Virginia's Innovation Ecosystem:

The Trusted Leader in Growing Cyber Security Solutions

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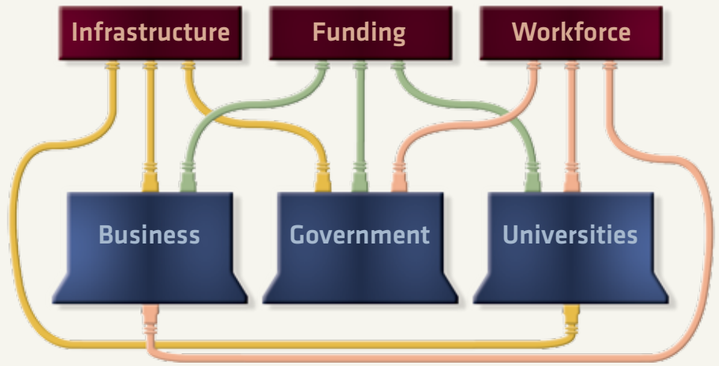
Virginia's Innovation Ecosystem: The Trusted Leader in Growing Cyber Security Solutions

The wealth of resources that have made Virginia a leader in innovation and technology are fueling the development of a new crop of cyber security solutions. Principles of collaboration, coordination, investment, integration and — perhaps most importantly — trust have been keys to this success.

In Virginia, this principle of integrated leadership is at the root of its economic success. Leaders from business, government and higher education have co-created an environment that has nurtured the types of innovation that has made the Commonwealth the home of the top technology companies and the number one recipient of federal investment. A shared vision for pro-business policies, a massive and highly skilled workforce and cutting-edge technology research has also planted Virginia at the heart of the cyber security space.



The U.S. Census Bureau's latest figures show that Virginia received more than $1 trillion in contracts from the federal government. This reliable stream of federal funding into the Commonwealth creates a fertile and nourishing environment for all technology innovation, but especially for the leading-edge cyber security research required to protect the nation's networks and infrastructure against malicious cyber attacks.

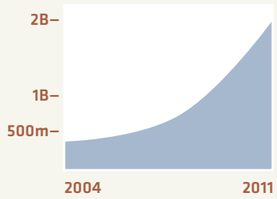
Virginia's forward-looking technology policies sustain this continued investment. The Commonwealth actively supports cyber security research, education and training at its public and private universities. In addition, it has cultivated a business-friendly environment where all companies — from start-up to systems integrator — can thrive.

As a result, Virginia is leading the nation's cyber security efforts. Its universities are turning out more cyber security graduates than ever. Its business-friendly policies have made the Commonwealth not just home to the top technology companies, but also a global data center hub. Its proximity to the federal government — the wellspring of cyber security policy, funding and technology — make Virginia the choice environment for creative, competitive businesses and people alike.

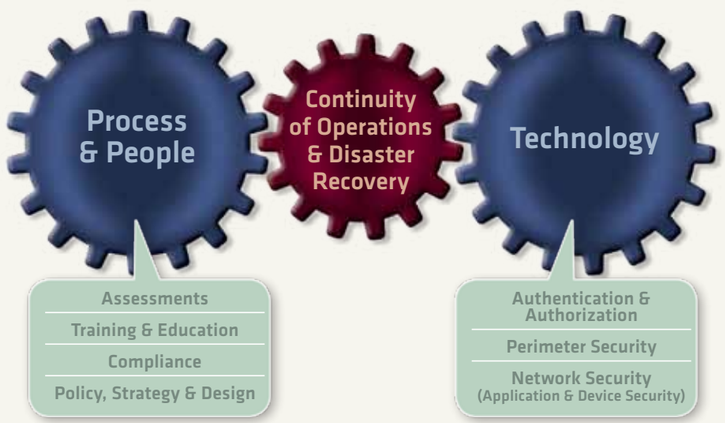
Cyber Security: A Matter of National Security and Economic Prosperity

The threat of cyber attacks impacts virtually every nation and every aspect of the world economy — from national security to manufacturing and supply chain logistics to online retail commerce and health care. **Today, approximately two billion users rely on the Internet globally, up from the 350+ million users online in 2004.** With this explosion in the number of users and with the approaching ubiquity of mobile technology, the threat of cyber attacks on governments, businesses and individuals grows. But the sustainability of today's information systems depends not just on protecting computer networks; it requires cross-sector leadership and the development of a trusted partnership formed between all of the state's entities, that can create the policies and strategies for a secure computing environment.

Explosive Growth in Internet Usage



A comprehensive cyber security solution demands a trusted partnership established between all of its assets, a coordinated investment in both people and processes, as well as new technologies. This model requires a creative and educated workforce and a business environment that supports innovation and investment, in addition to a robust set of technological tools.



