Cisco Networking Academy and NDG Present

Give Students Limitless Opportunities with Linux Courses

In collaboration with

Welcome to the 2nd session of the *Intro to Linux* webinar series!

- Use the Q and A panel to ask questions.
- Use the Chat panel to communicate with attendees and panelists.
- A link to a recording of the session will be sent to all registered attendees.
- Please take the feedback survey at the end of the webinar.

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Presenters and Panel

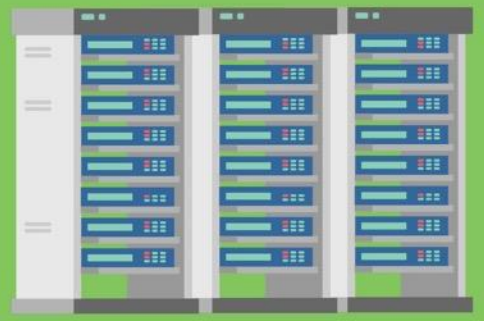
- Rich Weeks – NDG President
- Jorge Leiton – Cisco Learning Product Manager
- Raoul Bhatia – Cisco Platform and Service Operations Manager
- Helmut Heise – Cisco TAC Wireless Engineer
- Nick Goldwater – Cisco TAC Engineer

Agenda

- Summarize information from session 1
  - Why learn Linux? Job opportunities for people that know Linux.
- Cisco team members will share how they utilize Linux at Cisco
  - Cisco Service Grid
  - Cisco Linux and Wireless
  - Linux @ Work - Why is Linux important?
- Linux courses available via Cisco Networking Academy
- Questions and Answers

Linux is Everywhere!

THE WORLD RUNS SMARTER WITH LINUX



99% of the world's top supercomputers run Linux

1.4 Billion active users of Linux-based Android devices

80% of all stock exchanges rely on Linux

LINUX GOES WHERE NO MAN HAS GONE BEFORE

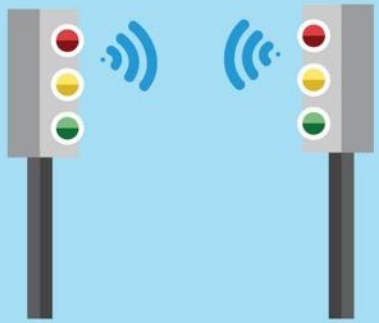
32 space missions
completed with Linux

Linux is helping NASA's
Curiosity Rover
explore Mars

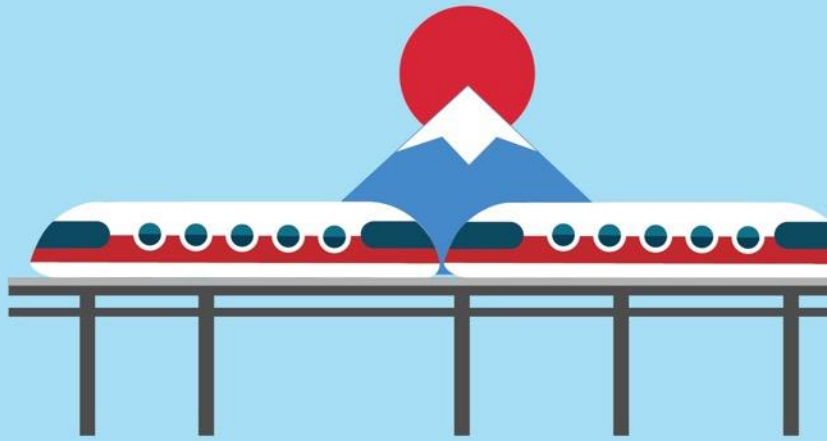
SpaceX uses Linux
on the Dragon and Falcon 9
spacecraft

LINUX IS TRANSFORMING TRANSPORTATION

US air traffic
control runs on Linux

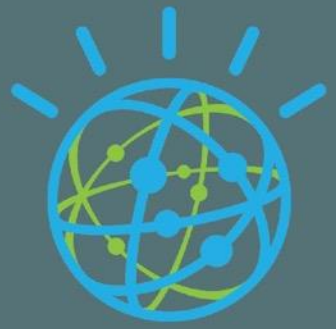


Queensland Motorways
relies on Linux for smart traffic management

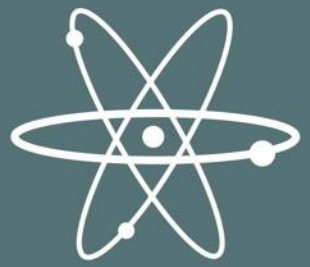


Linux helps run
bullet trains in Japan

FROM BIG DATA TO THE BIG BANG



Linux helps IBM's Watson analyze **200 Million** pages of clinical data in 15 seconds



