Cisco Networking Academy
NECC: June 2009

Marie Zwickert, Business Development Manager
“The American Recovery and Reinvestment Act is a historic opportunity to lay the groundwork for a generation of education reform…coming at a time of economic and education crisis…‘the perfect storm for reform’. It includes great leadership, proven strategies that work, and new money.”

U.S. Secretary of Education Arne Duncan
Speaking at the National Science Teachers Association Conference
March 20, 2009
What is Cisco Networking Academy?

An innovative education initiative, delivering valuable IT and networking skills, meeting national academic standards, and preparing students to be career and college ready.

Curriculum is designed to prepare diverse students for higher education, and high-wage, high-skill, high-demand careers in today’s competitive global economy.
Networking Academy: 21st Century Education

- Web-delivered curriculum
- Aligned to:
  - academic standards
  - CTE Information Technology skills and standards
  - IT Career Cluster
- Interactive learning tools
- Online assessment
- Hands-on labs with learning in context
- Interactive course guides for instructor professional development
- Pathways for students to
  - relevant industry certifications
  - in-demand careers
  - higher education – earning college credit
# Networking Academy in the United States

<table>
<thead>
<tr>
<th>Networking Academy Students</th>
<th>128,318</th>
</tr>
</thead>
</table>
| Distinct cumulative Networking Academy graduates  
(having successfully completed at least one course) | 549,845 |
| Academies | 2,219 |
| Instructors | 3,747 |
| Cumulative contribution value to United States Networking Academies * | $300,000,000 |

<table>
<thead>
<tr>
<th>Education Level</th>
<th>All</th>
<th>Secondary High Schools</th>
<th>2-3 year or Community College</th>
<th>4 year College or University</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>128,318</td>
<td>45%</td>
<td>44%</td>
<td>10%</td>
<td>1%</td>
</tr>
<tr>
<td>Academies</td>
<td>2,219</td>
<td>60%</td>
<td>31%</td>
<td>7%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Source: AME/MRE FULL Package of Quarterly Metrics_10 31 08_v1.xls

*This estimate includes donations and discounts made to educational institutions implementing Cisco Networking Academy within the United States.
## Education Implementation

<table>
<thead>
<tr>
<th>High School</th>
<th>Community College</th>
<th>4-Year College</th>
<th>Graduate Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program Areas</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Career Cluster: Information Technology, and across other clusters including Business and STEM</td>
<td>• Applied Technology</td>
<td>• Computer Science Engineering</td>
<td>• MS Computer Information Technology</td>
</tr>
<tr>
<td>• Credit for core coursework in Math, Science, or Language Arts, and Career and Technical Education credit</td>
<td>• Business</td>
<td>• Information Technology</td>
<td>• MS Computer Science</td>
</tr>
<tr>
<td></td>
<td>• Computer Science</td>
<td>• Math</td>
<td>• MS Information Systems</td>
</tr>
<tr>
<td><strong>Degrees</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AS Computer Network Engineering</td>
<td>• BS Engineering</td>
<td>• BA Networking and Communications Management</td>
<td>• MA Industrial and Technical Studies</td>
</tr>
<tr>
<td>• AS Information Technology</td>
<td>• BS Computer Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AS Network Technology</td>
<td>• BS Info Management Systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AAS Computer Specialist</td>
<td>• BS Networking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AAS Information Technology</td>
<td>• BApp Technology in Information Systems-Network Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AAS Network Engineering</td>
<td>• BA Networking and Communications Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• AAS Technology Network Support</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Certifications** | | | |
| • CompTIA: A+ | • CompTIA: A+ | • CompTIA: A+ | • CCNA: Cisco Certified Networking Associate |
| • CCENT: Cisco Certified Entry Networking Technician | • CCENT: Cisco Certified Entry Networking Technician | • CCENT: Cisco Certified Entry Networking Technician | • CCNP: Cisco Certified Networking Professional |
| • CCNA: Cisco Certified Networking Associate | • CCNA: Cisco Certified Networking Associate | • CCNA: Cisco Certified Networking Associate | • CCNP Security |
| • CCNA Security | • CCNA Security | | |
| • CCNP: Cisco Certified Networking Professional | • CCNP: Cisco Certified Networking Professional | | |

| **Careers** | | | |
| • Help Desk Technician | • Computer Support Specialists | • Network Engineer | |
| • System Administrator | • Computer Systems Specialists | • Systems Engineer | |
| • Desktop Support Technician | • Network and Computer Systems Administrators | • IT Engineer | |
| • PC and Network Support Technician | • Network Systems and Data Communications Analysts | • Voice over IP Engineer/Architect | |
| | • Computer and Information Systems Managers | | |
Key Benefits