According to Congressional testimony, the Department of Defense now operates 15,000 networks and seven million computing devices across 4,000 installations in 88 countries. These systems are constantly under attack. General Keith Alexander, in an address to the Center for Strategic and International Studies, noted that the Pentagon systems are "probed by unauthorized users approximately 250,000 times an hour, over six million times a day." In its newly released paper, "Strategy for Operating in Cyberspace," the Department of Defense's number one strategic initiative is to "treat cyberspace as an operational domain" (July 2011).

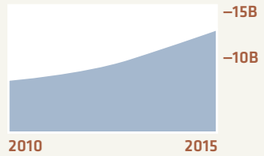
Leadership in Federal Cyber Security Initiatives and Investments

Shortly after taking office in 2009, President Obama named cyber security a national security issue, vowing that the United States government will "ensure that [the] networks are secure, trustworthy and resilient." The President acknowledged the critical importance of cyber security and ushered in a resulting infusion of federal spending. **In November of 2010, the market research firm INPUT estimated that spending by the federal government on cyber security products and services will increase from $8.6 billion in 2010 to $13.3 billion in 2015 at a compound annual growth rate of 9.1%.** That kind of investment across programs and services signals the federal government's commitment to growth of both cyber security technology and its specialized workforce.

Since the introduction of the Cyberspace Policy Review in March 2009, the Administration has been swift to identify weak areas in the nation's cyber ecosystem and has proposed ways to strengthen our defenses. The federal government now has well over 30 different initiatives, programs, R&D efforts, departments and divisions focused on cyber security and the protection of the nation's information and assets. Likewise, members of both parties in Congress have also recognized this critical need and introduced approximately 50 cyber-related bills.

Although responsibility for cyber security runs across most federal agencies, the Department of Defense and the Department of Homeland Security have been key establishments in creating cyber security-specific organizations and implementing federal cyber initiatives. But cyber security is a shared goal; government cannot be solely responsible for Internet defenses. A Department of Commerce report, *Cybersecurity, Innovation and the Internet Economy*, issued in June 2011, calls for a voluntary public-private partnership to strengthen the cyber security assets of all companies that rely on the Internet for business, not just those supporting the nation's critical infrastructure. The cyber domain is man-made, thereby demanding that all its entities such as government, academia, large and small businesses and investors found within this ecosystem must partner together to solve its security challenges. By proposing standards and presenting best

Federal Investment in Cyber Security



Virginia is Home to Federal Research

- 10 federally funded research and development centers
- 22 Department of Defense research centers
- Defense Advanced Research Projects Agency
- Homeland Security Studies and Analysis Institute
- NASA Langley Research Center
- Department of Energy's Thomas Jefferson National Accelerator Facility

practices, the Administration hopes to bolster cyber security across all sectors so that the Internet can remain an engine for innovation.

As the Obama Administration has suggested, the responsibility for cyber security rests not with the federal government alone, but in a cooperative and sustainable partnership among government, citizens and businesses. This cooperation requires investment, a trained workforce and a healthy business environment — all working together.

Workforce at Major Federal Installations in Virginia	
CIA	10,000+ (undisclosed)
Defense Advanced Research Projects Agency	240
Fort Belvoir	26,500
Fort Lee	9,700
Joint Base Langley – Fort Eustis &Fort Langley	13,500
Marine Corps Base Quantico	18,500
National Science Foundation	2,100
Norfolk Naval Shipyard	10,000
Pentagon	25,000

Virginia, already among the leading states in federal technology investment, workforce skills and business-friendly policies, is the bedrock for a trusted ecosystem that can support the next generation of cyber security development. The flow of federal money into the Commonwealth creates a fertile and nourishing environment for the Virginia-based federal facilities and contractors whose trained staff conducts leading-edge cyber security research to protect the U.S. networks and infrastructure against malicious cyber attacks.

TechAmerica

According to TechAmerica's *Cyberstates 2010* report, Virginia maintains the highest concentration of technology workers (per 1,000 private sector workers) and is ranked 5th in total high-tech employment.

Leadership in Virginia's Award-Winning Information Security Program

Each month, more than ten million cyber attacks, 120 million spam messages and 20,000 virus-laden emails target Virginia's state government IT systems and users. The Commonwealth's ability to protect, detect and react to these security threats is managed in a public-private partnership with Northrop Grumman. This unique partnership gives the Commonwealth an unparalleled security posture and provides numerous and redundant capabilities for protecting its assets and data. The consolidated IT services model

U.S. Sailors assigned to Navy Cyber Defense Operations Command (NCDOC) man their stations at Joint Expeditionary Base Little Creek-Fort Story, Virginia, Aug. 4, 2010. NCDOC Sailors monitor, analyze, detect and respond to unauthorized activity within U.S. Navy information systems and computer networks.

