

# Parallel Computing Resources @ UMD

# Overview of Available Clusters at UMD

Cluster Name	# Node	Access
Deepthought 2	488	CMNS/ENGR
MARCC/Bluecrab	846	All
BSWIFT	40	BSOS
Juggernaut	20	CMNS/ENGR

# Deepthought 2

- UMD's premier high performance computing cluster
- Suitable for highly parallelized tasks, some gpu computing capability, excellent for simulation

## WHO HAS ACCESS?

Department/College	Contact	E-Mail
School of Engineering	Jim Zahnsier	zahnsier@umd.edu
CMNS	Mike Landavere	mike@umd.edu
Astronomy	Derek Richardson	dcr@astro.umd.edu
Atmos/Oceanic Sciences	James Carton/Kayo Ide	carton@atmos.umd.edu / ide@umd.edu
IPST	Alfredo Nava-Tudela	ant@umd.edu
Physics	Jeff McKinney	mckinney@umd.edu

## Specs

Newest Processor Generation	# Nodes	Cores/Node	Total Cores	Memory/Node (GB)	# GPU
2.8 GHz Intel Ivy Bridge	488	20 (some 40)	9840	128 (1024 for some nodes)	144

# MARCC/Bluecrab

- Joint UMD/Hopkins cluster, largest compute facility accessible to UMD researchers
- Time is allocated in service units, no default access, application must be submitted by advisor (see [here](#) for details), small amount of free development allocation available per PI
- Broad suitability for **all** tasks, -very- high number of CPU nodes, GPU nodes recently installed

## CONTACTS FOR INFO

Department/College	Contact	E-Mail
Chem/Bio ENG	Jeffrey Klauda	jbklauda@umd.edu
Mech ENG	Johan Larsson	jola@umd.edu
Astronomy	Derek Richardson	dcr@astro.umd.edu
IPST	Pratyush Tiwary	ptiwary@umd.edu

## Specs

Newest Processor Generation	# Nodes	Cores/Node	Total Cores	Memory/Node (GB)	# GPU
2.6 GHz Broadwell	846	24-48	21120	5-21	672

# Service Unit Application Process

**Research Details**

\*Research Title

\*Research (Lay) Abstract

\*Desired Start Date

01-28-2021

\*Desired End Date

01-28-2022

\*Estimated Ram Per CPU Core (in GB)

\*Estimated File Space Required (in TB)

\*Requested Allocation Type

- None -

\*Requested kSU

Total kSU requested for duration of allocation (e.g. 1 year). Might be allotted at 25% per quarter.

\*Software Requested

Select your software from the drop-down list. If your needed software is not listed, select 'Other' and enter the software name in the 'Additional Software Needs' field

## HPCC Cluster Allocation Requests (New and Renewal)

Form to request new HPCC allocation, or renew an existing allocation

\*Requested for

Phillip Alvarez

Faculty Advisor

\*Request Type

New Allocation

Additional researchers to receive updates regarding this application

\*Allocation Name (4-20 characters)

**Research Details**

\*Research Title

\*Research (Lay) Abstract

\*Desired Start Date

01-28-2021

\*Desired End Date

01-28-2022

\*Estimated Ram Per CPU Core (in GB)

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\*Requested Allocation Type

- None -

\*Requested kSU

Total kSU requested for duration of allocation (e.g. 1 year). Might be allotted at 25% per quarter.

\*Software Requested

Select your software from the drop-down list. If your needed software is not listed, select 'Other' and enter the software name in the 'Additional Software Needs' field

\*Additional Software Needs

Please list any additional required software, compilers, or libraries needed for your work. Include minimum required versions where relevant.

SU Justification

Please provide a quantitative justification for the SUs requested. Often this can be as simple as an estimate of the number of jobs needed to complete the research goals and an average SU cost per job. 1 SU = 1 CPU-core used for 1 hour. 1 kSU = 1000 SU. If you need to attach documents, do so via 'Add Attachments' at the bottom, below Submit button.

