



Seamless Pathways: The Landscape



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Cisco | Networking Academy®
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Workshop Agenda

- **Overview:** What do we mean by pathways?
Why is this important, especially in the IT Industry?
- **Share** articulation and dual enrollment models of practice
- **Update** on the national movement @ Career Clusters, specifically, IT Career Cluster, Network Systems pathway
- **Explore** how new CCNA curricula align to the newly revised national standards for the IT Career Cluster, Network Pathway
- Gather your feedback on what you are hearing and what you need.



Why are Pathways Critical for the Future of CTE programs?

“The convergence of influences such as global competition and its impact on our economy, legislation and policy, and a focus on achievement and accountability call for dramatic changes in our education system.

Responding to these constantly evolving challenges is the driving force behind Career Clusters and programs of study.”

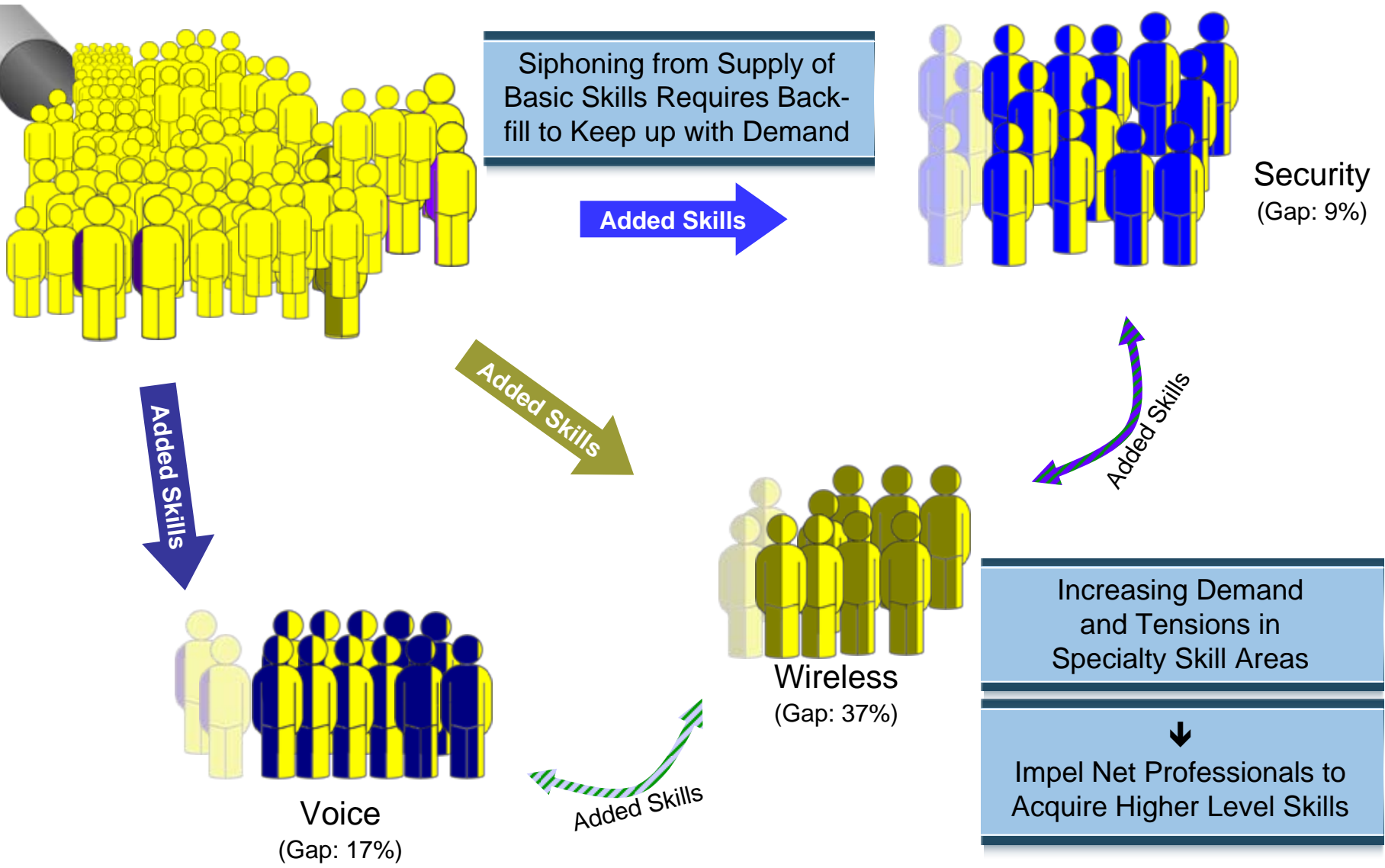
Career Clusters and State of States Study, June 2007

