



Donnelly Centre
for Cellular + Biomolecular Research

Donnelly Centre IT user manual

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*Prepared by members of the Donnelly Centre Information Technology User Group
(ITUG)*



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Introduction

This manual is a resource for users of the information technology (IT) infrastructure at the Donnelly Centre at the University of Toronto. The document is prepared by the IT User Group (ITUG), consisting of our computational Faculty advisors, the Director of Research Operations, the Donnelly Centre's Systems Administrator, and senior IT staff selected from relevant Donnelly labs.

Summary of computing resources

- UofT provides email via Microsoft Office 365, which also contains many other useful services, such as Outlook calendars, Microsoft Office online and 1TB of personal storage space via OneDrive, Skype for Business, and Microsoft Teams video conferencing. [Microsoft software for local software installation on work computers is also free](#)
- Labs are responsible for ensuring their users have access to a computer and IT services, such as printing
- Labs and users are responsible for their own computing needs once provided with access and must follow University and Divisional [security](#) and [usage policies](#) and guidelines
- Individual labs may have internal contacts to assist with lab-specific IT needs
- The Donnelly admin office has a high speed photocopier and electronic scanner
- The [Faculty of Medicine Discovery Commons](#) and [UofT Information Commons](#) provide help with central IT services, such as email, Office 365 and quercus
- Advanced IT services are available through the Donnelly Centre, such as lab server support and high performance computing (cost-recovery)
- Free access to a Canada-wide network of supercomputers is available from [Compute Canada via SciNet](#)

IT services overview

UofT Information Commons

Information Commons handles central UofT IT services, including email and Office 365 and should be contacted for any assistance related to these systems. They do not charge for support. Contact: [Information Commons Help Desk](#)

<https://onesearch.library.utoronto.ca/ic-faq-categories/about-and-hours-service>



Departmental services (Donnelly)

Advanced IT services are available through the Donnelly Centre, such as communal and lab owned servers and systems, high performance computing clusters, storage, private cloud, DNS, VPN, Web, firewall, networking, backup, archive, user accounts and other services. These services are cost-recovery.

Labs that currently pay for access to advanced Donnelly IT services:

Tier 1 (high usage)

- Andrews, Bader, Blencowe, Boone, Hughes, Kim, Moffat, Morris, Roth, Rost, Sidhu, Greenblatt, Zhang, Donnelly Admin

Tier 2 (lower usage)

- Fraser, Stagljär, Taipale

For off-site access to the Donnelly Centre Intranet and UofT network, VPN credentials can be provided to users (support@rt.ccb.utoronto.ca). This will provide users with simultaneous access to both the internet (via UofT Wifi) and our internal network (via VPN), including internal lab servers, clusters and printers.

The Donnelly Centre's High Performance Computing (HPC) infrastructure is managed by our Systems Administrator, Jeff Liu (support@rt.ccb.utoronto.ca). Please note that Donnelly does not provide desktop support services for personal computers, printers or Wifi, including faculty personal computers. If needed, these services are provided to labs through Discovery Commons. Jeff should not be contacted for these issues as he is typically overloaded with work on advanced systems.

Faculty of Medicine services (Discovery Commons, DisCo)

The Faculty of Medicine's Discovery Commons (DisCo) provides a wide range of technology services to students, faculty, and staff in the Faculty of Medicine, which can be seen on their [Service Catalogue](#). The unit also holds business hours for their [Service Desk](#) which provides direct access to any of their services.

Users that require assistance with their personal computers, laptops, printers, personal backup or any personal hardware/software issues that cannot be solved through their personal or lab networks should contact DisCo.

DisCo's standard rate for service is ~ \$75/hour (some services have different rates and packages - please refer to the specific service in their Service Catalogue to confirm rates).

- Contact the DisCo Service Desk via [Service Requests](#)



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- Contact an individual DisCo staff, refer to their [Staff Listing](#) page

Lab-specific IT services

Depending on their needs, individual labs have designated IT contacts that can assist their users in providing access to local workstations, printers and equipment. Below describes a list of labs and relevant IT contacts for each group, for set up of local workstations and printers:

Lab	Contact Person(s)	Contact email
Bader	Ruth Isserlin Gary Bader	ruth.isserlin@utoronto.ca gary.bader@utoronto.ca
Moffat	Kevin Brown Patricia Mero	bioboy99@gmail.com patricia.mero@utoronto.ca
Kim	Alexey Strokach Han Wen	ostrokach@gmail.com han.wen@kimlab.org
Boone & Andrews	Matej Usaj Myra Masinas	m.usaj@utoronto.ca myra.masinas@utoronto.ca
Hughes lab	Mihai Albu	mihai.balai @gmail.com
Greenblatt lab	Edyta Marcon	edyta.marcon@utoronto.ca

****For other labs contact PIs directly**



Internet access (Ethernet and Wifi)

- We recommend all computers connect to an ethernet cable for maximum speed and reliability. This is also *in compliance with UofT IT security requirements*. However, UofT Wifi is available throughout the building and campus, though less reliable than ethernet. Please visit <https://onesearch.library.utoronto.ca/taxonomy/term/5214> to find out how to connect to UofT Wifi.
- Connecting to UofT Wifi does not allow access to devices inside our internal network, (e.g. clusters, servers and printers), but users can sign up for a VPN account (via support@rt.ccbr.utoronto.ca) to access internal networks from on campus Wifi and at home.
- A few labs on floors 4, 5, 11 and 12 in the Donnelly Centre are not connected to the Donnelly Centre's internal network. These labs either manage their networks directly via their own lab members or by sending requests to IBBME-IT (helpdesk.ibbme@utoronto.ca).
- UofT staff and students with valid UTORids can [request temporary \(5 day\) guest Wifi accounts for work-related visitors](#).
- The University of Toronto does not allow the use of internal routers for Wifi access because these represent serious security risks from hackers and create radio interference with usage of UofT Wifi. Do not set up a home Wifi access point at work. Best practice is for all users to directly plug into an ethernet cable for maximum performance.
- In exceptional circumstances, some lab equipment and operations require the use of internal lab networks via Wifi routers (e.g. newer freezers, laptops only supporting Wifi). If so, these steps must be taken:
 - Labs must order a business-class wireless router and set up the Wifi router in bridge mode.
 - Users must set up a strong Wifi password and Admin password.
 - Wifi routers must be labeled with the up-to-date name, and contact person listed should have Admin login credentials and access to minimize difficulty during troubleshooting.
 - Radio channels must be selected to reduce interference with other systems. The following link provides guidance on how to view and choose channels on your router. <https://www.lifewire.com/wifi-channel-number-change-to-avoid-interference-818208>
 - Wifi LAN (local area network) must avoid 192.168.0.0 - 192.168.30.0. Network 192.168.100.0/24 is recommended.
 - Inform the Donnelly systems administrator (support@rt.ccbr.utoronto.ca) or local network administrator of the network.



Email and essential software and services

University of Toronto email account and Microsoft Office 365

Your [UTORid](#) grants you access to many University of Toronto services including utoronto.ca email (UTmail), managed by U of T Information Commons. To set up and access all services you need a UTORid and password. See:

- <https://onesearch.library.utoronto.ca/ic-faq-categories/utorid-accounts>
- <https://onesearch.library.utoronto.ca/ic-faq-categories/email-and-office-365-%E2%80%993-utmail>

Microsoft Office 365 and Sharepoint

- UofT students, staff and faculty members with an appointment of 20% or more can access the [full desktop and mobile versions of Microsoft Office through their UTmail+ account](#). Your UTmail account will allow you to install Microsoft Office on many of your work devices. You may run Office on up to 5 machines (Mac or PC). You can also run Office Mobile Apps (Word, Excel, Powerpoint) on up to 5 mobile devices (on various platforms).
- [Microsoft Windows and Office is free for U of T-owned computers](#).
- Office 365 provides 1TB of secure, personal storage space via **OneDrive** and **Sharepoint**. **OneDrive** is accessible from all computer and mobile devices. For information on how to set up OneDrive, see: <https://onesearch.library.utoronto.ca/ic-faq-categories/onedrive>

Sharepoint is a web-based tool that enables teams to collaborate using team sites, document publishing, blogs, wikis, and forums. It provides a secure place to store, organize, share, and access information from most computers and web browsers. For information on how to access Sharepoint, see: <https://onesearch.library.utoronto.ca/ic-faq-categories/sharepoint>

Antivirus software

Windows users **must** install antivirus software. We recommend using AVG (free), Avast, or similar antivirus. Apple computers and mobile devices should also use comparable antiviral software. The University also has recommendations for appropriate antivirus options for both students and staff: <http://www.antivirus.utoronto.ca/>



Other software

The University provides its students, staff and faculty with access to several other specialized software, including [via the Licensed Software Office](#), usually at a substantial discount. We recommend that users review available options prior to purchase of new software:

<https://onesearch.library.utoronto.ca/ic-faq-categories/software-u-t>

Data Storage, Backup and Archiving

Data Retention

Each lab is responsible for its own data retention policies.