Cisco Networking Academy provides:

- a pipeline of IT and networking talent needed for economic recovery
- basic and advanced IT/networking curricula
- preparation for industry-recognized certifications
- skills required for high-demand, high-wage jobs in virtually every industry
Top ARRA Grants for Networking Academy

- Broadband Technology Opportunities Program: Public Computer Centers
- Worker Training and Placement in High Growth and Emerging Industry Sectors
- Grants to States for Youth Activities
- Grants to States for Adult Employment and Training Activities
- Grants to States for Dislocated Worker Employment Training
Learn more…

For more information on ARRA grant opportunities and best practices, view the Networking Academy webinar:

Leveraging Cisco Networking Academy for Economic Stimulus Funding

(60 minutes)
Visit the Economic Stimulus Tools Page


- National, state and federal profiles of Networking Academy implementations
- Federal and state grant information
- Data sheets and presentations on Networking Academy and economic stimulus
- Data sheets for the top ARRA 5 grant opportunities

Also: Cisco Grants Office Webinars
View recordings of 11 webinars on ARRA grant topics:
https://grantsofficeevents.webex.com/ec0605l/eventcenter/pr ogram/programDetail.do?siteurl=grantsofficeevents&theActio n=detail&path=listevents_program&progID=169592

For more information, contact
netacad_econstim@cisco.com
21st Century Education Model
Preparing students to be career and college ready

- Interactive teaching and learning, with embedded simulations and virtual tools
- Web-delivered curricula providing 24/7 student access
- Hands-on labs
- Online assessments and grade book
- Instructor professional development tools and resources
- Curricula licensed at no cost (for nonprofit institutions); equipment discounts

In a global economy where the most valuable skill you can sell is your knowledge, a good education is no longer just a pathway to opportunity – it is a prerequisite.

– President Obama, Address to Joint Session of Congress, 2/24/09
Cisco Networking Academy
We Make Connections!

Nancy Null, Academy Instructor
Sollers Point Technical High School, Baltimore, Maryland
Academic Connections

Curricula integrating:

- Language arts standards
- Mathematics standards
- Industry standards
Lab 8.3.1 Interpreting a Service Level Agreement

Objectives
- Describe the purpose of a Service Level Agreement (SLA).
- Review general customer SLA requirements.
- Analyze a sample SLA and answer question regarding content and suitability based on customer needs.

Background / Preparation
An SLA is a formal agreement between a customer and a service provider. The SLA defines the types and levels of service that the customer can expect to receive, as well as any penalties that may exist for non-conformance. In this lab, you will review the purpose of an SLA and the types of customer requirements it can cover. You will then analyze a sample SLA between an ISP and a Customer of a medium-size business and answer questions regarding the provisions of the SLA. You may work alone or in small groups.

The following resource is required:
- Sample SLA (in this lab)

Step 1: Review typical customer needs
A typical customer will have the following requirements regarding an SLA. These requirements should be included in the SLA with the service provider:
- Service description – Describes the service volume and the times when the service is needed. It also describes the times when the service does not need to be covered by the SLA. The services described could be those typically found in a small- to medium-size manufacturing company: e-mail service, electronic data interchange, online accounting, secure remote worker support, remote instrumentation and control systems, and backup and recovery services.
4.1.3 Custom Subnet Masks

**Activity**

Determine the network ID of each IP address.
Enter the binary and decimal values of each octet in the spaces provided.