"The God Particle" was discovered using CERN's Linux-powered Large Hadron Collider

Google, Amazon, even Microsoft use Linux to power their cloud services

It’s not just one type of job.

System Admin

Cloud Computing

DevOps

Networking

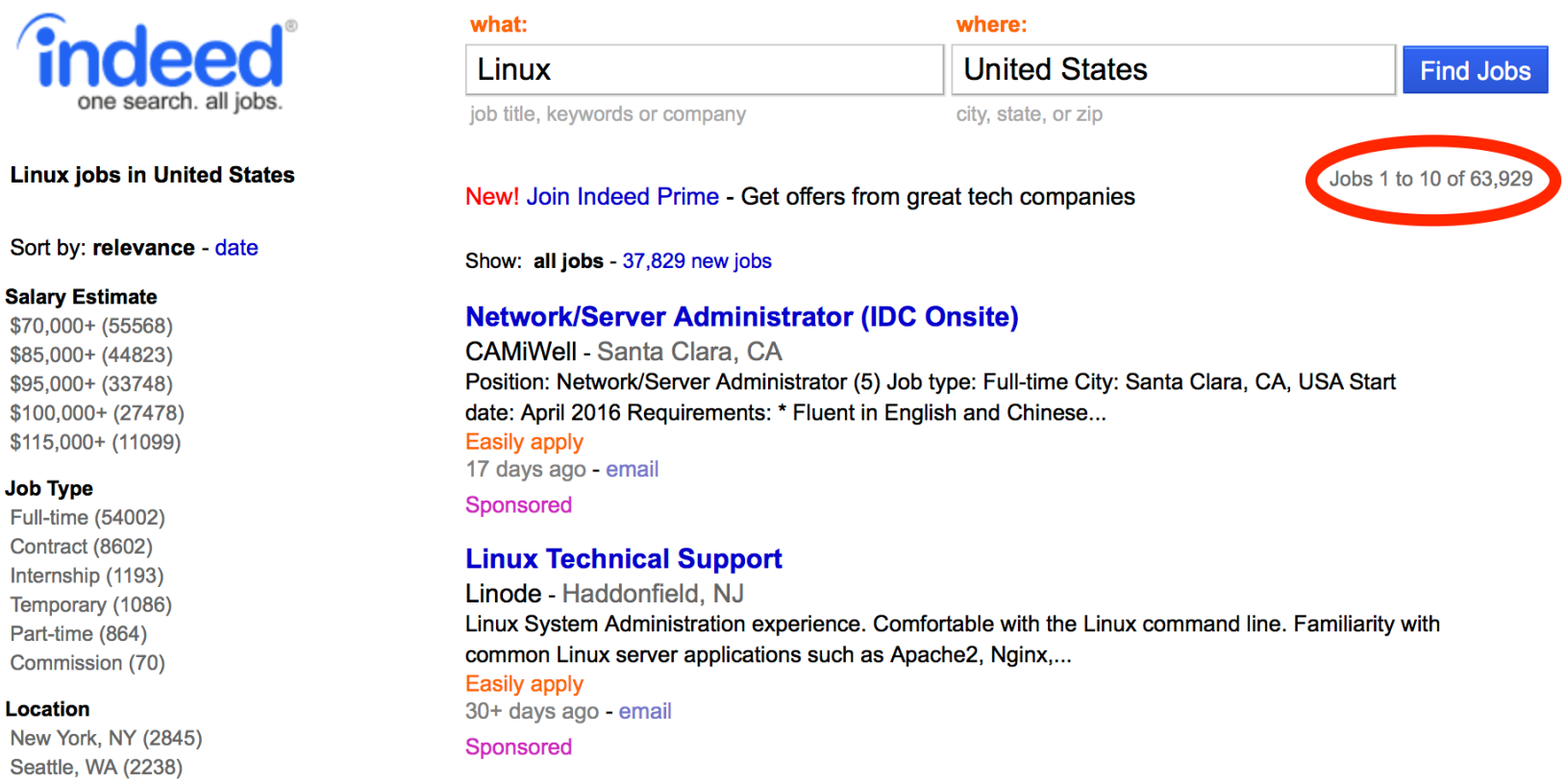
Cyber Security

Design/Arch
Planning

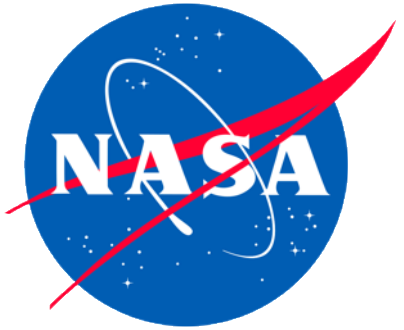
Data
Management

Linux Skills Are In Demand

Indeed.com Job Search Keyword = Linux	
76,594	China
63,929	USA
19,867	Japan
19,030	India
10,965	England
8,576	France
8,362	Germany
1,255	Australia
1,187	Mexico



Companies That Use Linux



Cisco ServiceGrid

Cisco Networking Academy – Linux in the Industry

Raoul Bhatia (raobhati@cisco.com)
Platform and Service Operations Manager
November 2016

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Agenda

- Introduction
