



# VIRGINIA ADVANTAGES

Information Technology



**VIRGINIA ECONOMIC  
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# Advantages for Information Technology in Virginia



Information Technology is not simply another industry in Virginia, it is central to the success of the Commonwealth. With one of the highest concentrations of technology workers in the country, Virginia has become a world-class center for emerging internet technology, software development, fiber optics and advanced communications companies.

The Information Technology sector is driven by the support of governmental leaders, such as Governor Terry McAuliffe, who launched his *New Virginia Economy* initiative with Executive Order 26. This initiative includes Information Technology, Mod-Sim, Cyber Security and Data Centers among its target industries.

Virginia Information Technology companies are recognized as leaders in the industry. This is true for more established companies like Computer Sciences Corporation, a Fortune 500 company, and emerging companies such as Xgility which was recognized in this year's Inc 5000 list of the nation's fastest growing private companies.

Virginia offers a dynamic IT industry cluster with a talented and skilled workforce supported by an acclaimed educational system offering a variety of cutting-edge IT degree programs.

## Virginia's Information Technology Industry

- Accounts for over 169,700 employees at IT companies
- Consists of an estimated 277,000 jobs at IT companies and IT jobs at non-IT companies, as reported in Cyberstates 2015
- Virginia has the 2nd highest concentration of technology workers in the country, with nearly 1 in 10 workers in the tech sector, according to Cyberstates 2015
- Virginia has the highest concentration in the country of technology occupations within the technology industry, with 55% of people employed in the technology industry performing technical jobs, as reported in Cyberstates 2015
- Computer systems design and related services accounts for more than half of the total technology employment in Virginia
- Has a direct economic output of \$41.4 billion and supports \$33.4 billion in additional economic output in Virginia
- In the past 10 years, over 70,486 jobs have been added in the information technology sector with investment of more than \$12.5 billion, recent announcements come from companies such as:
  - Appian
  - CACI
  - Carahsoft
  - Cvent
  - Cyrus One, LLC
  - DOMA Technologies
  - Kaspersky Government Solutions
  - Microsoft
  - Sevatec
  - Telos

Sources: Virginia Employment Commission, Virginia Economic Development Partnership