Virginia is extending its leadership in cyber security to local governments. Supporting citizens with a wide variety of services, municipalities are a primary provider of cyber security education and response. The Hampton-based Virginia Operational Integration Cyber Center of Excellence (VOICCE) delivers cyber security best practices, awareness and outreach to the municipality and its citizens. But more than that, VOICCE is the nation's first Cyber Center of Excellence at the municipal government level. VOICCE gives local governments a place to share ideas and experience. It also provides education for municipal governments on cyber security policy, technology and response. Its programs focus on incorporating cyber attack response into the mainstream of emergency operations by creating models of generic municipal networks and using those models to run cyber security experiments and scenarios. VOICCE then studies the roles and responses of local, state and federal responders during and after simulated attacks.

Virginia Governor Bob McDonnell outlines the Commonwealth's business-friendly policies in a CNBC interview.

helps Virginia enforce security standards, collect compliance metrics, protect electronic assets and respond in real-time to cyber attacks.

While Virginia's cyber security program reflects the shared leadership of the Governor, the General Assembly and the Secretary of Technology, Virginia Code empowers the Commonwealth's Chief Information Officer to govern cyber security efforts through the creation and promulgation of information security policies, procedures and standards. To fulfill his duties, the Chief Information Officer, who oversees the Virginia Information Technologies Agency, has established the Commonwealth Security and Risk Management Directorate, Information Security Officers' Advisory Group and the Commonwealth Information Security Council.

In recognition of the Commonwealth's cyber security leadership, Virginia's Information Security and Privacy program was recipient of the 2008 Outstanding Achievement award in State Government IT by the National Association of State Chief Information Officers.

CNBC ranked Virginia as the Best State for Doing Business in 2011.

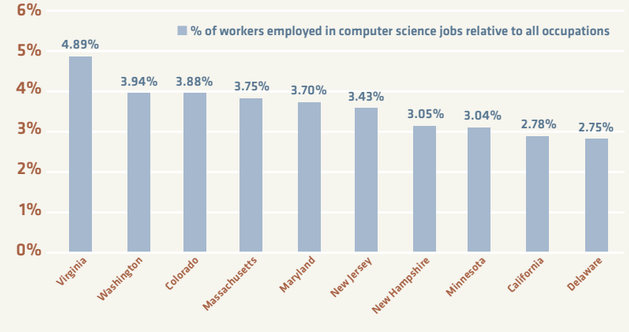
The Tax Foundation ranks Virginia as the 4th best state in the nation with business-friendly corporate taxes.

Leadership with Virginia's Business Partners

With the highest concentration of technology workers and computer science jobs in the nation, Virginia companies employ experienced and highly qualified IT and cyber security experts capable of conquering current and future cyber challenges.

The close proximity to the federal government's cyber security operations has led to the clustering of over 300 cyber security-focused companies in Virginia, over a third of which have their headquarters in the state. In fact, all of the global top ten IT services companies have a presence in Virginia.

Top 10 States Ranked by Concentration of Computer Science Jobs, 2009



NETWITNESS

Headquartered in Herndon, Virginia, NetWitness began in 2006 as a spin-off from ManTech International Corporation, offering network security monitoring solutions. It then expanded into the commercial and international market, becoming a standard for advanced cyber threat analysis.

invincea™

Invincea's technology was developed jointly with George Mason University's Center for Secure Information Systems. It provides protection against Web-borne and PDF-embedded threats by moving desktop Web browsers into a controlled virtual environment.

Micron®

Micron Technology is one of the world's leading providers of advanced semiconductor solutions, a key hardware component for making hardware cyber secure.

General Electric

In April 2011, General Electric announced an Information Security Technology Center in Glen Allen, Virginia to house high-tech teams specializing in cyber security, as well as network design, architecture, data management and application development.

Virginia cyber companies run the gamut in terms of offerings and organizational size, from award-winning start-ups to established systems integrators employing thousands of professionals. Of the top ten federal government IT contractors, all of whom are a significant presence in the cyber arena, five are headquartered in Virginia. Among the major players in the cyber security space, most also have a presence in Virginia, some with dedicated security divisions.

The host of technology companies in the Commonwealth offers a breadth of technologies and services across the cyber security spectrum, including network infrastructure, authentication, biometrics and encryption products. In addition, almost two-thirds of Virginia-based cyber security companies offer network security customization and integration services.

Although the federal government is a significant market for many of Virginia's cyber companies, other industries such as financial services, utilities and health care demand the world-class cyber security products and services offered by Virginia companies. In 2010, for example, Deloitte, the largest private professional services organization in the world and a top government contractor, established the Center for Cyber Innovation in Arlington, Virginia to help its clients integrate cyber security into their business strategies so that they can enhance operations, mitigate risks, empower personnel and strengthen customer support.