http://www.careertech.org/uploaded_files/CareerClustersProgStudySurveyJune07.doc

IT Industry: It's All About Pathways



Pressure on the Pipeline



What Do We Mean by Pathways?





Overview of the Career Cluster Model

- States' Career Cluster Framework launched in 2002
- Developed Career Cluster model as a tool for seamless transition from education to career in this era of changing workplace demands
- Goals:
 - High learner achievement
 - Successful transition between secondary, postsecondary education and/or employment
 - Better preparation for succeeding in careers (technical skills and employability skills)
 - Promotion of economic development to increase productivity

A Career Pathway Is ...

- A coherent, **articulated** sequence of **rigorous academic and career courses** commencing in the 9th grade and **leading to** an associate degree, and/or an industry-recognized certification or licensure, and/or a baccalaureate degree and beyond
- Developed, implemented, and maintained in **partnership** among secondary and postsecondary education, business, and employers
- Available to **all** students, designed to lead to rewarding careers

Source: League for Innovation in the Community College



Career Pathway Elements

Secondary Career Pathway Elements

- Meets state academic standards, grade level expectations, high school testing and exit requirements
- Provides additional preparation to assure college readiness and meets postsecondary entry, placement requirements
- Provides academic and career-related knowledge and skills in a chosen career cluster
- Provides opportunities to earn college credit

Postsecondary Pathway Elements

- Opportunities for students to earn college credit
- Alignment and articulation with certificate, associate, baccalaureate programs and beyond
- Industry-recognized skills and knowledge in each career area
- Multiple exit points including employment, business, entrepreneurial, and higher education opportunities

Networking Pathway Program of Studies

EDUCATION LEVELS	GRADE	English/ Language Arts	Math	Science	Social Studies/ Sciences	Other Required Courses Other Electives Recommended Electives	*Career and Technical Courses and/ or Degree Major Courses for Network Systems Pathway	SAMPLE Occupations Relating to This Pathway	
Interest Inventory Administered and Plan of Study Initiated for all Learners									
SECONDARY	9							<ul style="list-style-type: none"> ▶ Communications Analyst ▶ Data Communications Analyst ▶ Information Systems Administrator ▶ Information Systems Operator ▶ Information Technology Engineer ▶ Network Administrator ▶ Network Architect ▶ Network Engineer ▶ Network Manager ▶ Network Operations Analyst ▶ Network Security Analyst ▶ Network Specialist ▶ Network Technician ▶ Network Transport Administrator ▶ PC Support Specialist ▶ Systems Administrator ▶ Systems Engineer ▶ Systems Support Leader ▶ Technical Support Specialist ▶ Telecommunications Network Technician ▶ User Support Specialist 	
	10						Optional: IT Essentials: PC Hardware and Software		
							Certification: A+		
	11						CCNA Discovery: Networking for Home and Small Businesses CCNA Discovery: Networking: Working at a Small-to-Medium Business or ISP		
	College Placement Assessments-Academic/Career Advisement Provided								Certification: CCENT
	12						CCNA Discovery: Routing and Switching in the Enterprise CCNA Discovery: Designing and Supporting Computer Networks		
							Certification: CCNA		
Articulation/Dual Credit Transcribed-Postsecondary courses may be taken/moved to the secondary level for articulation/dual credit purposes.									
POSTSECONDARY	Year 13						Track 1 (CCNP): Building Scalable Internetworks Implementing Secure Converged Wide-Area Networks Track 2 (CCNA): CCNA Exploration: Network Fundamentals CCNA Exploration: Routing Protocols and Concepts		
	Year 14						Track 1 (CCNP): CCNP: Implementing Secure Converged Wide-Area Networks CCNP: Optimizing Converged Networks Track 2 (CCNA): CCNA Exploration: Lan Switching and Wireless CCNA Exploration: Accessing the WAN		
							Certification Options: CCNA or CCNP depending on the Track		
	Year 15						Specializations: Unified Communications, Security or Wireless		
	Year 16						Specializations: Unified Communications, Security or Wireless		



