Johns Hopkins University | Research IT https://researchit.jh.edu/
New Faculty Resources Guide

Hello and Welcome to the Johns Hopkins Community! We are Research IT [RIT] and our aim is to facilitate the acquisition, maintenance, and support of computational resources to the JH research community. Our team has many years of experience and local knowledge to assist any researcher to accomplish their analyses, data management, and storage needs. RIT is a **no-cost initial consulting and service team**, funded by the university to bring researchers and new technologies together to further support scientific research. We provide information and support for free and paid services available to JH Faculty such as on-premises high-performance computing (HPC) resources, enterprise level network accessible storage (NAS), Microsoft Azure Cloud Services, Amazon Web Services (AWS), web application services, and website hosting to name a few. This document will provide an overview of services readily available to you as faculty or researchers at Johns Hopkins. This includes resource information and availability, contacts for services, and rough pricing guides to better inform you of what is available. RIT works in a collaborative effort with many other teams at Johns Hopkins and facilitates access of resources to aide research, both internally or externally. If you need further support or wish to procure or maintain services not listed in this document, please feel free to email RITServices@jh.edu and we will help with any issues and custom requests or services.

Data Storage

When thinking of storage, we have resources available to house nearly any scale of data size and configuration from gigabytes to petabytes of structured or unstructured data. The various options will allow differing levels of accessibility, both in terms of storage tier (i.e. hot swappable, cool, or archival) and user access being internal or external collaborators, and magnitude of storage needed with capability of expanding to your current and future projects' needs. Security level is another factor in selecting one of our offerings and can influence which service to choose.

Name/Provider	***Data Type***	***Cost [Size]***	***PHI***	***User Base***	***Website***	***Contact***
SAFE S: Drive	Mounted drive in SAFE Desktop	Free [100GB]	Full PHI	Internal Only	ICTR SAFE	RITServices@jh.edu SAFEDesktop@jhmi.edu
SAFESTOR	Mounted drive in SAFE Desktop and SAFER; accessible on DISCOVERY [Research HPC]	Free for 3 years [Up to 10TB; $6/TB/month >10TBs]	Full PHI	Internal Only	RIT Website	RITServices@jh.edu
Microsoft Azure	Cloud Blob or Data Lake Storage	Pay for use [Unlimited]	Full PHI	Internal and External*	RIT Website	RITServices@jh.edu
AWS	Cloud S3 Storage	Pay for use [Unlimited]	Full PHI	Internal and External*	RIT Website	RITServices@jh.edu
Microsoft JHOneDrive	Online file share services	Free [5TB]	Limited PHI	Internal and External*	Microsoft OneDrive	Microsoft OneDrive
Microsoft SharePoint Online	Documentation Publishing and Sharing	Free	Full PHI	Internal and External*	Microsoft SharePoint Online	Microsoft SharePoint Online

* External users will use secure federated logins with approval from depositing PI

Compute Resources

Access to complex computational resources is critical for many studies and lack of those resources can greatly hinder the pursuit of science and research. RIT can help obtain access to many different resource types of varying complexities. These computational resource services can be categorized by the need to complete the analysis in a secure and compliant manner. Some researchers just need a secure space for text manipulation and analysis or statistical analyses on a patient cohort of varying scale that can be accessed remotely. Whereas some researchers need extensive computational power with many CPUs, GPUs, and/or GBs of RAM for alignment, cell identifying analyses with machine learning capabilities, and differential expression of RNAs from massive sequencing projects with 1,000's of human participants. You as a member of the Johns Hopkins community have access to resources to accomplish these scenarios and nearly everything in-between. These can be categorized by low computational requirements for the less resource intensive analyses, high computational requirements for complex or multifaceted analyses, or hybrid/scalable and there are options for each category available as on-premises services or cloud-based services.