- What is Cisco ServiceGrid?
- Linux on the Server
- COSI – Open Source at Cisco
- Linux on the Desktop
- Closing Words

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Introduction

Who am I?

- Platform and Service Operations Manager for the Cisco ServiceGrid solution
- My team currently operates 300+ Linux servers around the globe

Background – Powered by Linux

- Cofounded and operated an Internet service provider for 8 years
- 10+ years of work experience in the Internet industry, including high-availability, data center, network, and services operations
- Contributor to various open-source projects

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What is Cisco ServiceGrid?

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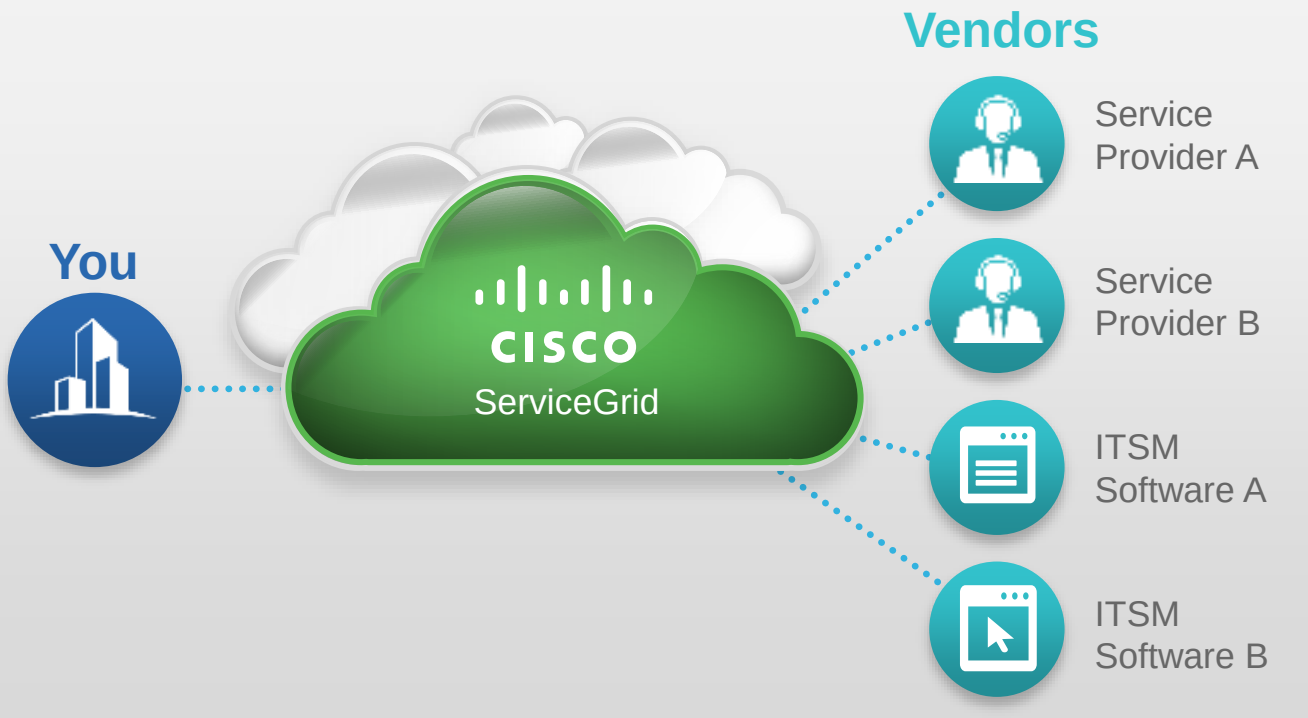
What is ServiceGrid?