Facilitating growth and collaboration among businesses are the Commonwealth's ten regional technology councils, which have long championed technology and innovation in solving state and national challenges. The Northern Virginia Technology Council recently established a cyber security committee that provides its members with education, networking, business and government opportunities in cyber security.

Micron Technology is making a $56 million investment in its Manassas, Virginia wafer fabrication facility.

Virginia's Cyber Security Landscape

Virginia is home to world-renowned leaders in IT and cybersecurity services.

Lockheed Martin
Information Systems & Global Services (IS&GS) Global Security Solutions division

Boeing
Information Solutions division

Raytheon
Intelligence & Information Systems division

L-3 Communications
Global Security & Engineering Solutions division

BAE Systems
Systems' Intelligence & Security division

Northrop Grumman*
Information Systems

Science Applications International Corporation (SAIC)*

General Dynamics*

Booz Allen Hamilton*

Computer Sciences Corporation (CSC)*

Apple

Cisco

Google

HP

IBM

McAfee

Microsoft

Oracle/Sun

Symantec

*Company headquarters in Virginia

VERISIGN®

Dulles, Virginia-based VeriSign, a leading provider of Internet infrastructure services, manages two of the world's 13 Internet root servers, considered national IT assets by the federal government. In addition, VeriSign is the operator of the authoritative domain name registry for .com and .net.

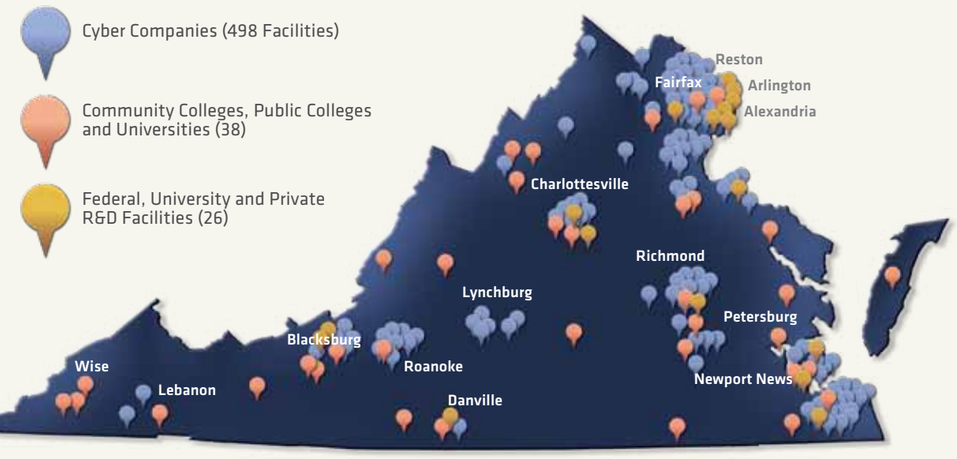
verizon

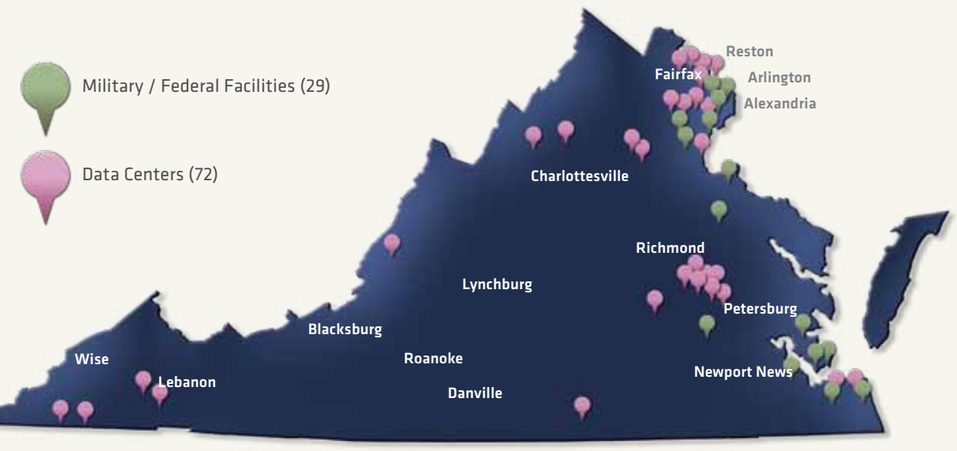
Verizon manages over 4,200 customer networks in 142 countries and territories and more than 260,000 security network and hosting devices. Its Ashburn, Virginia operations offer services to improve infrastructure and application performance, secure enterprises and enable collaboration.

