

## **McGill Research Cyber-Infrastructure Guide**

This is a practical guide for humanities and social science scholars on the current cyberinfrastructure provisions offered by McGill ITS. It explicates the knowledge base article on 'Web Hosting' at

<http://kb.mcgill.ca/kb/article?ArticleId=1777&source=Article&c=12&cid=2> though articles on the Virtualization Server and Documentum are also discussed briefly.

This guide is not meant to replace consultation with any McGill units - in particular ITS. Please consult with the appropriate units to assess their ability to meet your research needs.

This guide is also available online at <http://digihum.mcgill.ca/resources/research-services/mcgill-guide/>

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## **Web Hosting Overview**

McGill has two broad solutions for 'web hosting' - pages for McGill administrative and teaching needs, and space for much more ad hoc solutions for research, labs, and conferences. There is, however, a bit of overlap. In some instances units (like the Department of French Literature) use the older research set up for their departmental website. Likewise, the new Documentum infrastructure blurs research and unit cyberinfrastructure, while myCourses offers ways of linking research and teaching, as well as administrative, infrastructures. In short, there are several solutions for day-to-day cyberinfrastructure provided by ITS that are well suited to low intensity, out-of-the-box digital needs. Primarily however these solutions are geared towards publication of information; more often than not they are insufficient for ongoing digital research. The distinction is critical – if you wish to publish your activities and manage teaching or an administrative unit, they're ideal. If you wish to build web applications, use a content management system (or invent one, or develop a plugin), there are important considerations to keep in mind when sifting through what it is each service offers.

Most web hosting provisions at McGill fall under Content and Collaboration Solutions (CCS). However, if you choose a server set up, you'll likely deal with Network and Communication Services (NCS) as these options circumvent CCS entirely.

## **McGill's Web Management System**

<http://kb.mcgill.ca/kb/article?ArticleId=1839&source=Article&c=12&cid=2>

This is McGill's core system for producing and maintaining administrative and program websites and pages. It is an implementation of an open-source Content Management System called Drupal, and uses version 6+. Drupal is an extremely flexible and powerful CMS; it is used by numerous corporations and organizations for their websites because it is easily customizable, but also extremely robust in how it presents content, and manages users. McGill's implementation is fairly restrictive because of the need to control McGill's online 'brand' while faced with a wide-range of varying web-editing competencies among its administrative staff. In order to edit a webpage, administrators must take a course from CCS. Change requests are possible, but the way information is handled and displayed is centrally administered by CCS. Earlier versions used Drupal 5, which is why you might see some features (such as the Music Calendar) on some webpages, and not on others. This has been a major endeavor, and has transformed the University's webpages for the better. At the same time, it has also presented some problems in managing internal vs external content, and integration of certain functionalities – like calendar integration and presentation for instance.

### *Some issues to consider:*

Website Editors and Managers must take CCS courses.

Resource Accounts cannot be associated with webpages; editors and managers must be actual personal accounts.

### *Benefits:*

Easy presentation of McGill administrative content.

Little to no HTML or coding required.

Easy to move content from Word documents to the web.

Pages are easily organized allowing for presentation of administrative materials etc.

Can be updated without FTP or any other editors, using a web browser.

Links (as of fall 2012) to the McGill Channels / Events calendar system for easy RSS / Atom feed publicity

### *Drawbacks:*

Is extremely restrictive in how content is presented outside of menus, page content, and certain pre-approved plugins (for images, and links to calendar information)

Limited CSS options

All content must go through an established workflow – ie only editors can make changes, there are no commenting or open blogging systems in place.

### *Ideally for:*

Administrative units with support staff and faculty able to maintain online presence.

Can publish information, but not suited for use in conducting research.

### *Audiences:*

This is for all audiences; mainly publication, access usually not restricted (though CCS is working on ways to offer McGill-only or restricted content).