# Advantages for Information Technology in Virginia

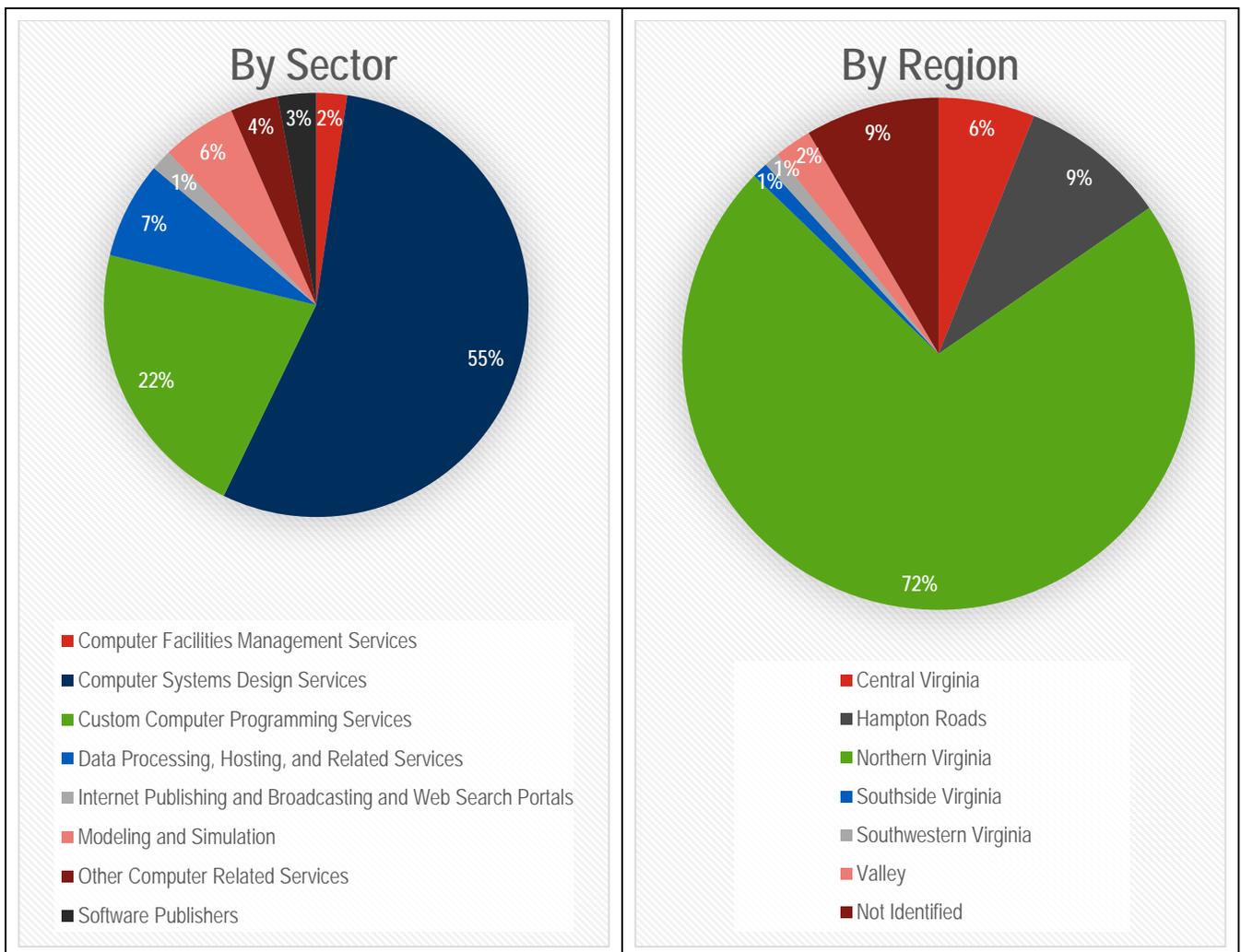


## Virginia's Established Industry Base

Key IT companies in Virginia include:

Accenture	Deltek	Leidos	Rosetta Stone
Alion	Exelis	ManTech International	Serco
Boeing	General Dynamics	Micron Technology	SAIC
CACI International	Harris Corporation	Northrop Grumman	SRA International, Inc.
CGI	HP Enterprise Services	Oracle	TASC
CSC	IBM	QinetiQ	Unisys
Cvent	L-3	Raytheon Company	Verisign

## IT Employment in Virginia



## Data Centers

As a critical network access point since the early days of the internet, Virginia plays a key role in supporting today's global internet traffic. Virginia hosts prominent commercial internet exchange points and has been one of the most active data center markets in the country with expansions by Equinix, Digital Realty Trust, RagingWire and CyrusOne. As Amazon.com and Microsoft have discovered, Virginia's critical IT infrastructure provides a foundation for the web-enabled services of tomorrow.

Aware of the necessity for such provisions as redundant power supply and dual fiber paths, Virginia offers a wide variety of site and building options in both urban and rural settings. With the advance of cloud computing and online services, the demand for data centers is growing on a daily basis, and Virginia provides a timely and cost effective solution for locating these facilities. In fact, Northern Virginia has the largest market-share of any data center market in the nation and is expected to hold this lead through 2016.

## Virginia's Data Center Industry

- Over 580 data processing, hosting and related establishments are located in Virginia employing more than 12,500 people
- TechAmerica consistently ranks Virginia as a leader for concentration of high tech workers in its annual Cyberstates report
- 70 percent of the world's internet traffic passes through the Metropolitan Area Exchange East in Ashburn, Virginia
- Ashburn, Virginia is considered the "bullseye" of the internet, as it is the main hub for interactions throughout the world

## Virginia Assets for the Data Center Industry

- Northern Virginia is the nation's largest market in terms of square feet of operational data center space due to its historic status as a key intersection for communications networks, competitive utility rates and proximity to Washington, D.C.
- In Southern Virginia, Mid-Atlantic Broadband Communities Corporation, a not-for-profit cooperative, offers an advanced 1,800+ mile fiber-optic broadband network and provides access to multiple major fiber optic and telecom service providers.
- The University of Virginia's Dependability and Security Research Group focuses on research issues related to computing systems whose failure would have a severe negative impact. The research interests encompass safety-critical systems, critical infrastructure and emergent grid computer systems.
- The Richmond area has been connected to Ashburn with "dark fiber" giving companies the ability to access data centers at a much faster and more affordable way. The fiber line opens opportunities for companies along I-95 between Richmond and Ashburn, including companies located within the Quantico Corporate Center.

## Targeted Industry Incentives

In addition to the low cost of doing business, Virginia offers an exemption from the Retail Sales and Use Tax for computer equipment bought or leased between July 1, 2010 and June 30, 2020 for use in a data center. The facility must be located in Virginia, generate capital investment of at least \$150 million and create at least 50 new jobs (reduced to 25 new jobs in areas of high unemployment) that pay one and one half times the prevailing average wage in the locality.

## Cyber Security

Virginia IT companies, from startups to large systems integrators, are leaders in the development of cyber security solutions for industry and government. With the constant advancement of information technology infrastructure security, Virginia-based companies are at the forefront of technologies such as cryptography, forensics, intrusion detection and firewall devices. Likewise, many of Virginia's universities are at the forefront of cyber security research and development, while also educating and training the IT professionals of tomorrow.