Data Backup

Personal file backup

Each user and lab is responsible for managing their own backup. There are many different products available. We recommend using OneDrive via UofT's Office 365 service, which provides 1TB per user. For needs outside this range, we recommend paying for [Dropbox](#), which can provide relatively low cost unlimited cloud storage capacity. These services will only backup files stored in their backup folders, not the entire machine, but this is usually all that is needed.

We also recommend purchasing a backup drive for each computer. However, if you get an encryption virus, it will encrypt the backup drive as well, while a cloud backup service will be immune.

On Mac OS you can use TimeMachine to back up the [entire contents of your computer to a local hard drive or online](#).

Large data (e.g. large lab data sets)

Labs are responsible for managing their own large data. There are several external cloud backup options that Donnelly users can use to store or archive research data that offer "unlimited" storage, such as **Dropbox**, **Amazon**, **Microsoft (Azure)**, **Jottacloud**, and **Google (Gsuite)** for a cost - check with each company for educational discounts. For instance, Dropbox offers a professional account with an educational discount that provides relatively low cost unlimited storage.



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Gsuite has a Linux tool which allows easy exchange/access to SciNet (which also has the option for encryption if data security is a concern).

Compute Canada/SciNet can archive large data sets for long term storage. Consult with Donnelly Systems administration staff (support@rt.ccbr.utoronto.ca) for more information.

High performance computing

SciNet: The UofT Supercomputer Facility

The [SciNet](https://www.SciNethpc.ca) supercomputer facility at UofT (<https://www.SciNethpc.ca>) is a regularly updated Top100 worldwide supercomputer resource with multiple supercomputers, such as the Niagara system with over 80,000 CPUs. SciNet is designed for high-throughput runs of developed code and not for day-to-day code development.

- This system has a job queueing system with a slightly different set up than the Donnelly cluster. As a result, you cannot take scripts from one directly onto the other and use it
- There are limits to the types of jobs you run. For example: the maximum wall time is 24 hours. To see the SciNet limits see [here](#)
- SciNet has dedicated test nodes that you can use to test a subset of your job to approximate your wall times.

SciNet Account set up

1. First set up a [Compute Canada account](#)
2. You will need your PI's CCRI number to set up your CCRI account. To get an account on this system your PI will need to have a Compute Canada role identifier (CCRI) number. To apply for a CCRI number see here: <https://ccdb.computecanada.ca/security/login>
3. Be aware that it can take 24-48 hours to get your Compute Canada account activated
4. For more detailed instructions see: <https://www.SciNethpc.ca/getting-a-SciNet-account/>

SciNet Training and courses

SciNet offers a variety of courses to help you get started with clustered computing as well as advanced methods and programming strategies. For complete course listing see [SciNet courses](#)

- **It is highly recommended that you take the [Intro to Niagara](#) course prior to using Niagara.** It is offered roughly monthly. Also, if you are not an expert in Linux, please take the courses "The Linux Command Line" and then "Linux Shell Scripting". You may be



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interested in other courses offered there, especially the data science ones - feel free to take them.

- Access detailed documentation for the Niagara compute cluster [here](#)
- The Donnelly Centre ITUG members organize annual SciNet workshops in the Red Seminar Room. These events are advertised via the main administrative office. All Donnelly users are welcome to register for these free sessions.

Donnelly clusters and servers

Donnelly cluster

April 2020 infrastructure includes: a new 8 node Intel Xeon Phi CPU system with a total of 544 physical cores, 1.5TB of memory and 32TB directly attached solid state (SSD) storage in a distributed file system; an older 'Banting' cluster with 24 nodes (SunBlade), 230 CPU cores, 2 TB RAM, and a total of 2800 TB of storage.

Access to the cluster is restricted to labs within the Centre that financially contribute towards the maintenance and upgrades of the facility and pay fees towards the service on a cost-recovery basis. Depending on the level of use, the number of lab servers maintained by our systems administrator and general demand, users are categorized into Tier 1 (high usage), or Tier 2 (low usage) clients and are charged proportionally.

