O2 Cluster Status

This page shows all service outages for the O2 cluster, including planned maintenance and unplanned events.

We also post updates on the [HMS RC Twitter page](https://twitter.com).

Two Factor Authentication:

All O2 cluster logins from outside of the HMS network require two-factor authentication. Please see:

- Two Factor Authentication on O2
- Two Factor Authentication FAQ
- How to setup your HMS Duo profile

### Scheduled Maintenance and Current Outages:

<table>
<thead>
<tr>
<th>Date</th>
<th>Service</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Scheduled Maintenance window: 5:30am - 1pm</strong></td>
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<tr>
<td></td>
<td></td>
<td><strong>Actual Maintenance window: 5:30am - 10 am</strong></td>
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<tr>
<td>2020-05-16</td>
<td>Network</td>
<td>A planned upgrade to the HMS interior firewall will result in an outage between O2 and all external networks, including the HMS Quad, all Harvard networks, and the internet.</td>
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<td>connectivity between O2 and networks outside out the HMS data center.</td>
<td>Note that the actual outage may end sooner than 1pm depending on the day’s progress.</td>
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<td><strong>Impact:</strong></td>
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<td>• Batch jobs which are already running on O2 will continue to run normally, except:</td>
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<tr>
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<td>• jobs which rely on connections to external networks (e.g. to download data) will be affected during the outage.</td>
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<td>• Jobs in a PENDING state will remain pending until after the outage is complete.</td>
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<td>• Interactive jobs and active logins to O2 and transfer servers will be killed.</td>
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<td>• Websites hosted by Research Computing on infrastructure in the data center (which is most of them) will be inaccessible.</td>
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<tr>
<td>2020-04-13</td>
<td>/n/app</td>
<td><strong>Maintenance window: 6:00am - 10:00am</strong></td>
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<td>The filesystem /n/app, which is used to host scientific software applications on O2, will be migrated onto newer, more performant storage.</td>
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<td>• HMS DevOps and Research Computing have tested this change in a development environment and do not expect it to affect jobs on O2 unless they are trying to directly access /n/app (e.g. to reload a Module).</td>
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<tr>
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<td>• As a precaution, ALL new jobs submitted during this time window will remain pending until after the work is completed. This includes both batch and interactive jobs.</td>
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<td>• Please plan accordingly. If you are very concerned about the robustness of your job to this change, we encourage you to make sure jobs finish before this time, and then wait to submit new ones until after the change.</td>
</tr>
<tr>
<td>Date</td>
<td>Service/Network</td>
<td>Event Description</td>
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</tbody>
</table>
| 2020-03-29 | O2 cluster /n/data2 /n/groups | **Maintenance window: 3.30pm - 7pm**  
High load on one of the storage servers that is known on cluster as /n/data2 and /n/groups,  
Impact:  
- Logins to O2 cluster and transfer nodes  
- Intermittent issues with data access.  
The issue was resolved after the high load processes finished. |
| 2020-02-27 | O2 Cluster                    | The O2 job scheduler became unavailable due to an unforeseen bug in the scheduler control process. The problem was resolved with a patch applied to the scheduler software. |
| 2020-01-12 | O2 Cluster                    | **Maintenance window: 4am - 12pm (noon)**  
Network maintenance being performed in the HMS data center will result in outages of 1-3 minutes on the O2 network.  
Impact:  
- To minimize the possibility of job failures, we will pause all jobs on O2 during this maintenance, and resume the jobs after the maintenance is complete.  
- O2 logins should still work, at least intermittently, during the maintenance. Any new jobs submitted during this period will remain pending until after the maintenance is complete.  
This work over Jan 11-12 is being done to increase network performance in the HMS data center. After completion, all HMS systems hosted in the data center (including O2, storage, virtual machine infrastructure) will be running on a 100 GB network! |
| 2020-01-11 | Network connectivity          | **Maintenance window: 4am - 8am**  
Network maintenance being performed on the HMS core network will result in outages of < 5 minutes between O2 and all external networks, including the HMS Quad and all Harvard networks.  
Impact:  
- Batch jobs which are already running on O2 will continue to run normally.  
- Interactive jobs will get killed.  
- Jobs which rely on connections to external networks (e.g. to download data) will also be affected during these outages.  
This work over Jan 11-12 is being done to increase network performance in the HMS data center. After completion, all HMS systems hosted in the data center (including O2, storage, virtual machine infrastructure) will be running on a 100 GB network! |
| 2019-09-02 | /n/scratch2                    | Unplanned service degradation for /n/scratch2 filesystem.  
- Date: Monday Sept 2 2019  
- Duration: 5.00AM to 11.30AM.  
Resolved by stopping a service that is misbehaving on the filesystem. Working with Vendor to prevent issues like this in future. |
### 2019-08-25

**O2 job submissions / queries**

The O2 cluster will have planned maintenance during this window:

- Begins: Friday Aug 25 2019, 08:00AM
- Maintenance was completed by 06:00PM on Aug 25

An update for the `/n/scratch2` filesystem will require a service outage for all O2 systems. Cluster services will be restored as soon as possible on Sunday 8/25, although the outage is scheduled for all day, as needed.