VIRGINIA'S TECHNOLOGY ECOSYSTEM: FERTILE GROUND FOR CYBERSECURITY GROWTH

Virginia Chief Information Officer Sam Nixon oversees the Commonwealth's cyber security infrastructure to defend against 10 million cyber attacks per month.

Virginia's Cyber Security Resources





Harris Corporation Opens Cyber Integration Center for Trusted Cloud Computing

In May 2011, Harris cut the ribbon on its new cloud computing center in Harrisonburg, Virginia, a next-generation data center that provides trusted cloud computing for enterprise clients with critical cyber infrastructure through a secure cloud service.

Gartner projects that clolud computing will generate $148.8 billion in revenues by 2014 (WSJ, April 21, 2011).

Leading the Migration to the Cloud — Virginia's Data Centers

As companies and governments embrace cloud computing, the migration to hosted data centers capable of storing, managing and securing proprietary and confidential information is expected to increase. Virginia has embraced this market by offering tax exemptions to companies that buy or lease at least $150 million in computer equipment (between July 1, 2010 and June 30, 2020) for use in a data center. In addition, Virginia has the lowest commercial electricity rates among the South Atlantic states, an added benefit for data centers operating in the Commonwealth.

Global data center developers and operators such as Digital Realty Trust and Equinix have opened several facilities across the Commonwealth. Microsoft, Amazon and Bank of America are also making major investments in Virginia. By the end of 2011, Virginia will be the trusted home to over 50 data centers, located throughout the state; over the next ten years, an additional 20 data centers will be added.

The presence and density of Virginia's internet traffic and hosting capabilities serve as the foundation of user-based security solutions. This leadership ensures an effective balance between new technology solutions and user-friendly technology implementation. The sheer volume and density of Virginia's internet traffic demands an infrastructure that protects government, business and consumer data alike. Shared leadership across these sectors has created an environment where established enterprises can thrive and new solution can take root.

Northern Virginia Data Center Inventory	
Loudoun County	3.73M sq ft
Prince William County	1.18M sq ft
Fairfax County	2.35M sq ft
Culpeper County	200K sq ft
Other Northern Virginia locations	1.4M sq ft

Southern Business and Development, the premier magazine for economic development opportunities in the South, named three Virginia locations to its Ten Best Data Center Sites in the South list (Winter, 2011):

Scott County Regional Business and Technology Park in Duffield, Virginia
The Tennessee Valley Authority and Chicago-based Deloitte Consulting named this site in Duffield, Virginia as a ready-for-development Tier III-certified data center site. Existing infrastructure currently supports the ATAC data center.

Quality Technology Services in Richmond, Virginia
QTS's 1.3-million-square-foot data center campus offers custom data suites from 1,000 to 50,000 square feet, as well as co-location and managed service options.

GigaParks in Southern Virginia
A network of 60 data centers, GigaParks is connected by an advanced 800-plus-mile fiber optic broadband network.

Shared Leadership in a First Rate Higher Education System

The Commonwealth of Virginia is known for its first-rate public higher education system, from a highly-regarded community college system to nationally recognized four-year colleges and universities.

These institutions produce a robust, educated IT worker pipeline, contributing over 2,150 technology graduates annually to the labor pool. Graduates represent all IT/cyber degree categories from Bachelor's to Doctoral degrees from four-year public universities and roughly 600 Associate graduates from Virginia's community colleges. The continued flow of this talent pipeline is essential for the sustained growth of the IT sector.

Recognizing the growing need for leadership in technology and cyber security education and training, Governor Bob McDonnell recently signed the Virginia Higher Education Opportunity Act of 2011, which creates a pathway towards awarding 100,000 more degrees over the next 15 years and places more emphasis on science, technology, engineering and mathematics (STEM) education in Virginia's colleges and universities.

According to the Bureau of Labor Statistics, Virginia ranks 1st in percentage of computer systems analysts and computer software engineers.

Beyond the number of technology graduates Virginia's public universities annually produce, four of the Commonwealth's universities have been named National Centers of Academic Excellence in Information Assurance Education (CAE/IAE) or Centers of Excellence in Research (CAE-R). Jointly sponsored by the National Security Agency and the Department of Homeland Security, these programs promote leadership in higher education and research and seek to increase the number of graduates prepared to enter the cyber security workforce.

(CAE/IAE, CAE-R) Established in 1990, GMU's Center for Secure Information Systems has the distinction of being the first academic center in security at a U.S. university. The Center encourages the development of expertise in both the theoretical and applied aspects of information systems security. GMU's research expertise includes cyber attack detection, cryptography, wireless resource management, automated intrusion recovery and self-protecting data centers.

(CAE/IAE) JMU's Information Security program began in 1999, and its graduate program was one of the first in the country, making JMU a hub for cyber research and education. Faculty and students conduct research on fingerprint-protected USB drives, network security risk assessments and the impact of radio frequency identification (RFID) technology on critical infrastructure information systems.