<table>
<thead>
<tr>
<th>Host Address</th>
<th>10</th>
<th>0</th>
<th>11</th>
<th>84</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subnet Mask</td>
<td>255</td>
<td>256</td>
<td>255</td>
<td>224</td>
</tr>
<tr>
<td>Host Address in binary</td>
<td>00001010</td>
<td>00000000</td>
<td>00001011</td>
<td>01010100</td>
</tr>
<tr>
<td>Subnet Mask in binary</td>
<td>11111111</td>
<td>11111111</td>
<td>11111111</td>
<td>11100000</td>
</tr>
<tr>
<td>Network Address in binary</td>
<td>1111111111</td>
<td>1111111111</td>
<td>1111111111</td>
<td>1110000000</td>
</tr>
</tbody>
</table>

[Check] [Reset] [New Number]
Lab 5.3.7 Configuring DHCP with SDM and the Cisco IOS CLI

<table>
<thead>
<tr>
<th>Device</th>
<th>Host Name</th>
<th>Interface</th>
<th>IP Address</th>
<th>Subnet Mask</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>Customer</td>
<td>Serial 0/0/1 (DTE)</td>
<td>209.165.200.225</td>
<td>255.255.255.224</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fast Ethernet 0/0</td>
<td>192.168.1.1</td>
<td>255.255.255.0</td>
</tr>
</tbody>
</table>
“Today's technical education programs must be designed to meet the criteria set by both higher education institutions and the labor market…

This means programs must provide learning experiences that enable students to meet both academic standards in various disciplines and also meet skill standards for particular industries or occupation clusters.”

Cisco Networking Academy Makes the Connections!

BioScience Education Connections (BEC) Working Group, National Science Foundation: http://www2.edc.org/bec/partnerships/mssw/textlink3.htm
Industry Connections

Engaging, hands-on activities that connect with students!

- Wireless skills
- Security skills
- Design skills
CCNA Discovery
Networking for Home and Small Businesses

Step 2: Log in to the multi-function device and configure the wireless network

a. Open a web browser. In the address line, type http://ip_address, where ip_address is the IP address of the wireless router (default is 192.168.1.1). At the prompt, leave the username textbox empty, but type the password assigned to the router. The default password is admin. Click OK.

b. In the main menu, click on the Wireless option.

c. In the Basic Wireless Settings window, the Network Mode shows mixed by default, because the AP supports 802.11b, g, and n wireless devices. You can use any of these standards to connect to the AP. If the wireless portion of the multi-function device is NOT being used, the network mode would be set to Disabled. Leave the default of Mixed selected.

d. Delete the default SSID (linksys) in the Network Name (SSID) textbox. Enter a new SSID using your last name or name chosen by your instructor. SSIDs are case-sensitive.

e. Write down the exact SSID name that you are using.

8.4.2 Using a Firewall

Single firewall configuration

A single firewall has three areas, one for the external network, the internal network, and the DMZ. All traffic is sent to the firewall from the external network. The firewall is then required to monitor the traffic and determine what traffic should be passed to the DMZ, what traffic should be passed internally, and what should be denied altogether.

Two firewall configuration

In a two firewall configuration, there is an internal and external firewall with the DMZ located between them. The external firewall is less restrictive and allows internet user access to the services in the DMZ as well as allowing a traffic that any internal user requested to pass through. The internal firewall is more restrictive and protects the internal network from unauthorized access.

A single firewall configuration is appropriate for smaller, less congested networks. However, a single firewall configuration does have a single point of failure and can be overtaxed. A two-firewall configuration is more appropriate for larger, more complex networks that handle a lot more traffic.
Lab 5.2.3.3 Designing the Core Layer

Preposed FilmCompany Physical Layout
Tools That Connect with Students

- Online 24/7 content
- Packet Tracer
- A community of learners!

https://www.academynetspace.com/
The switch deletes entries from the MAC address table if they are not used within a certain period of time. The name given to this period of time is the aging time; removal of an entry is called aging out.

As a unicast frame enters a port, the switch finds the source MAC address in the frame. It then searches the MAC table, looking for an entry that matches the address.

If the source MAC address is not in the table, the switch adds a MAC address and port number entry and sets the aging timer. If the source MAC address already exists, the switch resets the aging timer.

Next, the switch checks the table for the destination MAC address. If an entry exists, the switch forwards the frame out the appropriate port. If the entry does not exist, the switch floods the frame out every active port except the port upon which it was received.
Frequent extension and application activities

Activity

Decide the problems solved by implementing VLANs.

Select the scenarios where VLANs help to solve the problem stated.

1. Users in the warehouse are accessing records in the payroll department. Management has asked you to isolate the payroll department from the rest of the network.

2. Staff in the sales department continually join the network and then leave. This causes quite a bit of broadcast traffic as machines try to discover each other. These broadcasts slow down network performance in the graphics department.

