



CORE COMPUTATIONAL FACILITY AT VIRGINIA BIOINFORMATICS INSTITUTE

Providing informatics customers with access to state-of-the-art computational support

ABOUT CCF

The Core Computational Facility (CCF) at the Virginia Bioinformatics Institute (VBI) is responsible for providing a secure, stable, and manageable infrastructure supporting data-intensive research. The CCF is embarking on a mission to deliver sophisticated applications requiring high-performance computing infrastructure; a broad set of embedded, maintained, and ready-to-use national/international databases (-omic, text, image and other); and a cadre of application development specialists. Combined, these components enable basic and clinical biomedical researchers and transdisciplinary scientists to quickly and effectively translate even the most computationally intense ideas into solutions, which are then made widely available via the web to a broad base of users.

ABOUT VBI

The CCF is part of the 130,000 square-foot, state-of-the-art research facility at the Virginia Bioinformatics Institute at Virginia Tech. Work at VBI involves collaboration in diverse disciplines such as mathematics, computer science, general, synthetic and systems biology, medicine, plant, animal and human pathology, biochemistry, engineering, physics, statistics, and economics. This transdisciplinary approach to science serves as a foundation for far-reaching collaborations and partnerships in the scientific community. By successfully channeling innovation into information technology and biology, researchers at VBI are addressing some of today's key challenges in the biomedical, environmental and agricultural sciences.

OFFERING SUPERIOR SERVICES & SOLUTIONS

SERVER HOSTING (DEDICATED & SHARED/VIRTUAL)

- » Deployment, administration, support, and maintenance of server instances
- » Servers are housed in VBI's secure data centers with fast and reliable network access

HIGH-PERFORMANCE COMPUTING

- » Elenwe - Domain on Sunfire Enterprise 15000 (72 processors and 288 GB of shared memory)
- » Decypher - TimeLogic Decypher sequence comparison accelerator FPGA cards
- » Moria | Shared computer server (64 GB memory, 16 logical processors)
- » Hermes - a new cluster expanded from the original Storm system developed at the University of Texas Southwestern Medical Center at Dallas

STORAGE & BACKUP

- » 80 TB of enterprise storage from Pillar Data Systems, available via both SAN and NAS
- » On- and off-site backup with IBM Tivoli Storage Manager

DATABASE HOSTING

- » Hosting for Oracle and MySQL databases
- » CCF database personnel manage central information resources at VBI, ensuring data availability to authorized users while maintaining security and data recovery capabilities

BUILDING & SUPPORTING UNIQUE SYSTEMS

- » High-performance computing systems are developed by incorporating existing resources and tools or by developing new systems
- » CCF personnel ensure that these systems are web accessible, scalable, and maintainable
- » Application development, maintenance, and deployment
- » Development specialists are available to assist with the development and deployment of HPC-based applications

DATA SUPPORT

- » Database support, monitoring, and maintenance is available for an hourly rate
- » CCF data specialists can also assist with database design and architecture as well as data access strategies and development

ENABLING & SUPPORTING RESEARCH COLLABORATIONS

- » The CCF works with Virginia Tech's Advanced Research Computing group to provide the proper solutions for potential problems researchers may encounter
- » The CCF promotes best practices of systems management, sustainable research computing, and information technology security

FACILITIES

The computing facilities at VBI include two data centers that occupy 1850 square feet. Current resources encompass more than 1.75 TB of RAM, 750 processor cores distributed across 150 servers and clusters, and more than 200 TB of disk storage. The centers host a storage area network ensuring high-speed data access and reliability. Connectivity is achieved via gigabit Ethernet between the desktop and data centers and high-speed paths to Network Virginia and Internet2. Solutions provided by the CCF are modular and scalable while maintaining data and power design structures that avoid single points of failure. Aggressive, proactive monitoring and ongoing refinement ensure maximum availability in support of scientific efforts across the project life cycle.

MAJOR NEW INITIATIVES

The CCF is embarking on a mission to bring sophisticated applications requiring high performance computing infrastructure; a broad set of embedded, maintained, and ready-to-use national/international databases (-omic, text, image and other); and a cadre of application development specialists. Combined, these components enable basic and clinical biomedical researchers and transdisciplinary scientists to quickly and effectively translate even the most computationally intense ideas into solutions, which are then made widely available via the web to a broad base of users.

VBI's CCF will have resources available to bring biomedical researchers, transdisciplinary scientists, and information technologists together to more effectively and efficiently solve a wide range of problems. A critical component of our cyberinfrastructure is the ability to bridge this gap and create solid solutions to the problems posed to the Institute.

What can we do for you?

FOR MORE INFORMATION

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