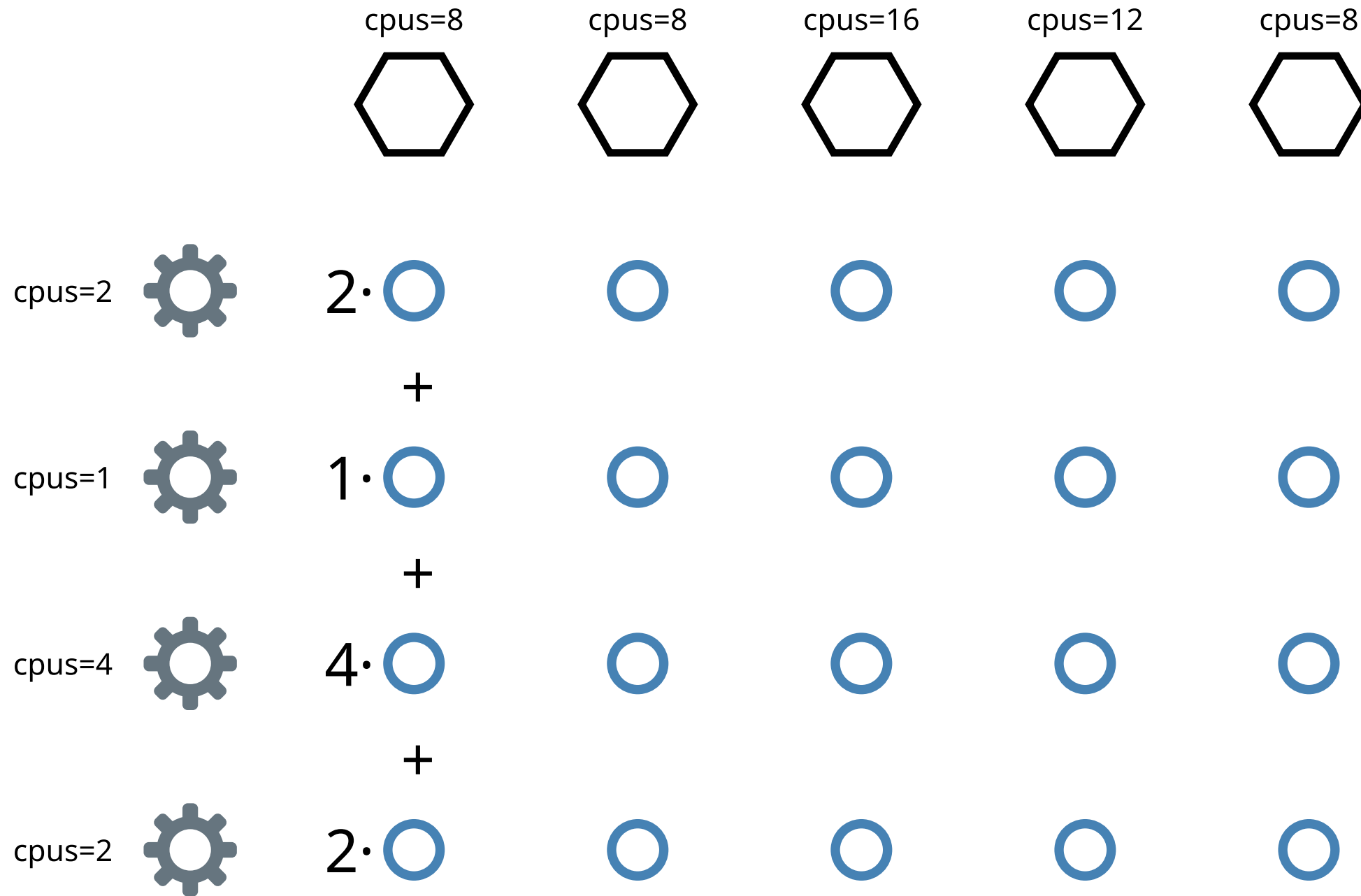


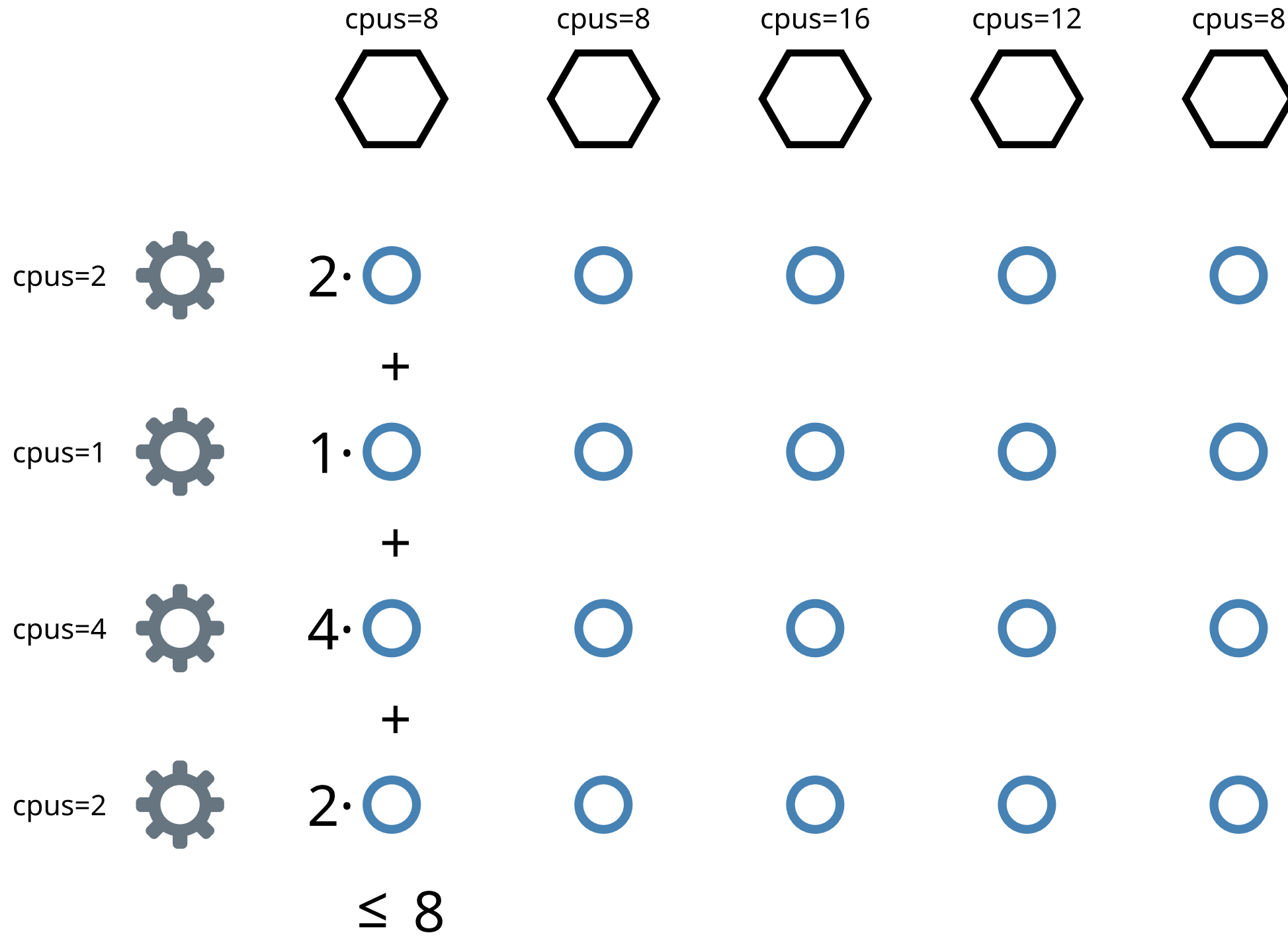


