

# Thunder test system

The **Thunder** cluster is a test system that features Marvell's ThunderX2 Arm processors. These processors use the aarch64 instruction set, rather than the x86-64 instruction set used by Intel and AMD processors.

Thunder consists of:

- one node with 128 GB of memory
- four nodes with 256 GB of memory
- 100GbE Mellanox Ethernet interconnect

Follow the procedures below to begin using the system.

Additional information and screen captures depicting various steps in the process are included in this slide presentation: [ChameleonCloud-WIP-09212022.pdf](#)

## Page contents

- [Getting started](#)
- [Accessing Thunder](#)
  - [Leasing Thunder nodes](#)
  - [Launching an instance](#)
  - [Accessing your instance](#)
- [More information and getting help](#)

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## Getting started

Users access the Thunder nodes by establishing a connection to them via Chameleon Cloud.

To get started:

- Create a Chameleon Cloud account.
- Email [hpcrd@ucar.edu](mailto:hpcrd@ucar.edu) and request access to the **NCAREExplore** project.

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## Accessing Thunder

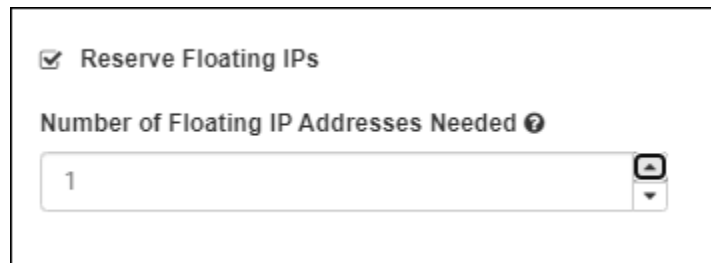
Once you have been added to the NCAREExplore project, access the Thunder nodes by going to [CHI@NCAR](#) and logging into your Chameleon account. From there you'll be able to *lease* nodes and start up *instances*.

## Leasing Thunder nodes

An individual user can request or lease one or more nodes for up to seven (7) days and create an IP address for accessing them.

Follow these steps:

1. From the Project menu, select *Reservations*, then *Leases*.
2. Select the *Create Lease* button.
3. Complete the General section by specifying a name (required), start time (defaults to now), and the length of your lease (defaults to 1 day).
4. Complete the Hosts section by checking the *Reserve Hosts* box and selecting the minimum and maximum number of hosts (both default to 1). There is only one type of node on Thunder, so there is no need to select *Resource Properties*.
5. Complete the Networks section by checking the *Reserve Floating IPs* box and specifying the number of Floating IP addresses you want to reserve (typically 1). There is only one physical network on Thunder controlled by Chameleon, so there is no need to select *Reserve Network*.



Once you have entered all your selections, select the *Create* button.

## Launching an instance

When your lease status is ACTIVE, you can launch an instance on your leased Thunder nodes.

1. From the Project menu, select *Compute*, then *Instances*.
2. Select the *Launch Instance* button.
3. Complete the Details section by specifying an *Instance Name*, selecting your lease in the *Reservation* box, and selecting the number of instances you want to start in the *Count* box (defaults to 1).
4. Complete the Source section by choosing an image: Click the ^ next to the *CC-Ubuntu20.04-ARM64 RAW* image to choose the default image.
5. Complete the Key Pair section by selecting either the *Create Key Pair* button or the *Import KeyPair* button. This key will be used to log in to your instance using the "cc" user account. If you have already uploaded a key pair to CHI@NCAR, that key pair will already be selected as the default.

Once you have entered all your selection, select *Launch Instance*.

## Accessing your instance

Once your instance has been provisioned and starts (status is *Active*), select *Floating IPs* on the Network menu, then the *Associate* button next to your reserved IP address.

Associate your floating IP address with a port by selecting your instance under "Port to be associated." (See image).



Once the status of that association is "Up" you can use your IP address and your key to **ssh** to your active instance by following this example (substituting your own IP address):

```
ssh cc@128.117.250.23
```

At that point, you can use the reserved Thunder nodes for your work.

## More information and getting help

[Detailed Chameleon Cloud documentation is available here.](#)

Since Thunder is a test system, send any support inquiries, software and hardware concerns, or requests for access to [hpcfl@ucar.edu](mailto:hpcfl@ucar.edu) instead of the CISL Help Desk.

We also welcome any feedback and performance reports that you can share as you test your workflows on Thunder.