**No user data will be deleted or otherwise changed during the outage.** But, as a precaution, please make sure you have copies of any critical data under `/n/scratch2` in particular, since that filesystem is not backed up.

Cluster jobs will not be able to run during the upgrade, so we have configured Slurm such that:

- Any job submitted with a wall time which crosses into the maintenance window will remain pending until the outage is over.
- If there are any running jobs on O2 when the outage begins (e.g. long jobs that were started awhile ago), they will be paused and Slurm will attempt to restart them after the outage, but we cannot guarantee such jobs will run successfully.

During the outage, you **WILL NOT** be able to:

- Login to O2 login servers nor file transfer servers
- Run any Slurm commands, such as: `sbatch`, `srun`, [etc.]
- Run nor start any cluster jobs on O2

Websites hosted by Research Computing will not be functionally affected, unless they submit jobs to the cluster (only a few websites do this). But, web developers will be unable to login and edit files.

<table>
<thead>
<tr>
<th>2019-08-23</th>
<th>/n/scratch2</th>
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</table>
| 2019-08-25 | Planned service outage for `/n/scratch2` filesystem:
|              | - Begins: Friday Aug 23 2019, 08:00AM  
|              |    - Maintenance was completed by 06:00PM on Aug 25

An update for the `/n/scratch2` filesystem requires a service outage. Service will be restored as soon as possible on Sunday 8/25, although the outage is scheduled for all day, as needed.

*During this outage, all other O2 cluster services will be up and running until Sunday morning 8/25 (see below).*

**Please note:**

- We will disable the auto-deletion script for old files under `/n/scratch2` for a few days after the outage.
- For jobs requiring `/n/scratch2` which may need to run during this outage window, make sure to submit those with the following `sbatch` option so they will not start running until the maintenance is completed: `--constraint=scratch2`

<table>
<thead>
<tr>
<th>2019-08-21</th>
<th>O2 job submissions / queries</th>
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</thead>
</table>

The Slurm job scheduler went offline at approximately 3:30am on 2019-08-21. We are currently working to restore this service.

- 7:30am: The Slurm job scheduler has been restored to service, and O2 job submissions should be operating normally again.
  We are still investigating the root cause of this issue.

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<thead>
<tr>
<th>2019-08-17</th>
<th>O2 logins Slurm job submissions</th>
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</table>

Scheduled power maintenance at Datacenter led to an unexpected power outage causing login nodes and other critical infrastructure services not respond. The issues is fixed by restoring power.

- Date: Saturday August 17 2019
- Duration: 6.30 AM to 6.00PM

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<tr>
<th>2019-08-09</th>
<th>O2 logins</th>
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</table>

/home filesystem experienced a service degradation that resulted in not allowing users to login to O2 cluster and submit jobs. The issue has been fixed by vendor.

- Date: Friday August 9 2019
- Duration: 8.00 AM to 11.00AM
### 2019-07-07

**O2 logins**

A network firewall issue during planned maintenance caused O2 cluster logins to fail and new SLURM job submissions to remain pending. Jobs already running on compute nodes should not have been affected.

- **Date:** Sunday July 7 2019
- **Duration:** 6:50 AM to 8:00AM

### 2019-06-30

**network issues**

Unplanned service outage for all of o2 cluster. One of the networking devices failed and caused multiple issues across HMS including o2 cluster logins and SLURM job submissions. The issue is resolved by replacing the faulty hardware.

- **Date:** Sunday June 30 2019
- **Duration:** 10:30 PM to 3.30AM

### 2019-05-24

**/n/scratch2**

Unplanned service degradation for /n/scratch2 filesystem.

- **Date:** Friday May 24 2019
- **Duration:** 10:30PM to 1AM.

Resolved by restarting a service on the filesystem.

### 2019-03-18-22

**/n/scratch2**

Unplanned service degradation. The /n/scratch2 filesystem is currently showing intermittent instability. We are monitoring it closely and will be implementing a number of hardware and software fixes this week resolve the performance problem.

- **Duration:** 4 days
- Implemented hardware and software fixes to resolve the core issue on the scratch2 fileserver.

### 2019-03-09

**Slurm Job Scheduler**

The Slurm Job Scheduler will have planned maintenance during this window:

- **Date:** Saturday, Mar 9
- **Time:** 08:00-19:00

Cluster jobs will not be able to run during the upgrade, so we have configured Slurm such that:

- Any job submitted with a wall time which crosses into the maintenance window will remain pending until the outage is over.
- If there are any running jobs on O2 when the outage begins (e.g. long jobs that were started awhile ago), they will be paused and Slurm will attempt to restart them after the outage, but we cannot guarantee such jobs will run successfully.

During the outage, you **WILL** still be able to:

- Login to O2 to access data
- Copy data to/from the O2 file transfer servers (transfer.rc.hms.harvard.edu) – except to /n/files (due to the storage outage for /n/files also on Mar 9)

During the outage, you **WILL NOT** be able to:

- Run any Slurm commands, such as: sbatch, srun, [etc.]
- Run nor start any cluster jobs on O2

Websites hosted by Research Computing will not be affected, unless they submit jobs to the cluster (only a few websites do this).