National Career Clusters Model and Where the Academy Fits





IT Career Cluster Template

Networking Pathway



Knowledge and Skill Statements	Performance Elements	Indicators: How does your program of study help students master these K&S?			
Identify and Analyze Customer/Organizational Network System Needs and Requirements to Design a Network;					
ITPA01.01.01	Gather Data to Identify Customer/Organizational Requirements				



IT Networking Pathway: Discovery 1-4



Knowledge and Skill Statements	Performance Elements	Indicators: Discovery			
		Networking for Home and Small Businesses	Working at a Small to Medium Business or ISP	Introducing Routing and Switching in the Enterprise	Designing and Supporting Computer Networks
<p>Identify and Analyze Customer/Organizational Network System Needs and Requirements to Design a Network; Students Will Learn and Practice Questioning Techniques, Site Survey Skills, and Methods of Quantifying and Documenting Data</p>					
ITPA01.01.01	Gather Data to Identify Customer/Organizational Requirements	Identify End-User Requirements in Order to Determine the Appropriate Wireless Standard to Use (Ch. 7.4.1)	Identify Types of Information to Gather During a Pre-Design Site Survey (Ch. 3.1.1)	Match Network Documentation Sources with Specific Types of Information Found in Them (Ch. 2.1.1)	Develop a Checklist of the Business Goals of a Specific Company (Ch. 2.3.3)



CCNA Discovery–Exploration Pathway Sample

Crosswalk: Discovery 1, 2–Exploration 2



Knowledge and Skill Statements	Performance Elements	Indicators: Discovery 1, 2–Exploration 2		
		Networking for Home and Small Businesses	Working at a Small to Medium Business or ISP	Routing Protocols and Concepts
<p>Design a Network System Using Technologies, Tools, and Standards to Demonstrate a Basic Understanding of Network Architecture; Students Will Apply Knowledge of Both Physical and Logical Network Fundamentals in Developing and Analyzing Network Designs</p>				
ITPA01.03.04	Implement Appropriate LAN Physical Media	Construct and Test Both Straight-Through and Crossover Cables (Ch. 4.5.3)	Connect a LAN Switch to a Router (Ch. 5.4.4)	Configure Ethernet Interfaces for IP on Multiple Hosts and Routers. and Examine the ARP Process (Ch. 2.2.3)



CCNA Exploration Pathway Sample

Crosswalk: Exploration 1–Exploration 4



Knowledge and Skill Statements	Performance Elements	Indicators: Exploration 1–4			
		Networking Fundamentals	Routing Protocols and Concepts	LAN Switching and Wireless	Accessing the WAN
Perform Network Administration and Monitoring to Maintain a Network System; Students Will Utilize a Variety of Applications Useful in Monitoring Systems and Practice Administrative Skills					
ITPA01.05.03	Perform Network System Administration Tasks	Describe Considerations in Deciding When Private Addresses Are to Be Used and Where They Are to Be Applied (Ch. 6.3.1)	Calculate Route Summaries and Supernetts Using VLSM and CIDR (Ch. 6.3.2)	Limit the Effects of Network Broadcasts by Breaking a Large Physical Network up into Smaller Virtual Networks Using VLANs (Ch. 3.5.1)	Perform Network Discovery and Documentation Using Network Commands (Ch. 8.1.2)

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	Year 16						Specializations: Unified Communications, Security or Wireless		

Panel of Academy Instructors



Panelists

Some Definitions and Trends ...

- **Articulated credit**
 - Gives college credit for courses taken in high school when the student enrolls at the postsecondary institution
- **Dual enrollment**
 - Simultaneous enrollment and credit for both high school and college
- **Transcripted credit**
 - Gives both high school and college credit for identified courses on respective transcripts



Panel Questions

- Describe pathways for the new curriculum at your institution
- How do you handle transfer credits?
- What are some lessons learned to share with others on pathways and transfer credit?