Details of the cluster and its features are summarized in the workshop [slide deck](#) and you can monitor your submitted jobs here: <http://monitor.cabr.utoronto.ca>

Server room

The Donnelly Centre has a professionally managed, air cooled server room on the 6th floor. Labs with advanced computing needs can install servers in this space. Consult with Jeff Liu for details.

Cloud servers

Compute Canada/SciNet provides cloud servers with a timeline limit of 1 year (can be renewed or set up for automatic renewal) that may be a great option for storing one or multiple websites for each lab.



Purchasing computing products

Labs should purchase computing hardware according to the University's Procurement policies. Some vendors provide educational discounts on computing products to University of Toronto students (e.g. Apple, Dell, etc.)

- Apple: 10% discount via [Apple Educational store](#). The Apple store offers an 8% discount on all computer products including iMac, Macbook, MacPro, MacMini with proof of educational status (e.g. presenting your T-card).
- Dell, HP, Lenovo, Acer and others provide discounts through [UofT WorkPerks program](#)
- The UofT bookstore no longer offers computers for purchase.
- Laptops and other computers purchased by University research funds remain property of the University upon departure of staff or student.
- Contact company sales people directly for larger and CFI-based purchases. Discounts via salespeople are often substantial (e.g. 50%).

E-Waste

The Faculty of Medicine has an annual E-waste day organized through the Group on Business Affairs, announced via the Donnelly Centre Administrative Office. E-waste day is typically held every Spring (May), at which time all labs are asked to drop off their E-waste in the basement of MSB in the breezeway. Discovery Commons personnel are on site to assist with destroying hard drives and or other data storage hardware.

Aside from the annual E-waste day, a designated area should be allotted on each floor, to accumulate small E-waste items, which can collectively be discarded when necessary. This can be requested via a Service Order request to the Donnelly Centre Administrative Office by email (ccbr.info@utoronto.ca).

A list of what is considered E-waste can be found below:

- Computers
- Monitors
- Printers
- Keyboards
- Cell phones
- Phones
- Hard drives
- Servers
- Batteries



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Note that toner cartridges can be re-boxed and returned to the Donnelly Centre Administrative Office (Room 230) for recycling. Boxes of used cartridges and other items should be clearly labelled “used”.



Emergency IT protocol

Emergency contacts

In the event of an IT emergency (e.g. fire, flood, cooling system failure) at the Donnelly, the Donnelly Systems Administrator (or back up ITUG members) and the Director of Research Operations should be notified immediately and the incident should be reported in detail. Contact numbers and emails are posted on the server room entry. Listed below are the Donnelly Centre's IT emergency contacts:

1. *Jeff Liu, System Administrator,*
Office phone: 416-946-0033,
Email: jeffs.liu@utoronto.ca
2. *Matej Usaj, Boone/Andrews lab IT*
Email: m.usaj@utoronto.ca , usajusaj@gmail.com
3. *Kevin Brown, Moffat lab IT*
Email: bioboy99@gmail.com
4. *Han Wen, Kim lab IT*
Email: han.wen@kimlab.org
5. *Mihai Albu, Hughes lab IT*
Email: mihai.balai@gmail.com
6. *Ruth Isserlin, Bader lab IT*
Email: ruth.isserlin@utoronto.ca
7. *Gary Bader, Professor*
Email: gary.bader@utoronto.ca
8. *Sara Sharifpoor, Director of Research Operations*
Office Phone: 416-946-7006
Email: sara.sharifpoor@utoronto.ca

Emergency response procedures for server room in room 631 (6th floor)

1. Fire in server room

- Pull fire alarm, follow fire evacuation protocol
- Call IT emergency contacts from safe place



2. Flood in server room

- Call UofT trades at 416-978-3000 immediately
- Notify IT emergency contacts

3. Noticeable high temperature in server room

- Call IT emergency contacts immediately

4. Power outage

- Call UofT trades at 416-978-3000 immediately
- Contact IT emergency contacts

5. Network Failure

- Contact IT emergency contacts



Server Room Map

Please contact Jeff Liu jeffs.liu@utoronto.ca or other members of ITUG team to request this information.

Network Closet Content

The Network closets are located beside the ladies washrooms on each floor. Access is only granted by contacting our Systems Administrator, Jeff Liu. Contents are listed below:

13th floor: 1U firewall13, fw

8th floor: 1U firewall83, fw

12th floor: 1U stagljar, fw, filer

All floors: Internet Switches (DisCo), CCBR Switches (CCBR)