## **Blogs.McGill.Ca**

<http://kb.mcgill.ca/kb/article?ArticleId=1813&source=Article&c=12&cid=2>

This service uses a multisite platform of the popular blogging CMS, Wordpress. It is open to groups of faculty or students – ie units, research groups, clubs, etc. – but is not open to individuals.

It is primarily geared towards production of ongoing content – blog entries etc detailing events, research, or issues related to the group’s activities. It is a bit more flexible than the WMS; users can request inclusion of Wordpress Plugins as well as customized templates or themes for their blogs, for a fee. A set of pre-defined themes and plugins is offered.

It is not clear from the ICS documentation how users are handled for the Blogs – ie whether blog editors can control access for others, and whether or not blog authors can use non-mcgill accounts etc.

There are currently c. 30 blogs. Most are administrative; some are research, of which few are updated on a frequent (ie weekly) basis. Latest posts in many date from 2009-2011.

### *Some issues to consider:*

User management not clear.

Unlike McGill’s WMS, blogs have a disclaimer noting that the University doesn’t endorse views on Blogs.

Publicity – the system is not well utilized. This raises questions of sustainability. Also, it is more frequently used by administrative units than other groups.

### *Benefits:*

A wordpress blog environment, easy to craft updates for ongoing subjects / topics.

Great for publicity.

Fewer restrictions on content, though still fall within normal McGill Guidelines. Authors can voice personal opinions etc.

You can embed videos (Vimeo / Youtube) from other accounts.

### *Drawbacks:*

Customizable themes and templates still within McGill ‘Branding’.

Custom CSS?

Fees for custom plugins etc. Must be adaptable to entire MU install of Wordpress (this means anything you request must work for the WHOLE system, not just your blog).

Some menu layout possible, though more restrictive than normal WordPress.

### *Ideally for:*

Publicity about research or group activities. Less structured than the WMS.

### *Audiences:*

Publicity, groups, and public facing audiences.

## **Documentum**

<http://kb.mcgill.ca/kb/article?ArticleId=1445&source=Article&c=12&cid=2>

Documentum is CCS's long-awaited content and document management system. In development since early 2008, and rolled out in fall 2012, it allows McGill employees to share documents, workflows, images, videos, etc. all within a collaborative web-based environment. It's pretty powerful. It has certain advantages over a shared drive in that you can comment on the documents themselves, create discussion groups, etc., as well as version documents instead of merely saving them to a shared disk.

Space is accessible for 1 year, and must be renewed. Each group must have two 'space coordinators' who are responsible for managing the online materials and conduct of participants.

### *Some issues to consider:*

Currently the service is open to McGill employees. Early discussions raised the possibility of opening spaces to non-mcgill users, particularly for research purposes. It is not clear if this is still possible or not.

How Documentum interfaces with more publicly facing web solutions like the WMS and Blogs isn't clear or addressed. It is possible to publish documents to different sets of users and audiences, but how you can integrate documents managed by Documentum into other websites isn't addressed.

### *Benefits:*

A robust social environment for managing documents and workflows related to any kind of task, in particular administration.

Free – no costs involved.

Versioning of documents, discussion spaces, emailing etc.

### *Drawbacks:*

Limited to McGill Employees.

Renewal required.

Limited customization.

Not clear how it might integrate non-mcgill users, or interface with other websites, including McGill-based solutions for publicity.

### *Ideally for:*

Administrative groups and units. It could be used by research groups with large corpora of documents, or those who require workflows for document management, in particular publishing or other research processes.

### *Audiences:*

Depends; not primarily for publicity, though publication of documents is possible in some instances.

## **Virtual Hosting Service**

This is perhaps the most flexible and economical solution for research groups interested in developing their own systems or those groups interested in having FTP, Php, and SQL database (MySQL PostGreSQL) solutions. It offers:

300MB disk storage

Php

1 SQL Database

All websites must follow one of three set McGill URLs:

Yoursite.research.mcgill.ca

Yoursite.labs.mcgill.ca

Yoursite.conferences.mcgill.ca

As indicated this space is well suited for research activities over teaching and publication. The service is free to McGill faculty (apparently), not clear about students.