(CAE/IAE) NSU responded to the growing demand for computer professionals in information assurance by creating its Institute for Information Assurance Research. Students gain proficiencies in cyber-related areas such as sensor network security, data security, security policy, wireless security and secure passwords.

(CAE/IAE, CAE-R) Virginia Tech trains students in both the technical and business aspects of cyber security by offering multidisciplinary degrees with concentrations in information security and information assurance. Faculty and student researchers focus on a wide spectrum of cyber security issues including Internet security and enterprise network security, security in mobile and wireless computing, software security, device/hardware-based security, secure embedded systems and cryptography.

Focusing on finance, law and policy, the George Washington Cyber Security Initiative addresses cyber security issues related to economic competitiveness, privacy and civil liberties. As part of this initiative, GW will institute a formal interdisciplinary Master's degree in cyber security, with policy, law and finance specialties, with a certificate program available for part-time students.

In addition to these five institutions, the other public four-year colleges and universities across the Commonwealth also have developed degrees catering to the growing need for cyber security professionals. These institutions have created cyber security-specific concentrations — ranging from computer engineering to information assurance — to better meet government and industry's demand for cyber security experts.

Two **Virginia Tech** students and their professor work together to solve a cyber security challenge. Research such as this is commonplace at the university.

Recognizing the growing need for cyber security education, **Virginia Commonwealth University** developed its Computer and Information Systems Security program in 2010. VCU is also providing a version of the program online for distance education.

Germanna Community College established an agreement with George Mason University, the University of Mary Washington and ManTech International Corporation to build a higher education center in North Stafford County, Virginia that will support the growing national security and technology cluster.

Likewise, the **Virginia Community College System** serves a vital function in instruction, workforce training and certification to individuals pursuing careers in cyber security. Twenty-two of the 23 community colleges throughout the Commonwealth offer training in cyber security, from certificates to Associate's of Science or Applied Science degrees.

LIBERTY UNIVERSITY

Virginia's private universities are also developing cyber programs which cater to the industry's needs. For instance, Liberty University created its first graduate program in the School of Engineering — a Master of Science in Cyber Security. The program allows for a two-track focus: law enforcement or cyber warfare.

Degrees in Cyber Security Fields Conferred by Virginia's Public Universities and Colleges

Four-Year College/University	Bachelor's	Master's	Doctorate	Total Degrees
Virginia Tech	280	230	60	570
George Mason University	98	297	12	407
University of Virginia	204	180	23	407
Old Dominion University	160	44	1	205
Virginia Commonwealth University	133	53	0	186
James Madison University	102	22	0	124
Radford University	62	0	0	62
Christopher Newport University	52	0	0	52
Virginia State University	40	0	0	40
University of Mary Washington	23	12	0	35
College of William and Mary	11	11	9	31
Norfolk State University	24	6	0	30
Virginia Military Institute	17	0	0	17
Longwood University	12	0	0	12
University of Virginia's College at Wise	7	0	0	7

All data from SCHEV for the 2009-2010 school year.

Degrees conferred in cyber security fields include the following programs: Computer Engineering; Computer Science; Information Science; Information Technology; Electrical, Electronics and Communications Engineering; Management Information Systems, and Systems Engineering.

Graduation with a degree in any of these fields does not indicate that individuals will work specifically in areas of cyber security.

Virginia Modeling, Analysis, and Simulation Center is a multi-disciplinary research center at Old Dominion University that offers Bachelor's, Master's and Doctoral degrees to students across the Colleges of Engineering and Technology, Sciences, Education and Business. Working with more than 100 industry, government and academic members, VMASC conducts research for use by the government, industry and other academic partners in seven core areas, including homeland security and military defense. Clients include the Joint Forces Command, the U.S. Army and the Commonwealth of Virginia.