### Virginia's Assets for the Cyber Security Industry

- Virginia is home to several Federal agencies that focus on cyber security, including the U.S. Army Cyber Command (ARCYBER), U.S. Department of Defense, U.S. Department of Homeland Security's National Cyber Security and Communications Integration Center and the Defense Advanced Research Projects Agency (DARPA).
- The Center for Secure Information Systems (CSIS) at George Mason University provides a dedicated environment to encourage the development of expertise in both theoretical and applied aspects of information systems security. Established in 1990, CSIS has the distinction of being the first academic center in security at a U.S. university. It is one of the National Security Agency's original Centers of Academic Excellence in Information Assurance Education, a designation it still holds.
- Cyber@VT is an interdisciplinary collection of research groups and laboratories at Virginia Tech organized under the Hume Center for National Security and Technology that focus on the research challenges of cyber security. Through these groups, Virginia Tech provides a diverse research portfolio to address the critical challenges that lie ahead in the fields of computer and network security.
- The Cybersecurity Innovations Laboratory, a partnership between Virginia Tech, the Naval Postgraduate School and L-3 Communications, is home to a number of cybersecurity-related programs in Virginia Tech's National Capital Region with focused research in the areas of wireless and network security.
- The Center of Excellence in Cybersecurity (COE-CS) at Norfolk State University was established through a collaboration with academic partners at Old Dominion University and Tennessee State University. The COE-CS was established with the research objective of creating a Cyber Analysis, Simulation and Experimentation Environment to simulate and prepare for cyber threats.
- James Madison University's Institute for Infrastructure and Information Assurance (IIIA) integrates and supports the university's efforts in the area of homeland security. IIIA actively seeks research sponsorship and provides funding for cutting edge research within the context of improving the nation's security.
- The list of cybersecurity companies growing in Virginia includes:
  - Cyber Defense Solutions
  - FoxGuard Solutions
  - GE
  - IKANOW
  - Secure Mission Solutions
  - Telos

## Modeling & Simulation

With the advent of modeling and simulation technologies for the purpose of business, companies can visualize and analyze a product or production process to determine constructive solutions to critical challenges, often for a fraction of the cost. Virginia's modeling and simulation industry covers a diverse set of sectors including logistics, product development, healthcare, manufacturing, urban planning, energy, training and gaming.

In 2005, Virginia began an initiative to aggressively promote the high-tech modeling and simulation industry by boosting research, encouraging development, and improving the information technology infrastructure. With this preparation and through centers such as the Virginia Modeling, Analysis and Simulation Center (VMASC) and the National Center for Collaboration in Medical Modeling and Simulation (NCCMMS), Virginia is now at the forefront of the modeling and simulation industry.

### Virginia's Modeling & Simulation Industry

- Employs over 9,600 people in the private sector
- Federal government and military Mod-Sim employment is estimated at an additional 2,400 people
- Consists of over 150 companies with more than 230 locations
- Since 2005, 22 Mod-Sim projects have announced more than 1,600 new jobs and investments of over \$126 million

Sources: Virginia Employment Commission, Virginia Economic Development Partnership

### Virginia Assets for the Modeling & Simulation Industry

- The Virginia Modeling, Analysis and Simulation Center (VMASC), is a multi-disciplinary modeling, simulation and visualization collaborative research center with more than 60 partners from industry, government and academia.
- The Southern Virginia Product Advancement Center (SVPAC) hosts a Modeling and Simulation Center of Excellence including a 3-D cave environment, and provides extensive services to assist advanced technology companies.
- Virginia Tech's Center for Human-Computer Interaction provides research based on the intersection of social and behavioral sciences and information technology.
- The Simulation & Game Institute (SGI) @ George Mason University is a unique (one of four in the world, and only one in the United States) space that provides research support, prototype development, as well as connections for product commercialization and business support.
- The National Center for Collaboration in Medical Modeling and Simulation (NCCMMS), a joint effort of Eastern Virginia Medical School and Old Dominion University, partners with a variety of academic, governmental and industry partners to advance the quality of medical modeling & simulation-based training and education.
- The list of Mod-Sim companies growing in Virginia includes:
  - SimVentions
  - Mymic
  - Trax International
  - SimIS

## GIS/Geospatial Technology

Geospatial Technology is a rapidly expanding industry that crosscuts nearly every discipline and sector of the U.S. economy. Virginia's vibrant geospatial industry mirrors national trends and continues to experience growth and demand for geospatial technicians despite the downturn in the economy.

Of all the advances in information technologies that have transformed the way geographers conduct research and contribute to society, Geographic Information Systems (GIS) is probably the most significant. GIS has had tremendous effects on research techniques specific to geography, as well as on the general ways in which scientists and scholars communicate and collaborate.

