



Cornell University

Center for Advanced Computing (CAC) Partner Program

Computing solutions for industry, education, and government

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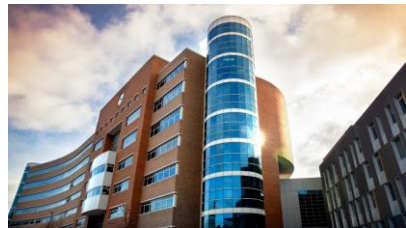
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Cornell CAC

We enable your success

www.cac.cornell.edu

Partner with Cornell

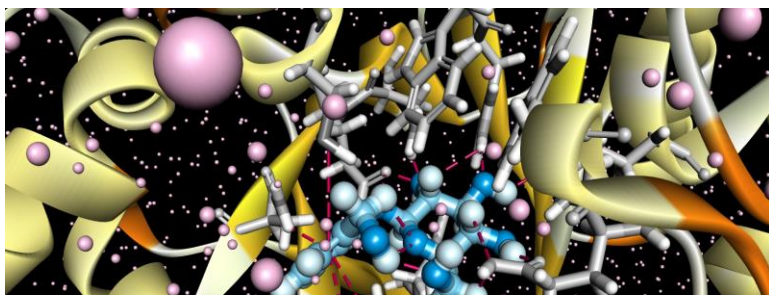
More than 80 organizations from business and industry, education, and government have partnered with the Cornell University Center for Advanced Computing (CAC) to solve their most vexing software, data, and computational problems.

Partner Program members leverage our skills and technological prowess to meet their user and market demands faster and more efficiently. Member benefits are customized to provide just the services you need.

Services available include system architecture design, cloud migration, building cloud images and containerizing applications, database and workflow design, data analysis and visualization, code modernization, tuning codes for performance, programming, IT strategy and best practices discussions, and training.

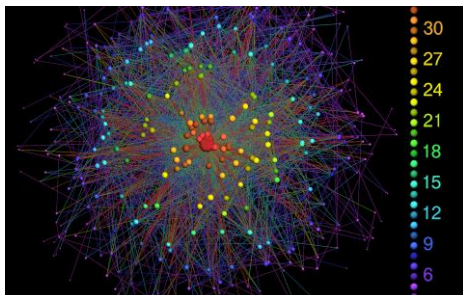
About CAC

CAC has successfully implemented tens of millions of dollars in business, industry, and federal R&D projects. Projects range from architecting HPC and cloud systems to optimizing software and tools. Director Rich Knepper is a cyberinfrastructure industry leader.



CAC's PhD and professional research scientists, computational scientists, system analysts, programmers, database system developers, and cloud engineers are leaders in their own right. They take pride in staying ahead of the technology curve while implementing new ideas with speed and efficiency.

Technology Leadership



CAC has a history of computational firsts. We deployed the first IBM SP supercomputer, the first Dell TOP500 HPC cluster, the first federated cloud funded by the NSF in collaboration with researchers such as the College of Engineering’s Pat Reed (*left*), and the first large-scale MATLAB cluster that achieved a 175x faster computation of a CDC Hepatitis C model (*right*).

Today, we’re helping researchers and Partner Program members with digital transformations and new technology adoption—creating real-time analytic and visualization platforms, performing social network analyses, architecting HPC and cloud systems, implementing parallel simulations, containerizing applications, designing data and machine learning workflows, and more.

Partner Program Memberships

Multiple Partner Program membership levels are available—from entry-level memberships for start-ups and small businesses to affiliate and supporting level memberships for larger organizations.





Members can access any of our services up to the number of consulting and/or computing hours allotted in their benefits package.

General consulting services provided by CAC staff do not constitute intellectual property.

“We’re exploring data sets faster than ever thanks to CAC’s database, workflow, and portal designers.”

*Shami Chatterjee
Research Scientist*

Process

Analyze	Plan	Deliver	Maintain
			
CAC professionals work closely with Partner Program members to understand their interests and project needs.	A one or multi-year membership is proposed with benefits (up to so many consulting hours, computing hours, etc.).	Consulting and/or computing services are provided. Consulting hours are accounted for and, if requested, reported monthly.	Turnkey maintenance is available for members who opt for a dedicated HPC system, or portal or database servers.

