



ADVANCED RESEARCH COMPUTING
TECHNOLOGY SERVICES
UNIVERSITY OF MICHIGAN

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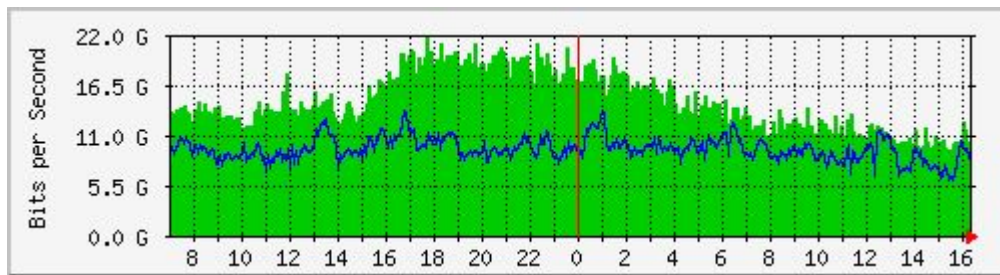
Turbo - Research Storage

- 1PB Storage System
 - Optional Snapshots
 - Optional Replication
- Good for other restricted data not just PHI/HIPAA, or unrestricted data
- NFSv4 + Kerberos and CIFS(Windows) for roaming clients
- \$115.20/TB/yr or \$230.40/TB/yr replicated ([LSA subsidizes](#))
- Future:
 - Direct bypass of UMHS Firewall (In discussion with MCIT)
 - Mixed CIFS/NFS to single export



Turbo Performance

- Connected at 40Gbps
- Flash / Solid State disk cache
- Performance increases as ARC expands the storage



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Armis - HIPAA Aligned HPC

- Clone of flux with extra restrictions
- Good for other restricted data not just PHI/HIPAA
- Pairs with Turbo Research Storage for PHI HPC
- Pilot phase, no fees currently
 - Future rates: Flux on Demand / Same as Flux



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Flux vs. Armis Security

- ✓ [Attorney/Client Privileged Information](#)
- ✓ [Export Controlled Research \(ITAR, EAR\)](#)
- ✓ [IT Security Information](#)
- ✓ [Other Sensitive Institutional Data](#)
- ✓ [Private Personal Information \(PPI\)](#)
- ✓ [Sensitive Identifiable Human Subject Research](#)
- ✓ [Student Education Records \(FERPA\)](#)
- ✓ [Student Loan Application Information \(GLBA\)](#)
- ⚠ [Social Security Numbers](#)
- ✗ [Credit Card or Payment Card Industry \(PCI\) Information](#)
- ✗ [Federal Information Security Management Act \(FISMA\) Data](#)
- ✗ [Protected Health Information \(HIPAA\)](#)

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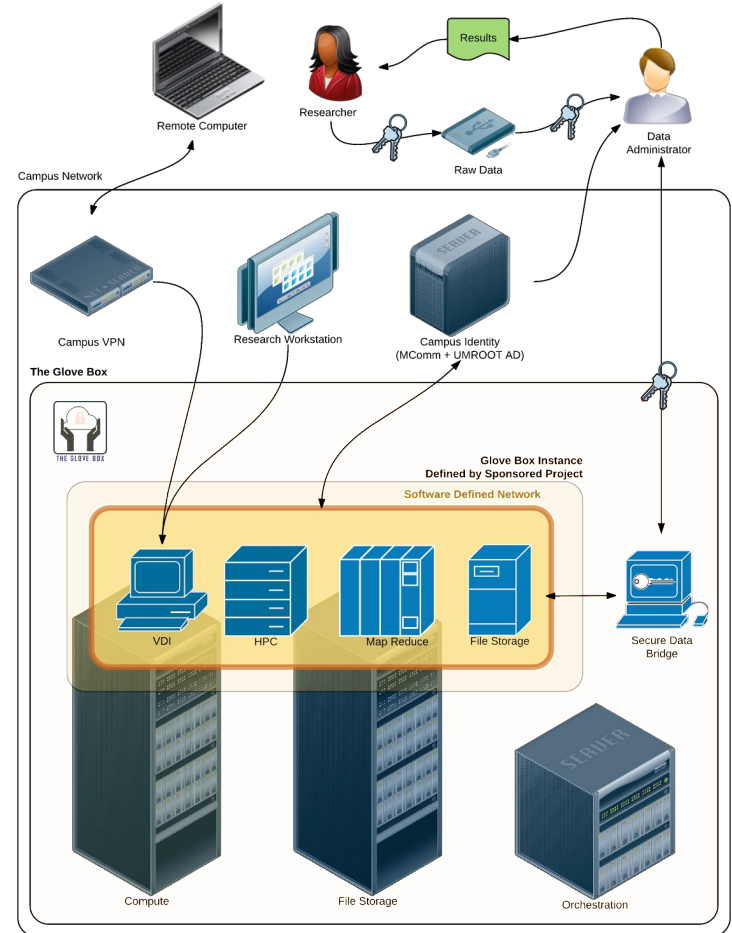
Glove Box - A Secure Analysis Environment

- Designed for highly sensitive data, ITAR, EAR, FISMA (Moderate)
- Good for other forms of highly restricted data
- Private Cloud environment, can be grown, modified as needed
- A non-sensitive version will be available first



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- Data Egress is optionally controlled via a named Data Administrator
- Component based:
 - Windows / Linux Desktop
 - Database, Other Server
 - HPC Clusters
 - Hadoop/Spark Systems
- Will Launch with Windows Desktop's and SAS Servers
- Same infrastructure support DSI Database service





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