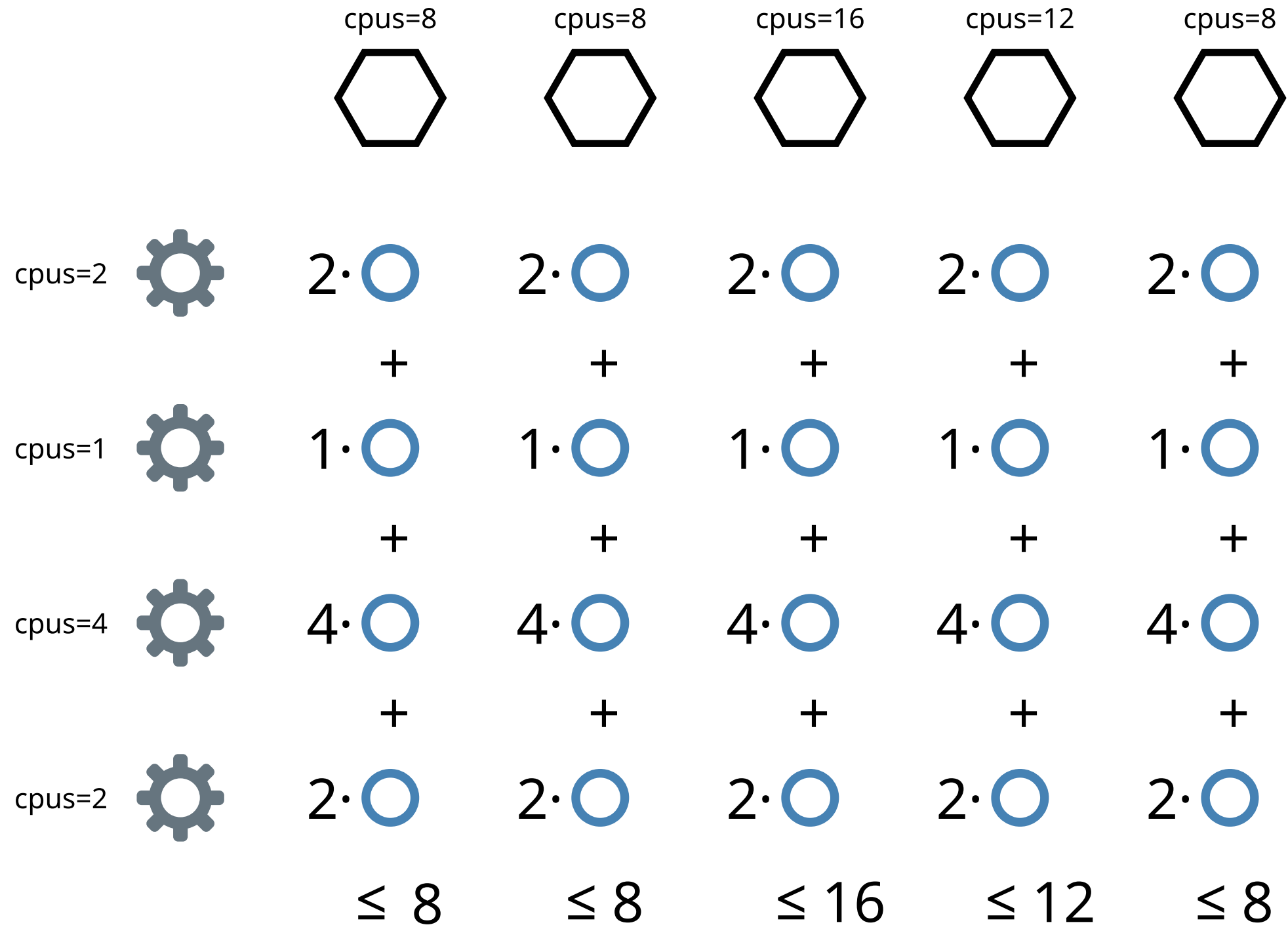














# Centralized scheduler

~~Centralized scheduler~~