Model of Practice: Articulation and Seamless Pathways

North Carolina

- Network Engineering 1 (Discovery 1, 2) and Network Engineering 2 (20-hour cert prep and Exploration 2) in high school
- Statewide articulation with NC community colleges for up to 4 credits and entry into Exploration 3, 4

“The new curriculum encourages pathways to postsecondary and careers and helps meet revised Perkins requirements. I see this as an opportunity to reestablish and renew the Cisco Networking Academy in North Carolina, both for instructors and students.”

David Babour, North Carolina Education Consultant



Model of Practice: ICT Pathway

California

- Creating “2+2+2” Information and Communication Technology (ICT) pathway from high school to community college to four-year universities that fits into STEM degrees
- Networking Academy students receive up to eight credits with articulation agreement
- Plans include embedding coursework beginning in 9th grade, incorporating industry involvement, and a summer bridge program after high school

“The flexibility and blended format of the Cisco curriculum makes it possible for us to create entry and exit points along the pathway.”

Richard Gronegut

Legal Main Contact, Regional Cisco Networking Academy, Ohlone College

Group Activity



Career Cluster Crosswalk Activity: Building Bridges

All Teachers Know that a Good “Bridge in” Activity:

- **Connects** prior student knowledge to the present lesson’s content
- **Builds** understanding of the “big ideas” behind the lesson
- **Challenges** students to go forward
- Your group challenge:
Build a bridge from the experiences and knowledge students acquire in earlier Discovery courses, to knowledge they will acquire in a later Discovery course