Cisco's Service Management Integration SaaS Offer

- Standardized, best practice ITSM integration
- Automate business processes and support workflows
- "Connect once – connect all"

Multi-Party Service Collaboration



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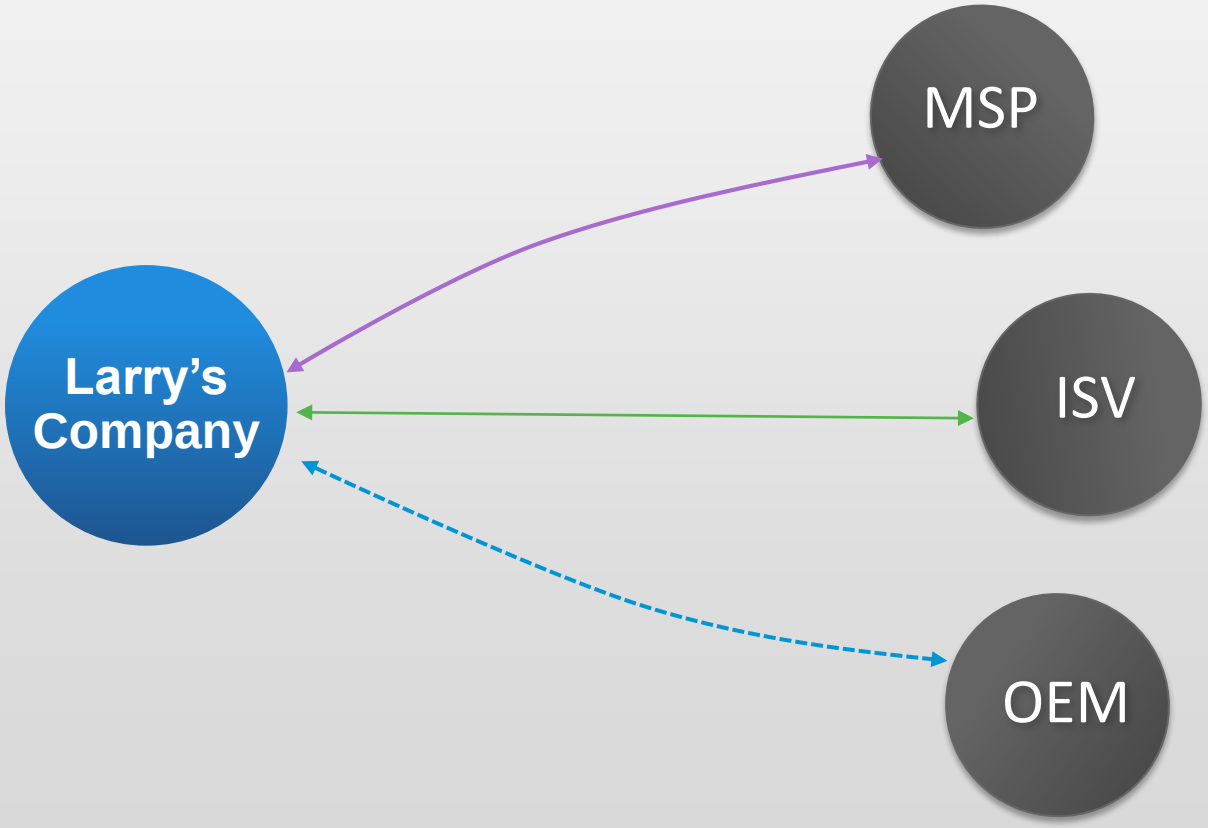
Managing Third Party Support