~~Centralized scheduler~~

Distributed scheduler

~~Centralized scheduler~~

Distributed scheduler

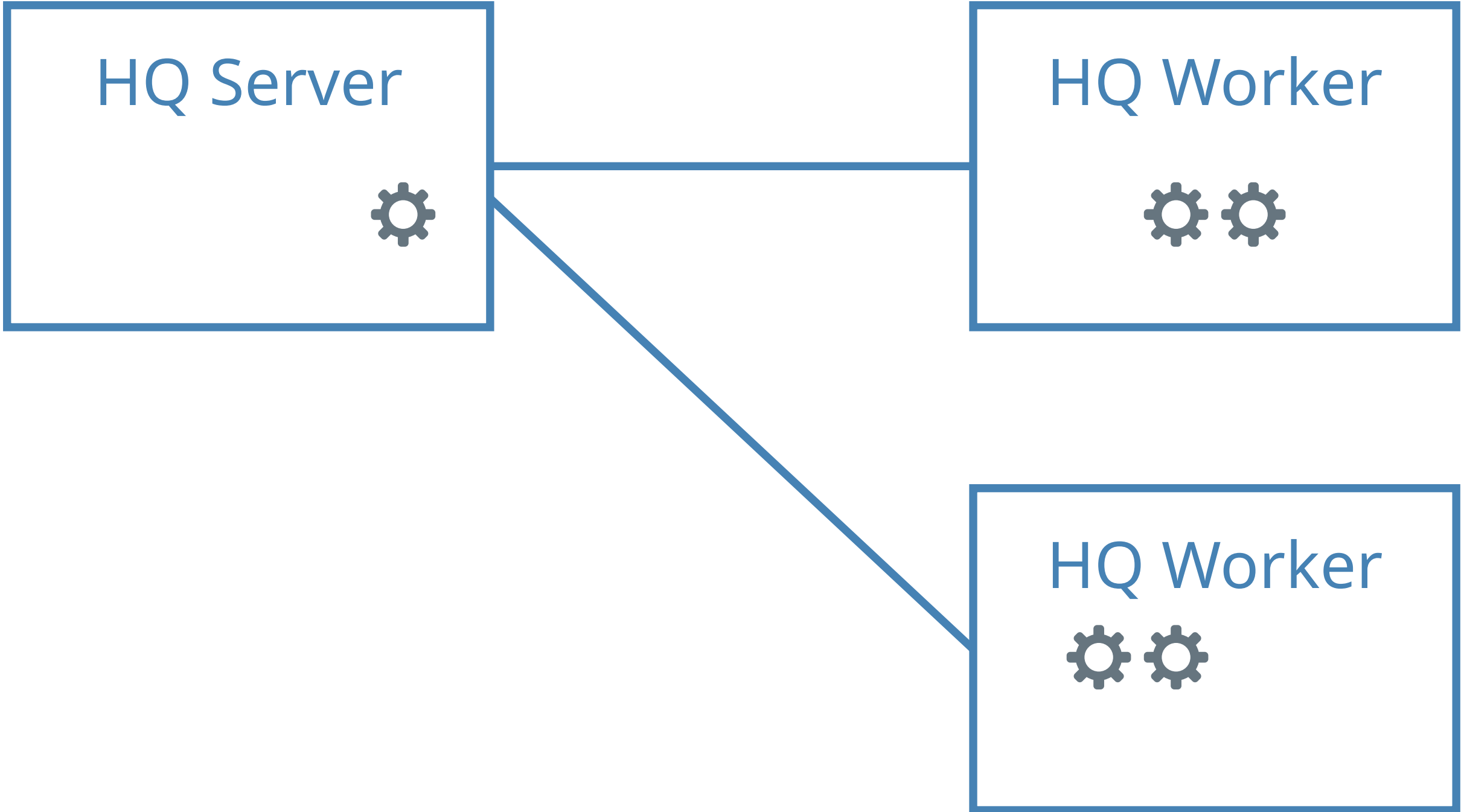
~~Centralized scheduler~~