This is, essentially, a 'web site' space with all that implies. It is customizable, comes with no predetermined content or infrastructure in place other than the server configurations and software provided by NCS (Apache, Php, SQL DBs). Nevertheless it does have important limitations: no content management systems (due to server usage requirements and security restrictions), limited access to error logs, and limited configuration of apache modules (if at all).

### *Some issues to consider:*

Unlike the other solutions listed above, this requires full web development for implementation – you need a webmaster.

Although any front ends constructed on the machine will be able to handle any users you may have (ie you can set it up so that non-mcgill users have access to web content), non-mcgill researchers who need access will have to obtain a mcgill login as per ITS's current security protocol. This can impact development time and processes, especially for external RAs, students, and private partners.

### *Benefits:*

Free – no costs involved.

Flexible environment for limited research development within the parameters set by NCS configurations.

Open to McGill researchers as well as groups.

### *Drawbacks:*

Severe limitations on disk space.

No access to non-publicly accessible folders.

Limited access to server logs (students and postdoctoral fellows, for instance cannot see logs on the interface; faculty can).

No development support.

One database; no additional user support or creation / permissions.  
Limited ability to configure apache via php ini\_set. Requests for vhost.conf made through NCS only.  
Content Management Systems (Drupal, Joomla, Django, Wordpress) forbidden.  
No development space.  
Not suited for development of web applications or digital processes that require server configurations, installation of server-sided applications or modules.  
URLs limited to preconfigured formats on McGill Domain.

*Ideally for:*

Small research or activity oriented websites for individuals or groups who want control over their web-presence, and those with limited to no funding.

*Audiences:*

Completely at the discretion of the users. Sites can be password protected to ensure privacy for research collaboration, or public facing.

## **Virtual Machine**

This program allows researchers, units, or teams of researchers to purchase an online Virtual Machine or Server (VM) which runs a server 'container' on a shared physical machine. In short it is a server, but only has a virtual existence. VMs are governed by a Service Level Agreement with NCS.

[http://kb.mcgill.ca/pf/12/webfiles/SLAs/VM\\_SLA\\_rev2.0.pdf](http://kb.mcgill.ca/pf/12/webfiles/SLAs/VM_SLA_rev2.0.pdf)

Because it IS an actual server, this is the most flexible among NCS's current solutions for research cyber-infrastructure. Virtual Machines are ideal for content management systems and digital research that requires server-sided scripts, applications, or other bells and whistles.

At the same time it is also the most costly of the solutions, running at \$5000 for a three-year contract. The standard provisions include Linux or Windows, 4GB of memory, dual core processing, and 60GB of storage with Tier 1 support. Additional memory, to a max of 5GB, is available for \$250, whereas additional disk space (storage) is available via SAN (Storage Area Network) for a separate charge. There are many advantages to this system, least of which is a McGill-based solution. Clients have remote access to their VM, including power on/off but they do not have physical access.

Even so, similar provisions in the private sector can cost c. \$50/year by comparison without the Tier 1 support, and additional disk space is not rationed.

### *Some issues to consider:*

Of all the options offered by ITS, this is the most intensive in terms of IT development. Tasks can be divided, however, between a webmaster (frontend website development) and a server administrator (backend server coding and scripting), or any combination. It is not clear from ITS documentation or from past experiences of projects using this service what Tier 1 Support actually entails. In some instances this has meant actual development support, in others, none.

Although any front ends constructed on the machine will be able to handle any users you may have (ie you can set it up so that non-mcgill users have access to web content), non-mcgill researchers who need access to the VM will have to obtain a mcgill login as per ITS's current security protocol. This can impact development time and processes, especially for external RAs, students, and private partners.

### *Benefits:*

Flexible environment for limited research development within the parameters set by NCS configurations.

Allows for access to machine beyond simple webspace; scripts, applications, etc. can be run on the server independent of viewable webpages etc. More languages other than PHP.

