

# Impact in Pennsylvania

2011

## Partnering with Pennsylvania to Educate America's Workforce

A sustained economic recovery requires a skilled and well-trained workforce. To reach their full potential as a vital resource for the United States, graduates now need to acquire problem-solving and critical-thinking skills, in addition to specific job-related expertise.

As organizations become increasingly reliant on innovative workers and intelligent networks, Cisco® Networking Academy® is helping Pennsylvania prepare for stable, high-paying jobs by teaching the skills that employers need.

### A Leader in Education Innovation

Cisco Networking Academy is a transformative, technology education program that prepares college- and career-ready students for the 21st century with curricula that builds information communications technology (ICT) and networking knowledge and skills.

Networking Academy is recognized worldwide as a leader in education innovation and e-learning. The courseware is developed by Cisco and delivered through public and private education organizations.

Curricula include instructor-led course content, online learning and skills assessments, hands-on labs, and innovative simulation and gaming technology. Core courses include IT Essentials, CCNA® (Cisco Certified Networking Associate) Discovery, CCNA Exploration, and CCNA Security. Students may then enroll in the more advanced CCNP® (Cisco Certified Networking Professional) courses.

Successful completion of the course work helps prepare Networking Academy students to take exams and earn ICT certifications that are valued by employers in diverse global industries and public-sector organizations. Courses also prepare students to pursue further education or apply these skills in their own businesses.


As of October 31, 2010, approximately 167,000 students were being taught by 4214 instructors in 2388 academies across the United States and Canada. Rapid growth over the past decade has demonstrated the program's success and versatility with its geographic reach, the diversity of students, the number and variety of

One million students engaged this year in 165 countries makes Cisco Networking Academy one of the world's largest classrooms. Since its inception in 1997, more than 3.75 million students have been enrolled, attending courses offered at local high schools, community colleges, universities, and nontraditional settings.

Cisco uses the network to connect students and instructors, and to partner with over 10,000 education institutions, while delivering 1 million online assessments per month, around the world.

Networking Academy cultivates partnerships with a broad range of education, government, NGOs and private organizations to advance education.

Cisco is the worldwide leader in networking for the internet, delivering innovations that change how we work, live, play and learn.



partners, the breadth and relevance of curricula, and its ability to keep pace with technical and pedagogical advances. Course content is consistent, providing students everywhere the same knowledge, skills development, and assessments.

Unique to Networking Academy is a focus on instructor professional development, and the creation of communities of support for both instructors and students. Instructors receive training prior to teaching their first class. They also have many professional development opportunities throughout the year, and access to peer communities where they can collaborate and share best practices online and in person. Students become part of a global network that helps them to troubleshoot coursework and prepare for exams, while also providing mentors and encouragement to one another.

## National Education Standards for a 21st Century Workforce

There is a growing concern on the part of government, foundations, and business organizations about the ability of our future workforce not only to enable economic recovery, but also meet the challenges of global economic competition. Several efforts are under way to help schools identify requirements for more rigorous studies that will improve math and science test scores, develop career-ready skills, and stimulate student interest in science, technology, engineering, and mathematics (STEM). Some of these efforts include:

- The education initiative and funding opportunities announced from the Obama administration to increase STEM literacy, teaching quality, and expansion of education and career opportunities to under-represented groups like women and minorities.
- The Common Core Standards, introduced as a state-led effort from the National Governors Association and Council of Chief State School Officers, to establish mathematics and language arts standards that define the knowledge and skills students need for success in college and careers.
- The Partnership for 21<sup>st</sup> Century Skills definitions of core subjects and 21<sup>st</sup> century themes representing the knowledge, skills and expertise that students should master to succeed in work and life.

The emphasis on technology is a common theme in all of the efforts to establish education standards. With our increasingly Internet-centric world, most careers in this century will require a strong understanding of how to take full advantage of technology-enabled communications and business processes. Educators want to use technology in their classrooms to better engage students, develop skills, and extend the learning experience. In addition, a workforce that is well-schooled in ICT and engineering can help spur innovation across many industries, which in turn opens up additional business opportunities to fuel productivity and economic growth. ICT investments are expected to play a major role in generating stable, high-paying jobs and boosting the nation's GDP.