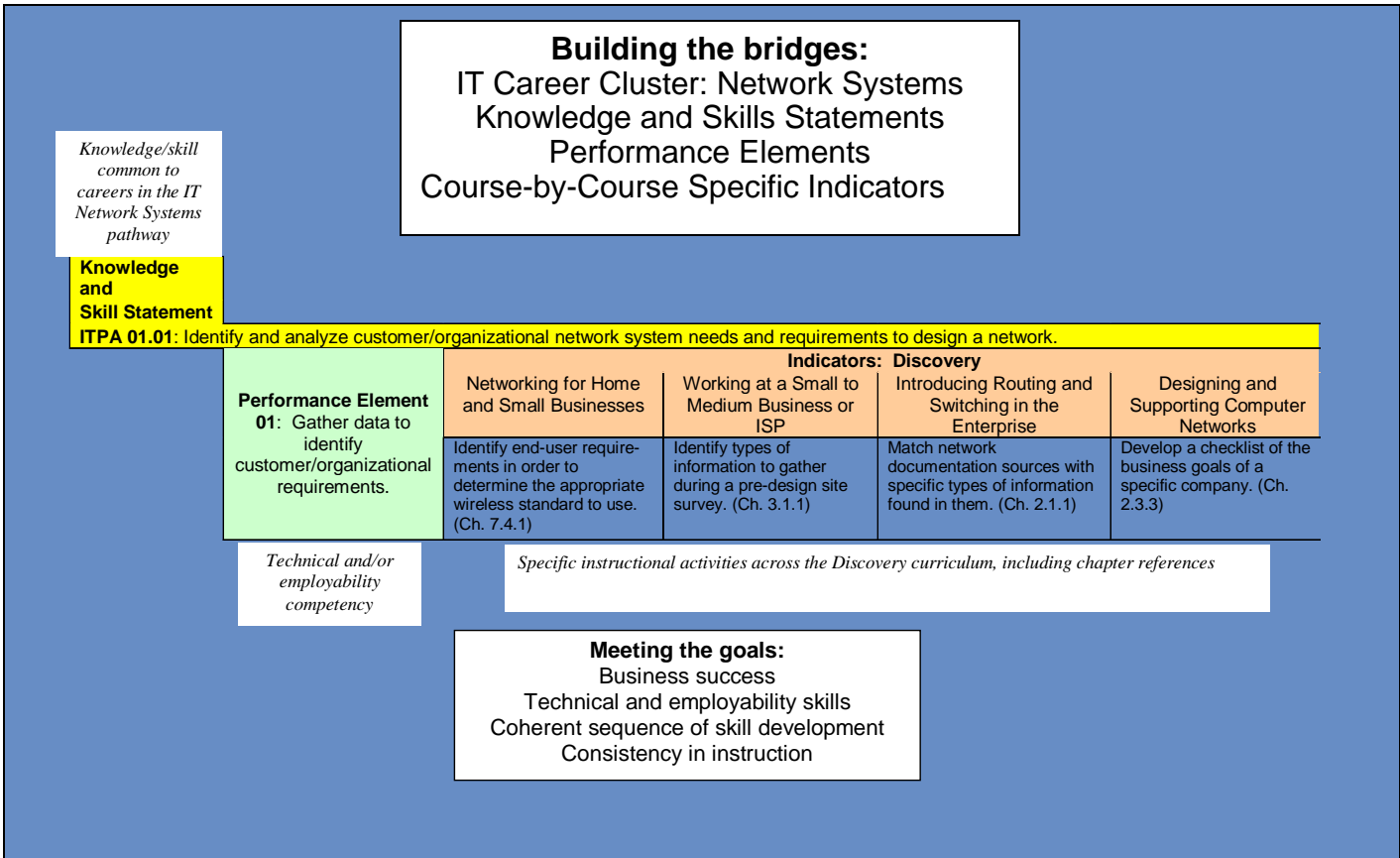
Activity

- Examine your assigned K&S statement and performance elements
- Follow the crosswalk of the sample indicators
- Select one crosswalk that builds a good bridge as it moves from Discovery 1 through Discovery 4
- Imagine that you have taught the indicator in earlier Discovery courses (Discovery 1 and 2, for example)
- Now you are about to teach the **same indicator** in a later Discovery course (e.g. Discovery 3 or 4)
- Construct an appropriate “bridge in” activity for your lesson that will give students the opportunity to **express their prior knowledge**, **build understanding** of the “big idea,” and **challenge** them to learn the new knowledge

Sample Crosswalk and Activity

K&S	Performance Elements	Sample Indicator	Bridge into New Knowledge
ITPA01.01.01	Gather Data to Identify Customer/Organizational Requirements	<p>Intro. Routing and Switching in the Enterprise: Match Network Documentation Sources with Specific Types of Information Found in Them</p>	Present pictures of Physical and logical network diagrams. Students identify which is which. Ask: Why is this information important? Imagine that you have just taken over as the network manager for a company, but there is nothing in the file drawers of your office...no documentation at all. What information would you need to gather?

Anatomy of the Discovery Crosswalk



What Have We Learned?

- There is a **sequential development of skills** across the four Discovery courses
- The **course indicators support the “big ideas”** of the cluster pathway Knowledge and Skills Statements
- Our **challenge** as teachers is to “build the bridges” for our students
- With the national focus on career pathways the new CCNA curriculum provides a strong program of study that **reflects the needs of the IT/Networking industry**

Next Steps

- Share your pathway models (2+2+2) with the community
 - Send examples and contact information to Cathy Neuman, cneuman@cisco.com
- Join the discussion forum on Career Pathways (Forums & Chat > Instructor Community > Career Pathways)



Our Goal: Student Success



For Our Diverse, Connected World
and for the Human Network

Additional Resources

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Pathways to College Access and Success

Katherine L. Hughes, Melinda Mechur Karp,
Baranda J. Fermin, and Thomas R. Bailey

How can we help all youth have smoother and more successful transitions to college? Credit-Based Transition Programs (CBTPs) such as Tech Prep, dual or concurrent enrollment, International Baccalaureate, and middle college high schools may provide one answer. These programs allow high school students to take college-level classes and earn college credit. Some CBTPs also provide services to support the many aspects of college transition.

Credit-based transition programs are widespread and interest in them by policymakers, parents, educators, and students has increased in recent

Findings

Below, we highlight findings regarding four key program features—student recruitment and selection processes, curriculum, support services, and data collection and use. For each feature, we investigated the current practices of the case study sites, identified those practices that seemed most promising in meeting the needs of middle- and low-achieving students, and identified barriers to implementing them.

Student Recruitment and Selection. Given this study's focus on the promise of expanding CBTPs to middle- and low-achieving students, the five programs' student recruitment procedures and approaches were a particularly significant area of study. The selection of programs for the study was based on assurances that they were accessible to a wide range of students. We found, however, that open participation does not necessarily ensure broad access.

<http://ccrc.tc.columbia.edu/Publication.asp?UID=385>

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Paths to CCNA Certification