### 2019-03-09

**/n/files filesystem**

The research.files server will have planned maintenance during this window:

- **Date:** Saturday, Mar 9
- **Time:** 09:00-15:00

During this window, the directory /n/files will not be available from the O2 file transfer servers and compute nodes.

### 2019-02-28

**/n/scratch2**

Unplanned Outage: A performance degradation on /n/scratch2 could cause jobs using /n/scratch2 to fail.

- **Duration:** 7:00AM - 9.00PM

### 2018-12-05

**/n/scratch2 filesystem**

The automated process that deletes old files under /n/scratch2 (specifically, files that were last accessed more than 29 days ago), was intentionally disabled by Research Computing for approximately the past month due to an issue on the scratch2 fileserver. So, there are currently files older than 30 days on /n/scratch2 which have not yet been purged as they normally would have been.

We fixed that fileserver issue and resumed the purging of these old files starting Wed, Dec 5.
### All O2 cluster logins from outside of the HMS network will start requiring two-factor authentication.

For more details, please see: [Two Factor Authentication (2FA) on O2](http://example.com) and [Two Factor Authentication FAQ](http://example.com).

Currently, O2 only requires a password login using your eCommons ID. Due to increased hacking attempts on O2, it is necessary to increase the security of our systems and going to two factor authentication is a big step.

HMS users already must use two factor authentication for Harvard Key and HMS VPN logins. O2 logins will work similarly.

Two-factor authentication will be required when logging in from:

- the HMS Public wireless network
- Other Harvard networks (FAS, etc)
- Networks at HMS affiliates (hospitals, etc)
- Any other external network (home, etc), NOT using the HMS VPN
- an HMS system (even on campus) which has a public-facing IP address (this is mostly for web and other application servers, not your desktop)

### MySQL and PostgreSQL Databases

A planned maintenance window at:

**Wednesday, 2018-11-28, 6pm - 7pm**

for the following services:

- PostgreSQL (production and staging database servers)
- MySQL (production and staging database servers)
- TWiki (the website: wiki.med.harvard.edu)

Only websites and cluster jobs using these database services were affected.

### /n/scratch2 directory

Intermittent storage issues affected the availability of the /n/scratch2 directories across O2 systems.

**Duration:** 6.00 AM - 6.00 PM

### /n/groups and /n/data2 directories

Intermittent storage issues affected the availability of the /n/groups and /n/data2 directories across O2 systems.

### authentication service

Instability in O2's authentication service was causing some user accounts to lose group memberships across O2 systems.

Services were restored to normal at approximately 10:18am

### /n/scratch2 directory

When attempting to write to files under /n/scratch2, you may see errant behavior such as:

- Files are successfully written, but warning/error messages are generated
- Files can not be written, with error messages such as "Bad Address"

Issue was resolved with a bug fix on the scratch2 storage server.

### O2 Login servers

Unplanned Outage: a core HMS network outage caused o2 login nodes unreachable. The issue is resolved by HMS Networking team

**Duration:** 02.30 PM - 5.30 PM

### PostgreSQL (production, staging)

These will be offline for approximately 1 hour starting at 9pm EDT for urgent maintenance.

### O2 Cluster and web services

Unplanned outage: a failure in the HMS virtual machine hosting infrastructure caused service outages in Research Computing's web services and, to a lesser extent, on the O2 cluster. The outage did not affect running cluster jobs, though.

**Duration:** 02:20 pm - 06:20 pm
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
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<tbody>
<tr>
<td>2018-08-06</td>
<td>O2 Cluster Unplanned outage: Cisco networking hardware failed and caused many jobs to fail. The defect hardware has been replaced and everything is stable. Duration: 05:00 am - 08:00 pm</td>
</tr>
<tr>
<td>2018-04-25</td>
<td>O2 login servers 2 login servers, login03 and login05, required reboots due to resource-intensive end user processes locking up those systems.</td>
</tr>
<tr>
<td>2018-04-11</td>
<td>O2 /home cluster A severe network latency to the /home storage cluster impacted logins and processes trying to access this cluster. Duration: 11:00am - 05:00pm</td>
</tr>
<tr>
<td>2018-04-10</td>
<td>O2 Cluster Unplanned outage: networking issues disrupted communication to/from the login nodes. Running/pending jobs were not impacted.</td>
</tr>
<tr>
<td>2018-04-03</td>
<td>/home filesystem The filesystem for /home was getting close to maximum capacity and running on older hardware. This planned maintenance involved migrating all /home to data to a new filesystem with more capacity. This required a full shutdown of O2's Slurm job scheduler and unmounting /home from all cluster and infrastructure systems.</td>
</tr>
<tr>
<td>2018-03-13</td>
<td>/n/scratch2 filesystem A hardware failure on the /n/scratch2 filesystem resulted in /n/scratch2 being non-writable. On 3/14, hardware was replaced and the filesystem repaired, after which service returned to normal.</td>
</tr>
</tbody>
</table>