Low Compute Requirements

SAFE Desktop

On-Premises Virtual Machines (VMs) with Engineering Services

High Performance Computing (HPC)

-ARCH

-JHPCE

-Phoenix-HPC

-DISCOVERY [Research HPC]

Hybrid/Scalable Compute and Storage Requirements

-SAFER with SAFESTOR [R:] in Secure Enclave/Trusted Research Environment

-Microsoft Azure

- VM with allocated resources
- Databricks
- ML Services/ML Studio
- OpenAI/ChatGPT

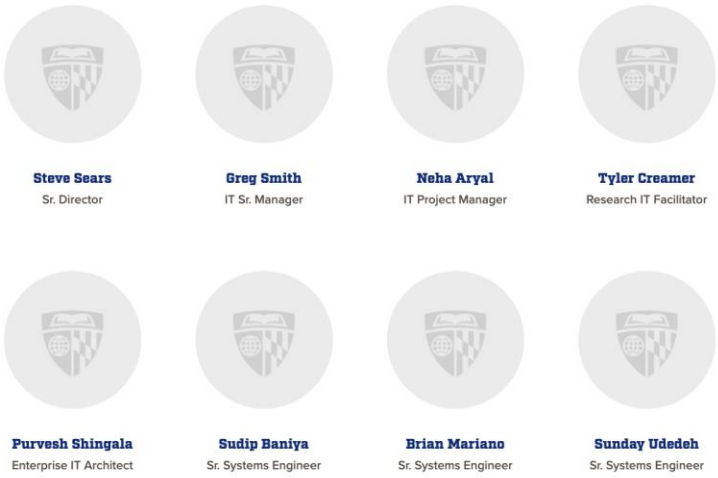
Process	Example Software/Programming Lang. Available	Resource	Contact for Resource	Cost
High Performance Cluster Compute	R, Python, Managed Genomic Alignment Tools, and other Analysis Software Applications [User specific modules can be installed and managed by users*]	ARCH	https://www.arch.jhu.edu/	Variable on usage
		JHPCE	https://jhpce.jhu.edu/	Dynamic based on usage
		DISCOVERY (Research HPC)	RITServices@jh.edu	Free Tier available
		Phoenix-HPC	https://plan.jh.edu/display/PHPC/PhoenixHPC	Free
		CRUNCHR	https://pm.jh.edu/cookbook	See website
Data processing or pipeline development	R, RStudio, Python, Jupyter Notebook	MS Azure Databricks	RITServices@jh.edu	Dynamic based on usage
		DISCOVERY (Research HPC) [OnDemand]	RITServices@jh.edu	Free
Machine Learning Services	R, Python, Jupyter Notebook	MS Azure ML Studio/Services	RITServices@jh.edu	Dynamic based on usage
AI Services	OpenAI/ChatGPT	MS Azure Open AI	RITServices@jh.edu	Dynamic based on usage

* Software access need to be compatible with HPC user permissions to installed and executed.
For questions about custom software, please contact the resource contact for specific usages.

Web Services

Web-based applications are great collaborative tools to share access to data and help others utilize data analysis tools in an accessible and customizable way. From creating and maintaining pages.jh.edu for researchers and WordPress content webpages for researchers to maintain themselves, all the way to custom hosting, Cloud Web Services (CWS) has expertise in deploying a world wide web presence through webpages for researchers and labs at Johns Hopkins through its web hosting packages. The CWS team also implements and helps maintain cloud services like the Microsoft Azure Web App Services to create web-based resources for data sharing and analysis. RIT works closely with CWS to help facilitate these and other services.

Research IT Contributors



Common Collaborators, great resources, and co-facilitators

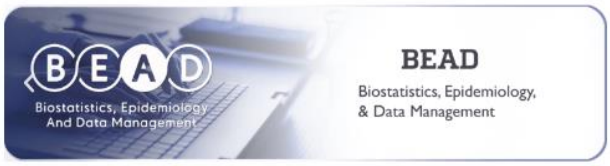
ICTR

JOHNS HOPKINS
INSTITUTE for CLINICAL & TRANSLATIONAL RESEARCH

PMAP

Johns Hopkins Precision Medicine Analytics Platform (PMAP)

BEAD



Data Trust

REDCap

SLDS

Have questions, comments, concerns? Please email RITServices@jh.edu to share them!