As with most new technologies, Virginia has been at the forefront of the research and development for GIS, including such areas as Cartography and Computer-Aided Drafting, Photogrammetry and Remote Sensing, Spatial Statistics, General Communication, Research and Publication Technologies.

## Virginia Assets for the GIS Industry

- Many of the major GIS/Geospatial companies have a presence in Virginia including ESRI, Intergraph Corp., Bentley and Digital Globe.
- The U.S. Geological Service (USGS), headquartered in Reston, Virginia, is the nation's largest water, earth and biological science and civilian mapping agency.
- Virginia is home to the National Geospatial Intelligence Agency, which provides geospatial intelligence and information for the federal government.
- Seven of Virginia's public universities offer geospatial programs—George Mason University, James Madison University, Old Dominion University, Radford University, Virginia Commonwealth University, Virginia Tech, and Mary Washington. In addition, GIS coursework is available at most of Virginia's community colleges.
- The Center for Geospatial Information Technology at Virginia Tech is an interdisciplinary center that partners with university researchers, government agencies and the private sector to research and develop advanced uses of geospatial technologies.
- George Mason University is home to the Center for Geospatial Intelligence (CGEOINT), which focuses on geospatial and spatiotemporal information extraction, analysis and visualization, and the Center for Spatial Information Science and Systems (CSISS), an interdisciplinary research center.
- The VCCS Geospatial Portal supports the efforts of the Virginia Community College System's member colleges by providing a calendar of geospatial events and activities across the state; developing and promoting geospatial career awareness efforts and related opportunities; enhancing the precollege geospatial pipeline and facilitating collaboration among faculty by supporting the sharing of geospatial curricula and other educational resources.

## Education and Training

With more than one in three residents awarded a bachelor's or advanced degree, the Commonwealth's workforce is one of the most educated in the nation. Some of the nation's best colleges and universities are located in Virginia, many offering undergraduate and graduate programs in all areas of business.

2014-2015 Select Degrees Conferred in Information Technology and Related Programs at Virginia Universities and Colleges <sup>1</sup>	
Program Name	Total
Computer and Information Sciences	1,425
Computer and Information Systems Security	51
Information Technology	792
Computer Science	367
Systems Engineering	201
Information Science Studies	414
Management Information Systems	383
Computer Engineering	287
<b>Total IT and Related Degrees Conferred:</b>	<b>3,920</b>

Among Virginia's quality programs in computer science and related disciplines are several specialized and innovative programs which prepare students for careers in cybersecurity, mod-sim, and other growing fields. Current offerings include:

### Old Dominion University

- Master of Engineering, Master of Science, Doctor of Engineering, and Doctor of Philosophy with a major in modeling and engineering
- Master of Science in Computer and Information Systems Security
- Post-Baccalaureate Certificate in Cybersecurity

### Norfolk State University

- Master of Science in Cybersecurity

### George Mason University

- Master of Arts in Computer Game Design, Bachelor of Fine Arts in Computer Game Design
- Master of Science in Cybersecurity

### Virginia Commonwealth University

- Master of Science in Computer and Information Systems Security

<sup>1</sup> Source: State Council of Higher Education for Virginia, [www.schev.edu](http://www.schev.edu)

# Advantages for Information Technology in Virginia



## Virginia Tech

- Post-Baccalaureate Certificate in Information Assurance Engineering

In addition to degrees, Virginia's community colleges provide students throughout the Commonwealth with opportunities to earn state of the industry certifications including:

- CompTIA A+ Certification
- Certified Internet Web (CIW) Database Design Specialist
- Certified Ethical Hacker
- Cisco Certified Network Associate
- Certified Information Systems Security Professional (CISSP)
- Systems Security Certified Practitioner (SSCP)
- GIAC Security Essentials
- Microsoft Certified Solutions Expert

## Virginia has a Skilled and Talented Workforce

From an affordable lifestyle and competitive business environment, to a skilled and ready labor force, Virginia is one of the most desirable places for business in America. Businesses in Virginia enjoy a business-friendly climate characterized by stable and competitive taxes, payroll costs, and lease rates, as well as legislation that protects "at will" employment practices.

Selected Occupations <sup>2</sup>	Virginia Employment
Computer and Information Systems Managers	14,050
Computer Network Support Specialists	7,030
Computer Network Architects	8,980
Computer Programmers	8,850
Computer Systems Analysts	27,130
Computer User Support Specialists	20,540
Network and Computer Systems Administrators	19,760
Database Administrators	5,450
First-Line Supervisors of Office and Administrative Support Workers	41,470
Human Resources Assistants, Except Payroll and Timekeeping	4,130
Office Clerks, General	86,540
Receptionists and Information Clerks	30,160
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	40,660

<sup>2</sup> Source: Bureau of Labor Statistics: Occupational Employment Statistics