**“Now is the time to build a firmer, stronger foundation for growth that will not only withstand future economic storms, but one that helps us thrive and compete in a global economy. It’s time to reform [education] to provide Americans of all ages a chance to learn the skills and knowledge necessary to compete for the jobs of the future.”** –President Barack Obama, January 2011

Networking Academy combines an emphasis on education standards and the skills that will be required in future job markets. Networking knowledge will be especially important in critical areas such as green technologies, healthcare, smart energy grids, and the push toward universal broadband deployment. The educational infrastructure at Networking Academy helps to ensure that the program's curricula will evolve to deliver technology knowledge and skills that can meet future learning requirements.



## State-of-the-Art Learning Environment

The instructional approach at Networking Academy encourages student engagement, enhancing the student's ability to synthesize learning and apply it in other contexts. Four skill areas identified by education researchers as critical for 21st century workers have been integrated into the course content:

- **Problem solving and decision making:** Students practice and test their knowledge by configuring and troubleshooting networks using hands-on labs and simulation software.
- **Creative and critical thinking:** Students understand the how and why of networking by combining hands-on learning with conceptual and analytical exercises.
- **Collaboration, communication and negotiation:** Students acquire individual and teamwork skills as they perform lab exercises and engage in business scenarios through gaming, all of which prepares them for the job world.
- **Intellectual curiosity and information handling:** Students develop the ability to locate, select, structure and evaluate information. Real-world case studies give students the opportunity to develop cutting-edge problem-solving techniques.

## Spotlight on Community Colleges

A unique feature of these institutions is their link to business and industry, and hence their integration into economic development. Community colleges are working to align their curricula, certifications and degrees with new ICT jobs through Networking Academy implementations. In the United States, 50% of all community colleges offer Networking Academy courses.

According to researchers, students today are faced with high tuition costs, a weak economy, and increased competition for admission to four-year colleges. They are more likely than at any other point in history to attend community college. Community colleges are also an invaluable resource for adults seeking to acquire new skills that are needed by employers. As a result, community colleges have experienced a spike in enrollment. And in October 2010, the White House convened the first Summit on Community Colleges to highlight the critical role they play in developing the nation's workforce, and in meeting President Obama's goal to lead the world with the highest proportion of college graduates by 2020.

As an example of how these institutions are responding to the challenge, Cuyahoga Community College instructor, Hamid Abdollahian, creates awareness around the increasing need for ICT and networking skills in the workplace and for Cuyahoga as a path for graduates to obtain those jobs. In his role as director of the Cisco Regional Academy at Cuyahoga, he contributes articles to print and online publications, and speaks on campus, about the knowledge and skills obtained through Networking Academy courses. Hamid includes facts from the Ohio Department of Jobs & Family Services, which recently reported on the fastest growing positions in the Cleveland metropolitan area: an expected increase of 4000 jobs in computer and mathematical occupations, including network systems and data communication analysts, which will be the jobs with the highest growth between 2006 and 2016. Hamid says, "Students are often surprised by the number of specializations within the networking field, and the number of industries and types of companies looking for this expertise. I spread the word that only 20% of 490 million legacy phone systems have been converted to voice over IP. I talk about the tremendous need for wireless network and storage network specialists, as well as network security experts to prevent cyber-attacks." The networking field is constantly evolving, and Networking Academy courses reflect those changes by incorporating real-world customer challenges. "This ensures that our students have access to the industry's best training and certification, and that our graduates can compete for higher-paying technology jobs. Anything we can do to help our local economy by preparing its workforce is priority #1 for us."

Another example is the partnership of two community colleges with the Colorado Department of Corrections (CDOC) to establish the first Cisco Networking Academy in a U.S. prison. Academy instructors from

Arapahoe Community College and Pueblo Community College contributed to the CDOC vision of opening doors of opportunity within prison walls. Now, offenders at the Denver Women’s Correctional Facility can learn and practice ICT and networking skills, using Networking Academy’s hands-on curricula, and move towards successful re-entry into society. Many are experiencing successful learning for the first time and are gaining a new sense of confidence in their ability. Within the first month, students were discussing complex technology concepts with assurance. The instructors and CODC also partner with the business community to have professional women in ICT careers visit the facility to talk with the students. According to Carl Wotowis, Assistant Director of the Offenders Program, “Our students know the odds are against them out in the community, but they are willing to give it everything they can. I think the biggest surprise for all of us is how much they support each other. They are pioneers, and the camaraderie among them is remarkable and inspiring. They have a sense that they may not only change their own lives, but the lives of other women in prison.”