Virginia's Leading Public University Cyber R&D

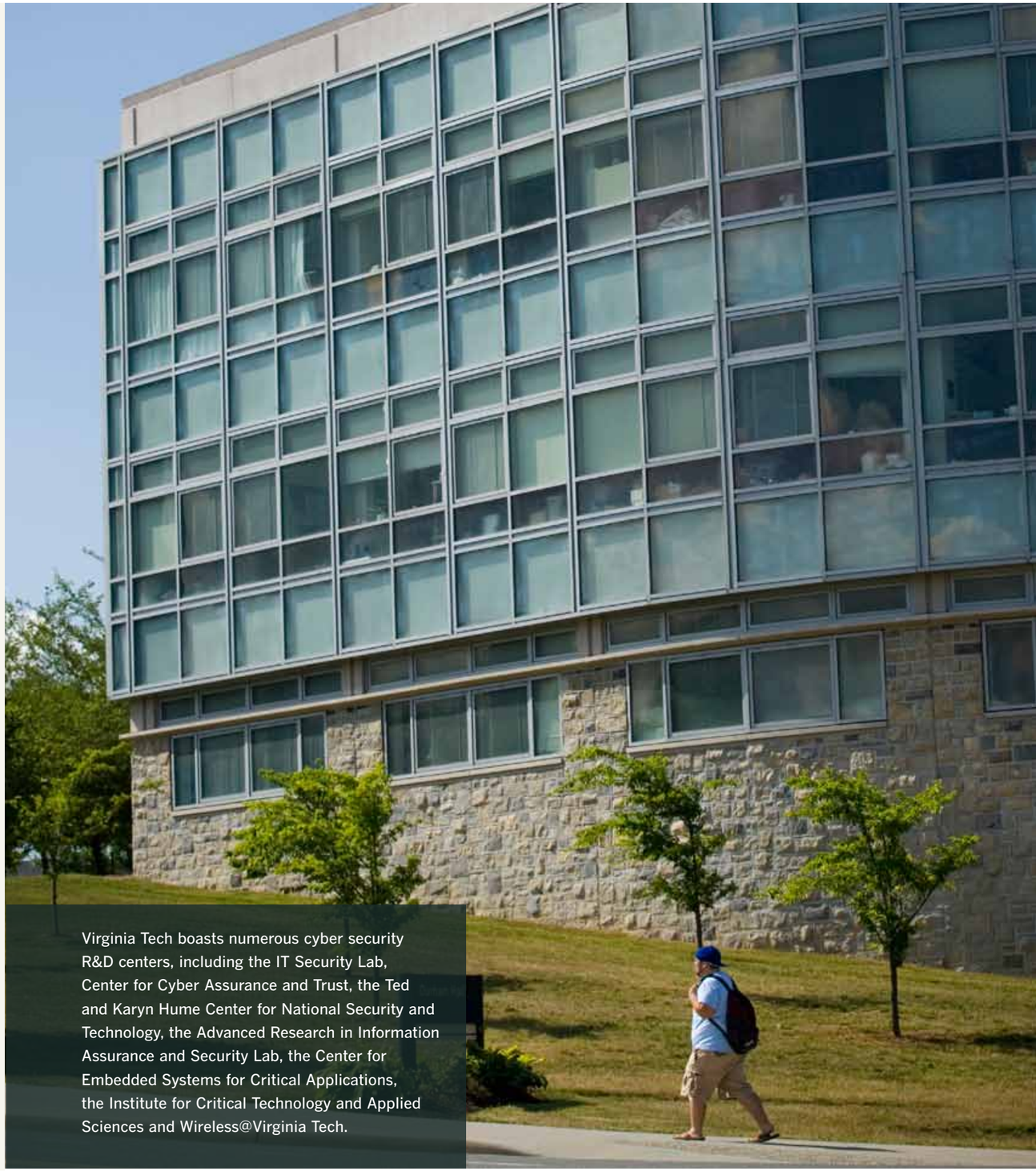
Besides their mission of creating an educated workforce, Virginia universities are home to many leading university and federal research and development centers that conduct vital cyber-related research backed by federal awards and industry partners.

Of the 15 public universities in the Commonwealth, two-thirds are engaging in cyber security-related research, including developing secure software solutions, designing technology to prevent identify theft on mobile devices and building early-detection cyber intrusion systems.

Most recently Virginia Tech has received a five-year continuing grant to establish a National Science Foundation Industry/ University Cooperative Research Center site for cyber security. Initial topics of research for the center include secure computing architectures, cloud computing security, visualization tools for cyber defense, securing critical infrastructure, wireless security, and malware detection and mitigation.

Other specific projects explore products, services and processes that:

- Acquire cyber situational awareness of enterprise networks (Sushil Jajodia, George Mason University)
- Use virtual machine technologies for business continuity and information security within data centers (Sushil Jajodia, George Mason University; Peng Liu, Pennsylvania State University; Meng Yu, Virginia Commonwealth University)
- Detect wireless sensor security breaches (Cheryl Hinds, Norfolk State University)
- Harden web applications from cyber attacks (David Evans and Anh Nguyen-Tuong, University of Virginia)
- Localize threats on a wireless network (Yaling Yang, Virginia Tech)



Virginia Tech boasts numerous cyber security R&D centers, including the IT Security Lab, Center for Cyber Assurance and Trust, the Ted and Karyn Hume Center for National Security and Technology, the Advanced Research in Information Assurance and Security Lab, the Center for Embedded Systems for Critical Applications, the Institute for Critical Technology and Applied Sciences and Wireless@Virginia Tech.