Featured Service: Red Cloud



One of the more popular services we offer is Red Cloud. Users can request instances with up to 128 cores and 240GB RAM. NVIDIA GPUs are also available. Persistent disk storage volumes are backed by Ceph storage with up to 1.9 petabytes of raw capacity. Unlike public clouds, CPU cores and RAM are not oversubscribed or shared with other users. Users have full access to the underlying physical processor and memory without competition, resulting in fast, consistent performance. Users can manage their cloud service using a Web console, command line clients, or any development library supporting the OpenStack API. Virtual clusters are available.

“CAC services help our members meet their R&D and market demands faster and more efficiently.”

*Paul Redfern
Partner Program Director*

After discussing your needs, we'll propose an appropriate membership level for you. Besides accessing our services, members may gift technologies to speed up product testing or market acceptance. Members may also sponsor student research and Cornell events. Partnering with us to pursue federal or foundation grants is another possibility.

Member Services

CLOUD MIGRATION

We'll build ready-to-use cloud images and containerize apps for efficiency and deployment across multiple clouds.

Docker & Singularity
Portability to Clouds or HPC
Cloud-based Web Applications

CLOUD ACCESS

Red Cloud is an on-premise cloud that provides root access to virtual servers and storage on-demand and dedicated CPU cores/GPUs.

Up to 128 Cores & 240GB RAM Per Instance; Virtual Clusters
NVIDIA GPUs & Ceph Storage

HPC/SERVER MAINTENANCE

CAC's systems staff will architect, house, and maintain a dedicated HPC system or servers so you can focus on your organization's goals.

Server & Network Maintenance
Software Updates
Avoid Capital Expenditures

DATA STORAGE

CAC offers GBs to petabytes storage services with fast, no fee transfers in and out.

Dedicated Storage & Object Storage
Globus Online Data Transfer
Archival Storage

PROGRAMMING & AI

We program and fine tune codes in C/C++, C#, Java, MATLAB, MPI, OpenMP, Perl, Python, R, etc. and can help you get started with AI.

Code Modernization & Parallelization
Performance Analysis/Debugging
Code & Cache Usage Optimization

DATABASE DESIGN

We design and maintain data pipelines and databases such as SQL, and operate database servers with robust performance.

DB Server Capacity Planning
DB & Workflow Design
Data Analysis & Visualization

PORTAL DESIGN

We design and build portals with high performance capabilities such as custom tools, databases, and large-scale storage systems.

Portal Design/Implementation
Portal Hosting & Maintenance
Portal Optimization

IT/HPC STRATEGY & TRAINING

We produce custom online training on any subject and will educate your workforce online or in person.

Cornell Virtual Workshops
Webinars & eCornell Certificates
Strategy & Best Practices Sessions

Member Projects

While most Partner Program members have a specific project in mind, others join the program to support Cornell, a community of scholars engaged in deep and broad research and teaching tomorrow's thought leaders to think otherwise.

Sample Projects

- *Corning* – IT/HPC staff received training on database architectures and Corning R&D collaborated with a CAC computational physicist to improve simulations and better understand glass imperfections.



- *Boeing* – asked CAC to compare the parallel performance of aircraft subsystem simulations on a desktop and cloud platform and provide advice on how the simulations could be further parallelized for additional speed-up.
- *US EPA* – was interested in understanding how vulnerable our nation's water distribution systems are to contamination by terrorists. CAC designed and installed a high-performance computing system for the National Homeland Security Research Center which reduced threat scenario run times from hours to minutes.

- *Supercomputing Wales* – needed best-in-class training for their users, so they turned to CAC's training leadership to meet their needs. CAC is also training Frontera supercomputer and Jetstream2 cloud users.



- *Johns Hopkins University* – joined the Partner Program to access our software development expertise and accelerate the enhancement of their Public Access Submission System. PASS allows researchers to comply with the access policies of their funders and institutions via a single, unified website.

Join the many organizations who've partnered with CAC:

Air Products	GE	Nextiva
Amazon Web Services	Gen Re	Northrup Grumman
Animusic	HVB Bank	NVIDIA
Bettis Lab	IBM	Pfizer
Boeing	Infosys	Praxis VC Center
Capital One	Intel	SAIC
Campbell & Co.	Intl. Olympics	SQLStream
Columbia University	Johns Hopkins	Stratus
Corning	KLA-Tencor	Supercomputing Wales
Dell	Manning & Napier	TTC Technologies
Emhart Glass	Mercedes-Benz	Unisys
ENSCO	Merck	USDA
Equitable	Microsoft	US EPA
Ford	MITRE	Xerox

CAC welcomes hardware and software donations that enhance faculty and student research experiences and educational opportunities.

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