## The Data Behind the Demand

Tables 1 and 2 outline the growth and projected demand for ICT-related careers in the nation and the state.

Table 1. Projection of select ICT occupations in the United States<sup>1</sup>

U.S. Occupation Projections	Employment		Change		Average Annual Openings	Occupational Employment as of May 2009 <sup>2</sup>
	2008	2018	#	%		
Computer Support Specialists	565,700	643,700	78,000	14.0	23,460	540,560
Computer Systems Analysts	532,200	640,300	108,100	20.0	22,280	512,720
Network and Computer Systems Administrators	339,500	418,400	78,900	23.0	13,550	338,890
Network Systems and Data Communications Analysts	292,000	447,800	155,800	53.0	20,830	226,080
Computer and Information Systems Managers	293,000	342,500	49,500	17.0	9,710	287,210

Table 2. Projection of select ICT occupations in the state<sup>3</sup>

Pennsylvania Occupation Projections	Employment		Change		Average Annual Openings	Occupational Employment as of May 2009 <sup>2</sup>
	2008	2018	#	%		
Computer Support Specialists	23,710	23,830	120	0.5	744	21,460
Computer Systems Analysts	22,840	26,070	3,230	14.1	929	22,740
Network and Computer Systems Administrators	14,970	16,850	1,880	12.6	530	14,750
Network Systems and Data Communications Analysts	7,530	10,450	2,920	38.8	446	6,340
Computer and Information Systems Managers	9,260	9,600	340	3.7	184	9,120

<sup>1</sup> Source: U.S. DOL, Bureau of Labor Statistics, October 2010, [bls.gov/oco/oco2003](http://bls.gov/oco/oco2003)

<sup>2</sup> Source: U.S. DOL, Bureau of Labor Statistics, State Occupational Employment and Wage Estimates, May 2009, [stat.bls.gov/oes/current/oesrcst](http://stat.bls.gov/oes/current/oesrcst)

<sup>3</sup> Source: Pennsylvania Department of Labor, August 2010

## The Impact in Pennsylvania

The partnership between Cisco Networking Academy and Pennsylvania has touched the lives of 25,447 students and generated an estimated in-kind contribution value of \$11,185,620 to education in the state. Tables 3 and 4 provide information on the state's current academies, curricula, and education levels.

Table 3. Cisco Networking Academy in Pennsylvania<sup>1</sup>

<b>Students</b>					3,540
<b>Female students</b>					12%
<b>Distinct cumulative students</b> (successfully completing at least one course)					25,447
<b>Instructors</b>					102
<b>Academies</b>					78
<b>Education level</b> (students/academies at more than one education level are counted proportionately)	Secondary Schools	Community Colleges	Universities	Other <sup>2</sup>	
Students	62%	32%	3%	3%	
Academies	76%	19%	4%	1%	
<b>Curricula</b> <sup>3</sup> (students/academies that take/teach multiple curricula are counted more than once)	ITE	CCNA 1, 2	CCNA 3, 4	Advanced Technologies / Other <sup>4</sup>	
Students	39%	63%	17%	2%	
Academies	58%	72%	47%	12%	
<b>In-kind contribution value</b> <sup>5</sup> (estimated cumulative value to academies including donations and discounts)					\$11,185,620

<sup>1</sup> Source: Quarterly Metrics, October 2010

<sup>2</sup> Includes community-based organizations, middle schools, military, nontraditional educational settings, and post-graduate institutions

<sup>3</sup> Source: MRE report 4415P51, November 2010

<sup>4</sup> Includes CCNA Security, CCNP, Security, Wireless, IP Telephony, Java, UNIX and Panduit Network Infrastructure Essentials (PNIE)

<sup>5</sup> Source: MRE report 4496, November 2010

Table 4. Active Academies in Pennsylvania<sup>1</sup>

Active academies are defined as those that have taught a class with at least three distinct student assessments or adopted a new curriculum within the last 12 months.