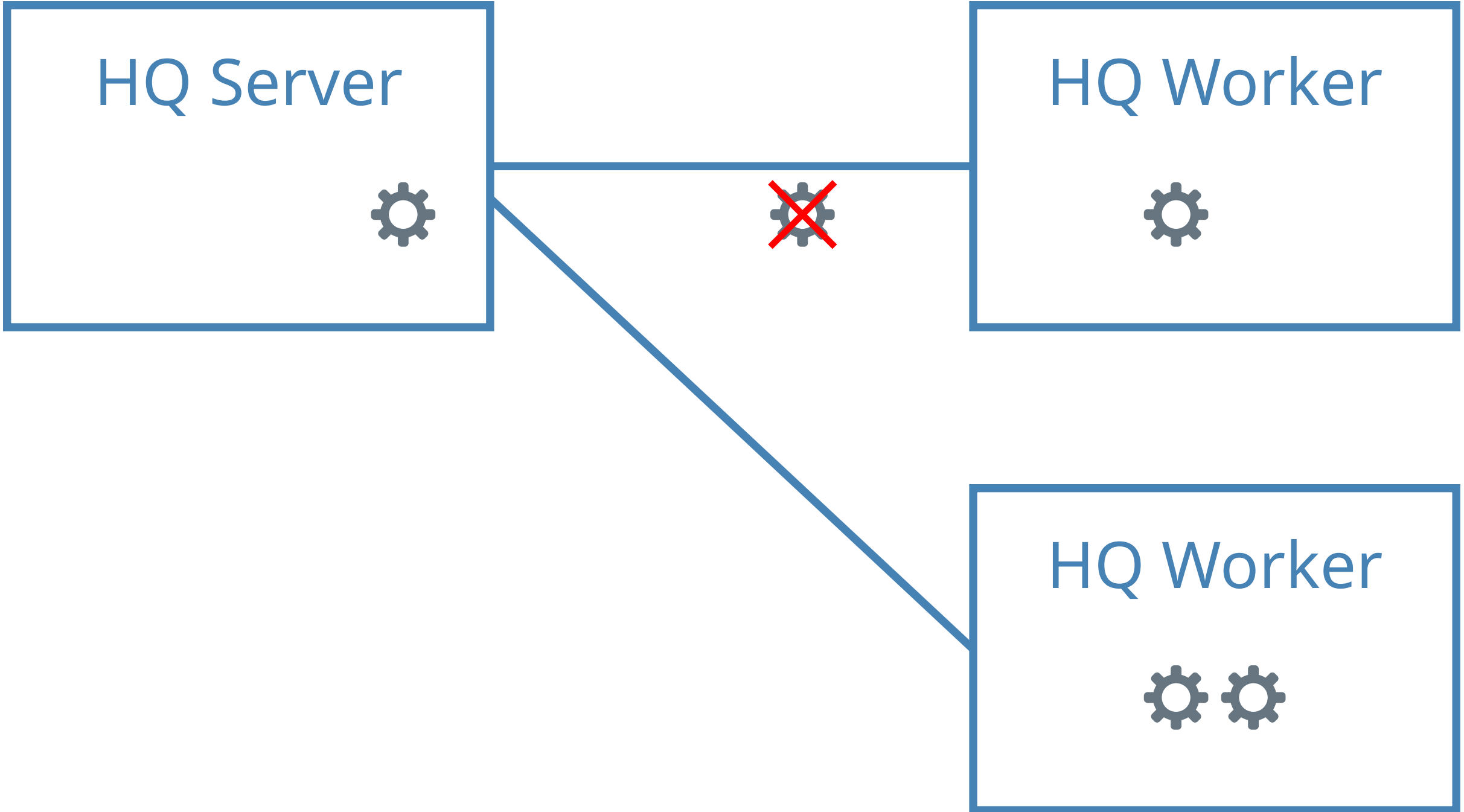
~~Distributed scheduler~~

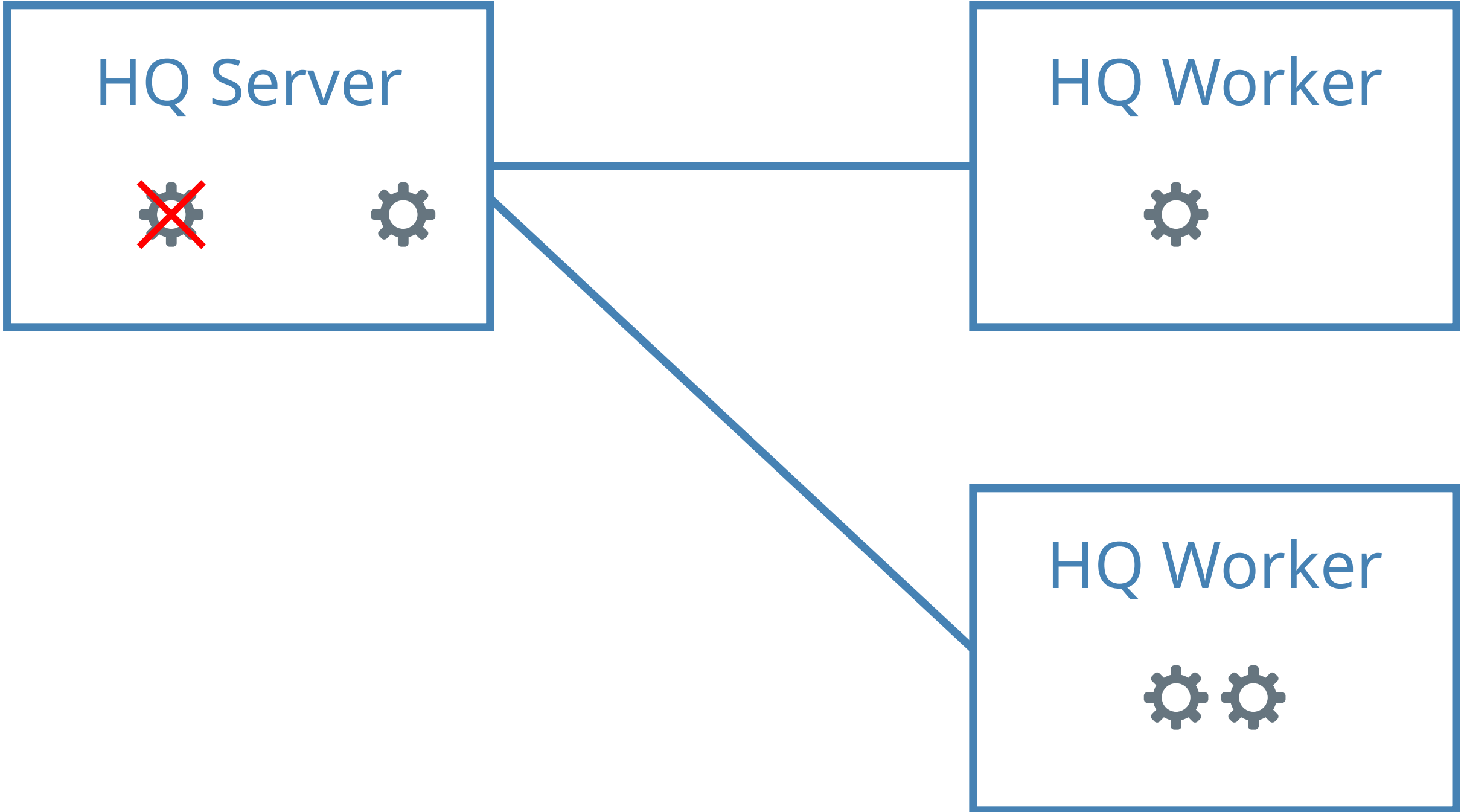