IPs can be mapped to non-mcgill domains.

VMs are backed up.

### *Drawbacks:*



Cost is prohibitive for individual researchers, and extremely disproportionate to private sector solutions.

Non-McGill access to server requires mcgill login.

Not all CMS work with the current VM configuration – Wordpress, for example, is typically barred by NCS. Drupal, *perhaps* might work.

Not clear what Tier 1 Support actually means from ITS knowledge base.

*Ideally for:*

Large research groups using established software and applications, with budget resources for IT personnel and development.

*Audiences:*

Completely at the discretion of the users.

## **Server Hosting**

<http://kb.mcgill.ca/kb/article?ArticleId=1293&source=Article&c=12&cid=2>

Another option is to have NCS host your physical server for you in one of McGill's two datacenters – either downtown in Burnside or at the MacDonald Campus. Although the documentation mentions virtual servers as well, it isn't clear what this means in relation to the VM. In practical terms, it's for actual physical servers which mean 24/7 monitoring and support. The Data Hosting Service is governed by a SLA with NCS.

[http://kb.mcgill.ca/pf/12/webfiles/SLAs/Data\\_Centre\\_Hosting\\_SLA\\_rev2.1.pdf](http://kb.mcgill.ca/pf/12/webfiles/SLAs/Data_Centre_Hosting_SLA_rev2.1.pdf)

This means giving over your machine to NCS, and hooking it up inside the data centre on a server 'rack'. This has several advantages, including access to SAN or Storage Area Network, a way of adding disk space to networked machines – so you probably could buy your own server, then add more disk space, if needed, from NCS's own resources, for a fee.

As with other options, NCS operates using a SLA or through an established fee schedule. Network connection fees to the server, set up etc. are all costs involved in hosting, as well as monthly network fees. Two port speeds are available – 100 MBps and 1 GBps. The full list of fees is contained within the request form at

[http://kb.mcgill.ca/pf/12/webfiles/Computers\\_Storage/Server\\_Hosting\\_request\\_form.rtf](http://kb.mcgill.ca/pf/12/webfiles/Computers_Storage/Server_Hosting_request_form.rtf)

It is important to note that as of August 2009, there is insufficient space in the Burnside Data Centre to house additional machines. In all likelihood this means using the MacDonald Centre, which has a fibre connection to the downtown campus. For all practical purposes, there is no computing difference other than ease of physical access to the machine.

Many departments use this service, as to large research projects, in particular CFIs.

In some instances clients have SLAs with NCS for server admin, incurring additional cost and fees for technical support. NCS will also arrange purchase of a server for you, again for a fee. These additional tasks are governed by separate SLAs.

### *Some issues to consider:*

Initial cost of the server.

Recurring costs.

SLA might involve similar authentication issues with the VM and VHost programs since McGill uses LDAP (ie mcgill user IDs) for server admin purposes.

Consider usage – which connection will provide enough bandwidth for your activities?

100MBps should be fine for websites, though 1GBps is better for handling large images and video files etc.

### *Benefits:*

Most flexible McGill option since clients own the hardware and simply pay for the connection to the McGill network.

Servers can be backed up on tape.

Few limitations on content management systems, software / packages, modules etc.

*Drawbacks:*

You must provide the server yourself – buying a server is not an easy process if you are unfamiliar with the market.

Requires a skilled server administrator to be of much use. Servers must be configured and maintained on a continuing basis, this is not something a regular computer user can normally do. Server Administrators can be costly and are in high demand.

Limits on physical space in McGill Data centres might be a problem for some users.

*Ideally for:*

Well-funded research teams or departments with data-intensive research.

*Audiences:*

All audiences – servers can host both private and public information, as well as systems that can manage individual user content etc.