Number of Districts	With Networking Academies	Without Networking Academies	% Penetration
19	19	0	100%

\* Indicates Cisco Networking Academy Training Center

### Congressional District 1

Asociacion De Puertorriquenos (Philadelphia)  
Chester Housing Authority (Philadelphia)  
South Philadelphia High School (Philadelphia)  
South Side High School (Hookstown)  
Thomas A. Edison High School (Philadelphia)

### Congressional District 2

People's Emergency Center (Philadelphia)

### Congressional District 3

West Shamokin Academy (Rural Valley)

### Congressional District 4

A.W. Beattie AVTS (Allison Park)  
Community College of Beaver County (Monaca)  
North Allegheny Local Academy (Pittsburgh)  
Quaker Valley (Sewickley)

### Congressional District 5

Career and Technical Center (CTC) (State College)  
Central Pennsylvania Institute of Science & Technology (Pleasant Gap)  
Clarion County Career Center (Shipperville)  
Seneca Highlands (Port Allegany)

### Congressional District 6

Center for Technical Studies of Montgomery County (Plymouth Meeting)  
Daniel Boone Area School District (Birdsboro)  
Montgomery Community College/West Campus (Pottstown)  
SCTE Networking Academy (Exton)  
Wilson School District (West Lawn)

### Congressional District 7

Pennsylvania Institute of Technology (Media)

### **Congressional District 8**

\*Bucks County Community College (Newtown)

### **Congressional District 9**

Big Spring School District (Newville)  
Franklin County Career & Technology Center (Chambersburg)  
Greater Altoona Career & Technology Center (Altoona)  
Scotland School for Veterans Children (Scotland)  
Somerset CTC Academy (Somerset)

### **Congressional District 10**

Pennsylvania College of Technology (Williamsport)  
Tunkhannock High School (Tunkhannock)

### **Congressional District 11**

Monroe Career & Technical Institute (Bartonsville)  
West Side Career & Technology Center (Kingston)

### **Congressional District 12**

Admiral Peary Area Vocational-Technical School (Edensburg)  
Pennsylvania University of Pennsylvania (Pennsylvania)  
Connellsville Area School District (Connellsville)  
Eastern Westmoreland Career and Technology Center (Latrobe)  
Elderton Local Academy (Elderton)  
Ford City Local Academy (Ford City)  
Pennsylvania Highlands Community College (Johnstown)

Washington School District (Washington)

### **Congressional District 13**

Abington Senior High School (Abington)  
Eastern Center for Arts and Technology (Willow Grove)  
MCCC Central Local (Blue Bell)  
\*Montgomery Community College/Central Campus (Blue Bell)  
North Montco Technical Career Center (Lansdale)  
Swenson Arts and Technology High School (Philadelphia)

### **Congressional District 14**

Brashear High School (Pittsburgh)  
Carnegie Mellon University (Pittsburgh)  
Carrick High School (Pittsburgh)  
McKeesport Local Academy (McKeesport)  
Pittsburg Job Corps Cisco Networking Academy (Pittsburgh)  
Steel Valley Local Academy (Munhall)  
Urban League of Greater Pittsburgh (Pittsburgh)  
\*Pittsburgh Public Schools (Pittsburgh)

### **Congressional District 15**

Career Institute of Technology (Easton)  
Easton Area School District (Easton)  
Freedom High School (Bethlehem)  
Lehigh Carbon Community College (Schnecksville)  
Liberty High School (Bethlehem)  
\*Northampton Community College (Bethlehem)  
Souderton Area School District (Souderton)  
Upper Perkiomen School District (Pennsburg)

### **Congressional District 16**

Lancaster County Career and Technology Center (Mount Joy)  
Reading Area Community College (Reading)

### **Congressional District 17**

Berks Career Technology Center (Oley)  
Fleetwood Area High School (Fleetwood)  
Muhlenberg School District (Laureldale)

### **Congressional District 18**

Forbes Road Career and Tech Ctr (Monroeville)  
Mt. Lebanon Local Academy (Pittsburgh)  
Parkway West AVTS (Oakdale)  
Steel Center Area Vocational Technical School (Clairton)  
Western Area Career and Technology (Canonsburg)  
\*Westmoreland County Community College (Youngwood)