~~Centralized scheduler~~

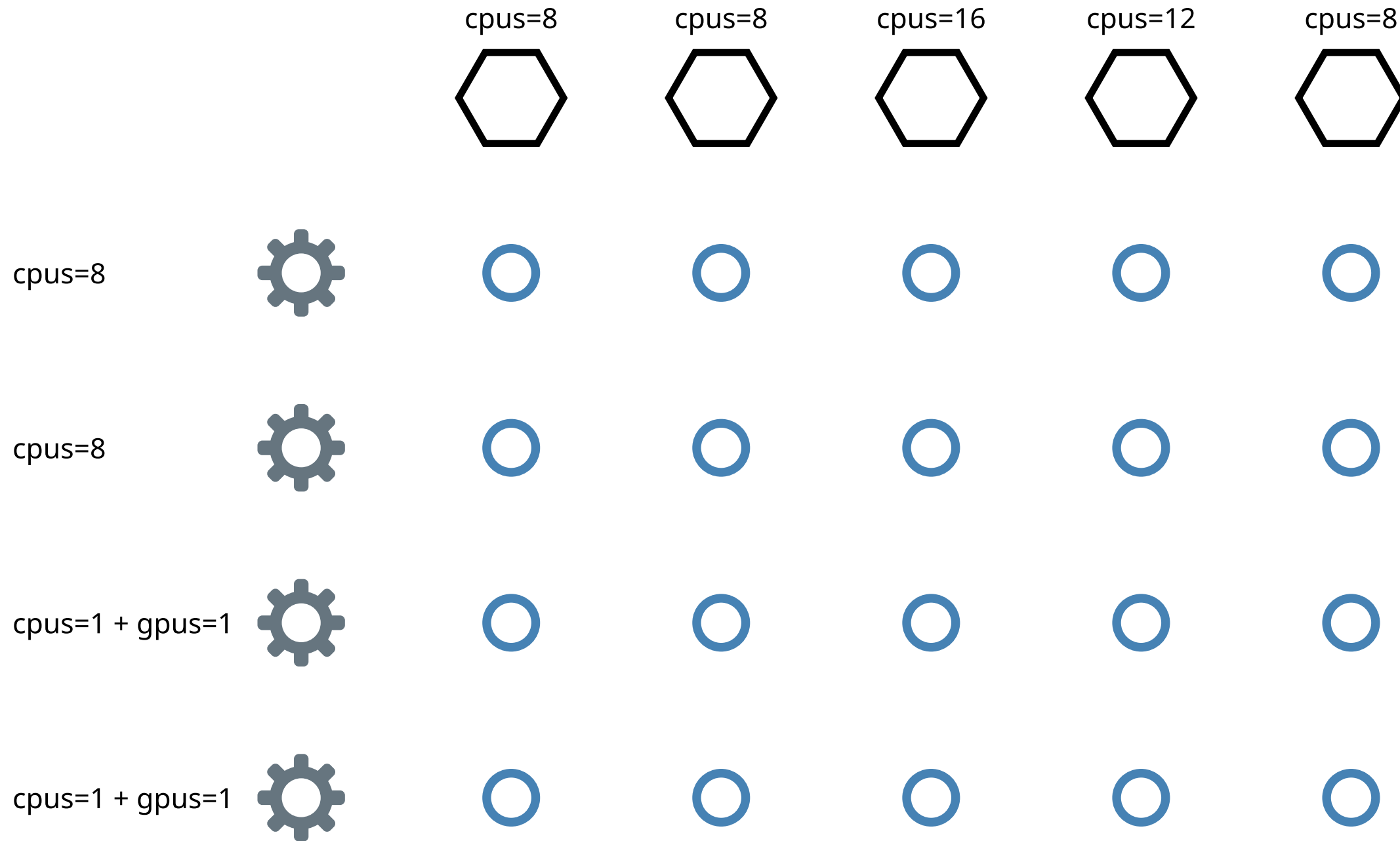
~~Distributed scheduler~~