Code Use and Scalability

Please describe the expected use of codes and the details of the scaling of these codes with the number of cores. Past scaling on the requested resource is ideal, but results from similar HPC clusters can be listed. If you need to attach documents, do so via 'Add Attachments' at the bottom, below Submit button.

Milestones

Please describe the scientific milestones you hope to achieve with the requested SUs.

# Service Unit Application Process

**Additional Software Needs** ⓘ

Please list any additional required software, compilers, or libraries needed for your work. Include minimum required versions where relevant. ✕

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**Milestones** ⓘ

Please describe the scientific milestones you hope to achieve with the requested SUs. ✕

## HPC Cluster Allocation Requests (New and Renewal)

Form to request new HPCC allocation, or renew an existing allocation

**\*Requested for**  
Philip Alvarez ✕

**\*Request Type**  
New Allocation ✕

**Faculty Advisor** ⓘ

Additional researchers to receive updates regarding this application ⓘ

**\*Allocation Name (4-20 characters)**

**Research Details**

**\*Research Title**

**\*Research (Lay) Abstract** ⓘ

**\*Desired Start Date**  
01-28-2021

**\*Desired End Date**  
01-28-2022

**\*Estimated Ram Per CPU Core (in GB)**

**\*Estimated File Space Required (in TB)**

**\*Requested Allocation Type**  
-- None --

**Requested Cluster** ⓘ  
If a specific cluster is needed, elaborate in 'SU Justification' ✕

**\*Requested kSU** ⓘ  
Total kSU requested for duration of allocation (e.g. 1 year). ✕  
Might be allotted at 25% per quarter.

**\*Processor Need**  
-- None --

**\*Software Requested** ⓘ  
Select your software from the drop-down list. If your needed software is not listed, select 'Other' and enter the software name in the 'Additional Software Needs' field ✕

**Additional Software Needs** ⓘ

Please list any additional required software, compilers, or libraries needed for your work. Include minimum required versions where relevant. ✕

**SU Justification** ⓘ

Please provide a quantitative justification for the SUs requested. Often this can be as simple as an estimate of the number of jobs needed to complete the research goals and an average SU cost per job. 1 SU = 1 CPU-core used for 1 hour. 1 kSU = 1000 SU. If you need to attach documents, do so via "Add Attachments" at the bottom, below Submit button. ✕

**Code Use and Scalability** ⓘ

Please describe the expected use of codes and the details of the scaling of these codes with the number of cores. Past scaling on the requested resource is ideal, but results from similar HPC clusters can be listed. If you need to attach documents, do so via "Add Attachments" at the bottom, below Submit button. ✕

**Milestones** ⓘ

Please describe the scientific milestones you hope to achieve with the requested SUs. ✕

# BSWIFT

- Small compute cluster for BSOS researchers
- Access granted through OACS web interface, scheduling system less formal
- Good for data processing and analysis of large datasets, poor GPU performance

## CONTACTS FOR INFO

Contact	E-Mail
OACS Help Desk	<a href="mailto:oacshelpdesk@umd.edu">oacshelpdesk@umd.edu</a>

## Specs

Newest Processor Generation	# Nodes	Cores/Node	Total Cores	Memory/Node (GB)	# GPU
2.66 GHz Intel Nehalem	40	6	560	48	1

# Juggernaut

- UMD's newest cluster, small size but growing
- Grew out of high demand for Deepthought 2
- Excellent for high shared memory and small, high-speed GPU compute applications

## Specs

Newest Processor Generation	# Nodes	Cores/Node	Total Cores	Memory/Node (GB)	# GPU
2.5 GHz Intel Cascade Lake	20	6	744	256-1536	6

## CONTACTS FOR INFO

Contact	E-Mail
?	?



# Let's Sign Up!

- Please enter the breakout room corresponding to the cluster most applicable to your research
- We will be guiding interested parties through the process of requesting access or filling out a development service unit application