### **Congressional District 19**

Carlisle Area School District (Carlisle)  
Cedar Cliff High School (Camp Hill)  
Consolidated School Of Business York (ACC) (York)  
Northern York County School District (Dillsburg)  
Red Lion Area Senior High School (Red Lion)  
Upper Adams School District (Biglerville)  
York County School of Technology (York)

<sup>1</sup> Source: Congressional\_Report\_November 2010

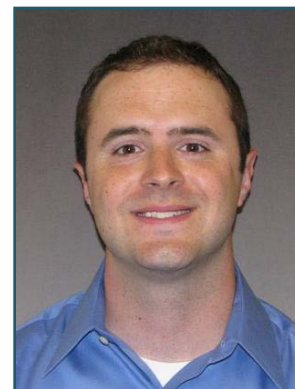
## **Pennsylvania Student and Community Impact Story**

Dan Clarke is a systems engineer with Cisco's Public Sector team in Pennsylvania. How did he get here? Let's take a look at his journey from Cisco® Networking Academy® student to success in industry.

Dan was always interested in technology. In his early teens, he learned how to change codes to customize video games. A few years later at the Pennsylvania College of Technology in Williamsport, he discovered courses from Cisco Networking Academy. He decided to pursue a dual major in networking and computer security. He took IT Essentials, Cisco CCNA®, Cisco CCNP®, and security courses.

Dan worked 40 hours a week while going to school full-time. It took three semesters before he could fit an academy class into his schedule. Cisco CCNA 1 and 2 turned out to be the best classes of his college experience, enabling him to review material he already knew while adding theory and application. The hands-on portions and troubleshooting exercises were particularly vital.

One of Dan's biggest inspirations was Professor Jeff Weaver. "Jeff has a very inspiring communication style. He makes complex material understandable, and takes extra time to make sure everyone understands completely. He also teaches how to break things down into simple segments. I use that approach daily on the job, and continue to collaborate with Jeff today."



Another inspiration was the Cisco Network On Wheels (NOW) van, which paid a visit to academy students to demonstrate the latest Cisco communications and networking technology. Later, Jeff Weaver spoke about opportunities to work for Cisco in various capacities. Dan wanted to pursue it, and Jeff put him in touch with Marie Zwickert, the Area Academy Manager for that region.



Marie put Dan in touch with the Cisco NOW van team. Immediately after graduation, Dan applied for opportunities with the NOW van and the Associate Sales Engineer/Associate Sales Rep (ASE/ASR) program. He was hired for both, filling an open spot in the NOW van for 7 months, and then transferring to the ASE program in North Carolina. He trained there for a year before going out into the field.

During that time, Dan also earned his CCNA certification, but he didn't stop there. With support from his colleagues in the NOW van and the ASE program, he eventually achieved the Cisco CCNP®, CCDA®, and CCDP® certifications.

Today Dan is a systems engineer for Cisco, working in a pre-sales role supporting the Cisco Public Sector team in Pennsylvania. He supports networking design and configuration and customer solutions for K-12 and universities, as well as for state and local government.

“Working with education is great. I love to give back, working with administrative and networking folks at schools to deliver the technology their students use today. We implement wireless networks so students can use their iPads and download content, video-on-demand, etc. The same thing applies to working with state and local governments to enable services for them and their constituents— in some cases, services they never expected to be able to afford— because we are able to design cost-effective solutions.”

“One of the things I like best about technology is its ability to bring about change. Every day it is changing the way we work, live, play, and learn, to use a Cisco phrase. Right now, I can start a call on an office phone, and step outside and drive away on the same call. What will it be like 10 years from today? New technology, and new customers with different problems that require unique solutions – it's dynamic!”

Today Dan participates in promotional events for Cisco Networking Academy, and speaks to current students and instructors to give back some of the inspiration he received. His recommendation for new students is:

“Just do it. Take the time to enroll in a class, learn the material, and try it out. I still talk to a few of my fellow classmates, and those who are in the networking field, as well as those in other fields, say the material still applies and helps them compete in their careers.”

## Learn More

For additional information, impact stories, how you can get involved, and contacts in your area, visit our website: [www.cisco.com/web/learning/netacad/us-can](http://www.cisco.com/web/learning/netacad/us-can)

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