3. During the execution of a large project, members of the Marketing, Sales and Public relations departments collaborate on different parts of the project. The Network administrator is concerned about response time on the collaboration server.

4. The company plans on installing a VoIP system but worries that voice traffic will be unusable due to the large amount of data on the network.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
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<tbody>
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</tbody>
</table>
Lab Activities
Simulation / Hands-On
Delivering Diversified Instruction

- Multi-sensory content
- Available anywhere, anytime
About Sollers Point Technical High School

Cisco Networking Academy

sollers point tech
ISO 9001:2000

An ISO-Registered Premier Gold Seal Technical High School
Baltimore, Maryland

allied health | auto collision repair technology | auto services technology | carpentry careers | cosmetology | culinary arts | electrical careers | graphic print communications | engineering technician | industrial technician | information systems management | network academy(cisco)
A Community Facing Change…

…a program preparing students for the future.
Work and Learning Connections

- Partnerships
- Internships
- Articulation
Where Do We Connect?

- College
  - Parallel enrollment, articulated credits

- Industry
  - 43% of current class: internships next year!

I am so jealous of these future Cisco engineers… you can’t beat the education they’re getting and it’s free! I am happy to see the curriculum progressing at the same rate as job requirements that are coming.

– Brandon Dixon, 2006 graduate, currently completing a B.S. degree and working in the computer security industry
Academy Connections Work!

- For Instructors
  - Quality content
  - Instructional support

- For Students
  - Skillset
  - Knowledge
  - Employment
  - College
Grants to States for Youth Activities: DOL

Grant Description: $1.18 billion in formula grants will be provided to state and local employment and training service providers to enhance programs that prepare youth for employment and/or post-secondary education through linkages between academic and occupational learning.

Program Priorities: Expanded summer youth employment opportunities during 2009. 30% of funding must be used to serve out of school youth. Intended to include youth who are disconnected from education and the workforce. Priority for serving veterans and spouses.

Applicants

Eligibility
Local Workforce Investment Boards and One-Stop Career Centers will receive funding from State Departments of Labor.

More specific eligibility criteria and timelines will vary by state.

Federal to State Allocations


A list of State WIB contacts is available at www.doleta.gov/usworkforce/statecon.cfm

A searchable database of current One-Stop Career Centers is at www.servicelocator.org and www.careeronestop.org

Award Info

Timeline

Federal to State Timeline
State allocations made available on March 6

State to Local Timeline
SDOLs will distribute funds to LWIBs and OSCCs based on priorities and timelines established by each state.

Funds must be obligated to local agencies by September 30, 2010; however ETA encourages states to obligate funds by mid-April.

Guidance Letter for DOL

Youth activities under WIA are allowable with 2 changes: increase in age eligibility to 24 max; work readiness will determine effectiveness of summer employment.

Work experiences and other activities that expose youth to opportunities in ‘green’ educational and career pathways.

Integrate work and classroom learning.

Academic and occupational linkages.

Summer employment = any set of allowable youth services from May 1–Sept 30, if it includes work experience.

Some Allowable Expenses
Grants to States for Dislocated Worker Training

**Grant Description:** $1.43 billion in WIA Dislocated Worker formula grants for states to provide employment and training services to dislocated workers through the One-Stop system, to support reentry into the recovering job market.

**Program Priorities:** Agencies that provide eligible services to recipients of public assistance and other low-income individuals for intensive services and training services (for substantially increased numbers of dislocated workers).

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**Eligibility**
Local WIBs and OSCCs will receive funding from State Departments of Labor.

**Federal to State Allocations**

**State to Local Awards**
Specific eligibility criteria/timelines vary by state.

Searchable database of OSCCs is available at www.servicelocator.org and www.careeronestop.org

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**Federal to State**
Allocations made March 6, SDOLs will begin receiving funds immediately.

**State to Local**
State departments will distribute funds to LWIBs and OSCCs on priorities and timelines established by each state.

Funds must be obligated to local agencies by September 30, 2010.

Local agencies must expend funds by June 30, 2011.

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**Some Allowable Expenses**

Guidance Letter for DOL

Training activities can include:
- Occupational skills training
- On-the-job training
- Programs that combine workplace training and related instruction
- Skill upgrade and retraining

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- **Applicants**
- **Award Info**
- **Timeline**
- **Some Allowable Expenses**