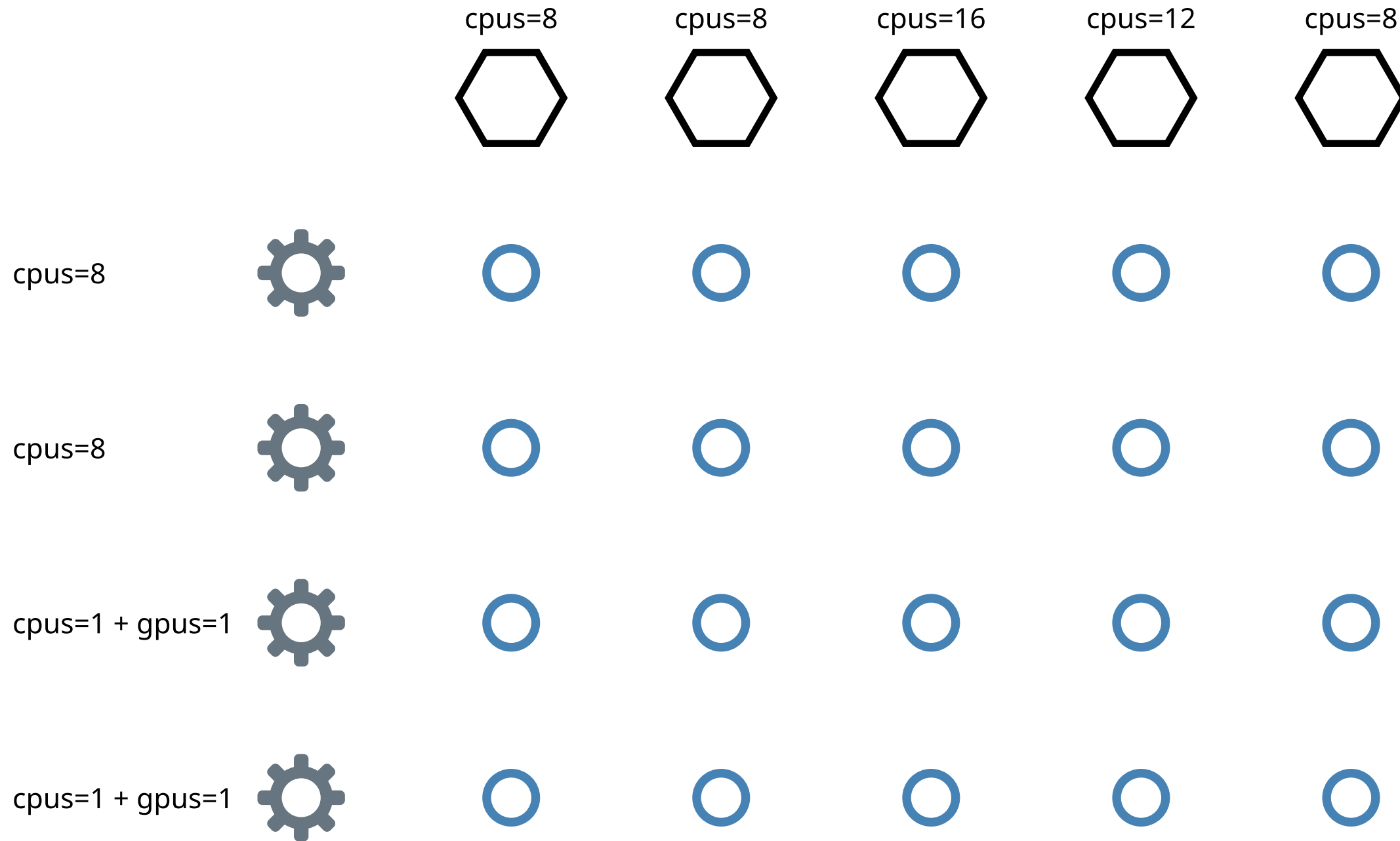
Hybrid scheduler

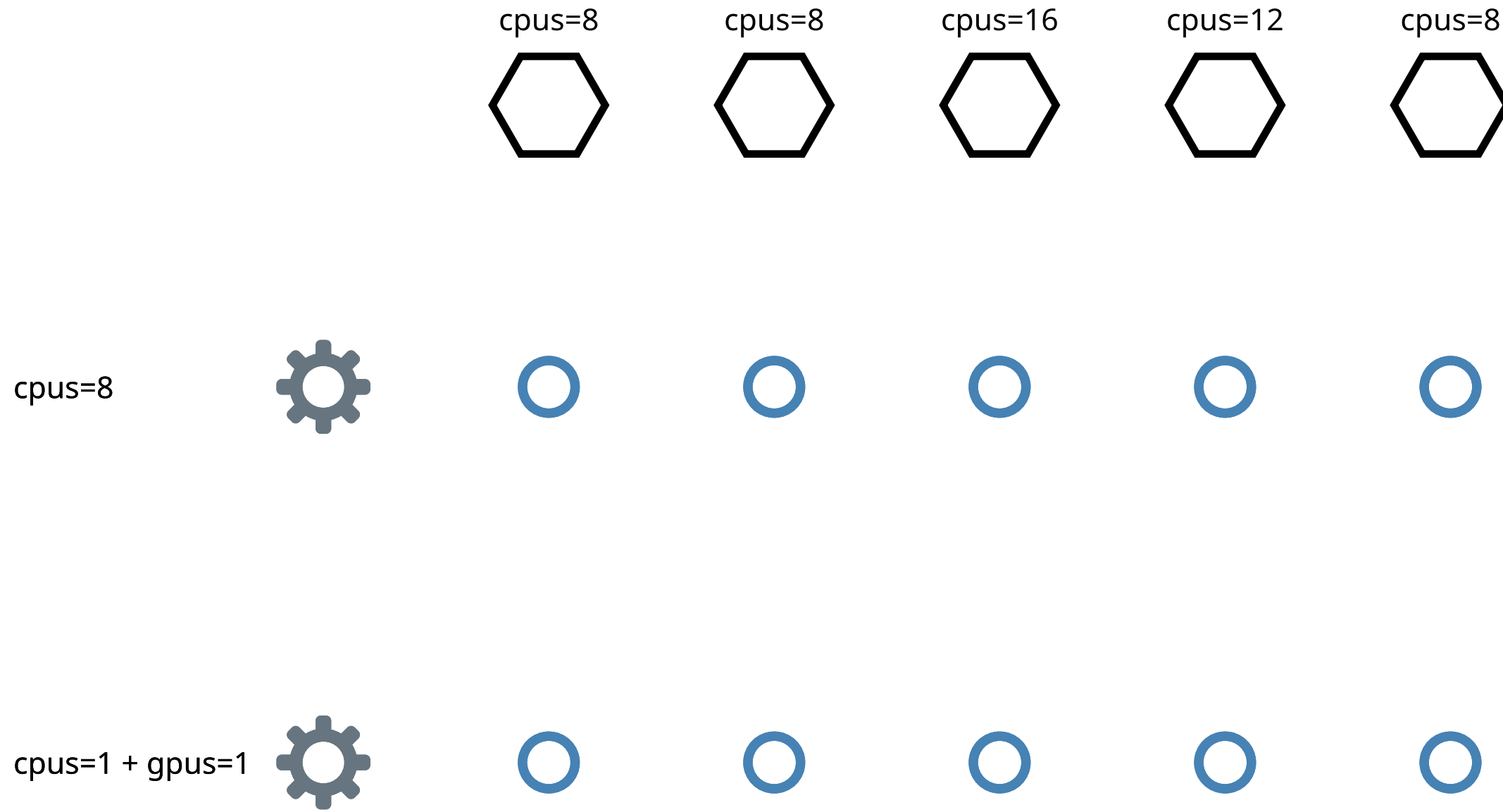












# HyperQueue

<https://github.com/It4innovations/hyperqueue>