CIT GAP FUNDS
CENTER FOR INNOVATIVE TECHNOLOGY

Launched in 2005, the CIT GAP Funds are seed-stage investment funds designed to attract private capital to enable the formation and establishment of new high-growth technology companies in Virginia. The GAP Funds invested in Invincea, a fast-growing company with award-winning cyber security technologies, as well as in more than 40 other high technology start-ups since its inception.

University Entrepreneur Programs

Darden School of Business. UVA's Darden is ranked #1 for faculty and #7 for entrepreneurship programs by *Entrepreneur* magazine and The Princeton Review.

University of Virginia Venture Summit. The UVA Venture Summit brings together national leaders managing over $15B in venture capital, making it the largest event of its kind in the country.

Business Alliance for Innovation and Entrepreneurship. Host of the Grubstake breakfast, the Alliance caters to early-stage companies seeking focused growth capital in the range of $250K-$2M.

Mason Enterprise Center. The Center assists entrepreneurs through incubation facilities, mentorship and procurement opportunities.

Virginia Tech Intellectual Properties. VTIP evaluates, protects and markets inventions created at Virginia Tech.

The Mason School of Business Entrepreneurship Center. The Center helps students learn to create, finance, evaluate and manage smaller enterprises and new businesses.

Ernest M. Hodge Center for Entrepreneurship. The Center helps aspiring entrepreneurs and small business owners launch and expand their companies in the Hampton Roads area.

VCU da Vinci Center for Innovation. A collaboration of VCU's Schools of the Arts, Business and Engineering, the Center is a unique collegiate model that advances interdisciplinary innovation and technology-based entrepreneurship. Programs include an undergraduate certificate in Product Innovation and a Master's in Product Innovation (pending approval).

Leadership in Creating Virginia's Entrepreneur and Business-Friendly Culture

The Commonwealth's pro-business environment and its spectrum of resources for entrepreneurs and small businesses create a fertile field for the development of new products and services, including:

- The network of 29 Small Business Development Centers helps entrepreneurs to develop intellectual property and offers patenting assistance.
- Virginia's Philpott Manufacturing Extension Partnership provides prototyping assistance or help in manufacturing new technologies.
- The Virginia Department of Business Assistance offers business information services, small business financing, a jobs investment program that helps offset recruiting and training costs and provides information on how to market to federal, state and local governments.

Virginia also boasts a network of nearly 30 incubators that offer facilities and services such as consulting, business advice and networking opportunities to start-ups.

Additionally, Virginia is home to the Virginia Economic Development Partnership, which can help businesses of all sizes with their location selection process, international trade, and other business needs.

To further stimulate new business creation, Virginia's universities host ongoing innovation-focused programs which help promising ideas move to real-world-based ventures. The Entrepreneurship Program at the University of Virginia's Darden School of Business awards over $1 million in entrepreneurship scholarships annually. It also conducts four major entrepreneurial competitions and offers several targeted bootcamps where students interested in entrepreneurship or venture capital funding can get intensive training. Finally, more than 100 venture capitalists serve the Virginia entrepreneur community and provide opportunities for private equity financing.

Technology-Friendly Tax Legislation and Pro-Business Programs

- Capital gains tax exemption on investments in science and technology-based start-ups
- Angel Investor Tax Credit
- Refundable R&D Tax Credit
- The Small Business Jobs Grant Fund
- Major Jobs Facilities Tax Credit
- Virginia Small Business Financing Loan Guaranty Program
- Virginia Jobs Investment Program
- Governor's Opportunity Fund for Company Attraction
- Local Technology Zones
- The Virginia Small Business Financing Authority
- Economic Development Loan Fund
- VSBFA Virginia Capital Access Program
- VSBFA Industrial Development Bond Programs

Leadership for the Future

Cyber security is a critical, enabling technology for the 21st century economy. As the heart of information systems governing national defense, banking and finance, health care, the power supply and law enforcement, cyber security requires continual investment and improvement. The solutions to thwart tomorrow's cyber threats with next generation technologies must be developed now.

Cyber security is critical. Leadership matters. And to be effective, a trusted cyber security network relies on the integrated leadership of government, business and higher education working together to create innovative solutions. In Virginia, this leadership approach has built a nurturing environment for cyber technology: research and development, supported by education and workforce training programs, a bustling entrepreneurial market environment, an established technology infrastructure and sustained investment. Working seamlessly together, these symbiotic elements have allowed sustainable cyber solutions to flourish.

A recognized leader in technology development, federal investment, higher education and business, Virginia has become the natural home to the growing cyber security industry. The assets that have made Virginia the choice location of the nation's top minds, technology companies and research centers have created a thriving ecosystem for cyber security.

> "The rich assets that have made Virginia a leader in innovation and technology are making it the leader in cyber security today and into the future."
>
> Jim Duffey, Virginia's Secretary of Technology