**Personnel & SLAs**

[http://kb.mcgill.ca/pf/12/webfiles/SLAs/VM\\_SLA\\_rev2.0.pdf](http://kb.mcgill.ca/pf/12/webfiles/SLAs/VM_SLA_rev2.0.pdf)

If you wish to use McGill ITS for your technical support and development processes, you'll likely have to sign a Service Level Agreement (SLA) that will govern the costs and tasks involved.

Template SLAs exist for VMs and Server Hosting; they include support, which in all practical terms means administration of the server, NOT DEVELOPMENT support or assistance resolving research-related coding issues. They will help with configurations, but the relationship will be shaped by what NCS thinks is best for the McGill system as a whole, adhering to global policies (like user access / admin) which might not be well suited to your research needs.

NCS SLAs govern network and machine usage and administration; they are not geared towards support of particular research needs such as the development of new software, its implementation, etc. In the past the expectations of researchers have exceeded or surpassed what ITS and NCS see as their obligations in these areas. If you are a humanities or social science researcher and are thinking of arranging a SLA with NCS for technical work or support, discuss past arrangements with other researchers and be explicit with NCS about your needs. A SLA is a contract.

From current ITS documentation SLAs are not possible with Content and Collaboration Services, which is primarily responsible for web-content and development.

## **Other Options**

### ***McGill Graphic Design***

If you require graphic design work or video production McGill's internal printing and graphics department is skilled at creating logos, slides etc. for researchers.

<http://www.mcgill.ca/graphic-design/>

For graphics work the fees are c.\$50/hr. This is a highly skilled production team. Their primary work is in print media for advertising, though they do complete some 'interactive' media presentations.

As of yet, they do not do website design.

### ***McGill Digital Humanities***

#### **Personnel**

McGill DH operates a small Research Assistant pool designed to match tech-savvy students with humanities and social science research projects.

As of Sept 1, 2013, the pool will serve as the basis for a Research Assistant Service program wherein RAs will be supervised by McGill DH faculty and staff on particular projects who commission McGill DH for particular tasks such as website design, etc. The aim of this Service is to build up student competencies through practical experience working with established digital humanists and real research projects. Central administration will help McGill DH monitor the quality of work student RAs complete, and assist them in developing digital skill sets that match their humanistic or other degree interests.

The basic rates for the Service are:

\$15/hr undergraduate RA

\$20/hr master's level RA

\$25/hr doctorate level RA

Plus a \$5/hr for administrative oversight of the RA, and 4% vacation pay as per McGill policies.

You can purchase a block of hours for a specific task, if you wish, or employ a particular RA through McGill DH for a period of time. All hirings will involve completion of a Memorandum of Agreement between McGill DH and a researcher / research team.

Payments are made by FOAPAL.

#### **Websites**

McGill DH is able to offer disk space to humanities researchers if needed. Please contact [digital.humanities@mcgill.ca](mailto:digital.humanities@mcgill.ca) for rates and types of storage / webspace.

Rates are competitive with the private sector, not McGill NCS. The aim of this program is to build humanities-based sustainable cyber-infrastructure capacity, as well as preservation.

**Hardware*****University-Wide***

The university's AV loan program currently offers access to HD cameras suitable for taking photos of documents.

Photocopiers now contain B&W scanners capable of 600DPI scanning, and basic contrast adjustments.

Consumer-level colour and higher-density book scanners in rooms in most branch libraries. See <http://www.mcgill.ca/library/library-using/computers/scanners>

While these solutions are not ideal, in many cases it is easier – and more efficient – to proceed with an initial digitization project with a good HD camera and camera stand. Guides to lighting are available online.

***McGill Libraries***

Digitization is a formalized process at the Library requiring payment of appropriate fees.

Please see <http://www.mcgill.ca/library/library-using/branches/rarebooks/reproduction/>.

Scanners used by McGill Library digital resources are not generally accessible to non-library staff for any purposes. If you are embarking on a large project involving digitization contact Amy Buckland or the head of a particular library, such as Rare Books or the Osler Medical Library for details. Such projects may require – or it might be advantageous to have – McGill librarians as co-applicants or collaborators.