Individual, Custom Developed Connections to Service Providers, Vendors, OEMs



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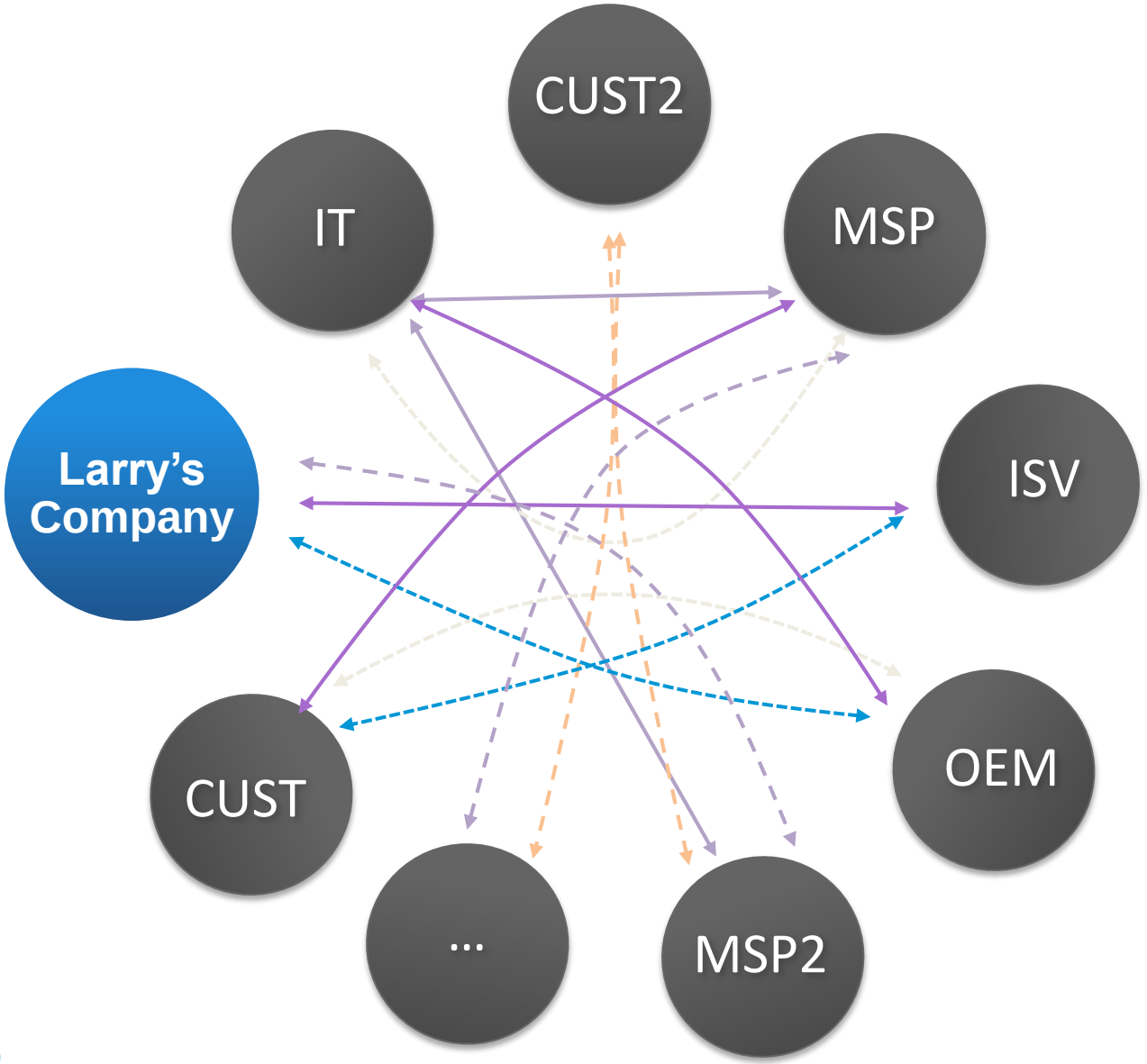
Over Time The Service Ecosphere Grows...



Not scalable
Poor visibility
High costs

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There Must Be a Better Way ....

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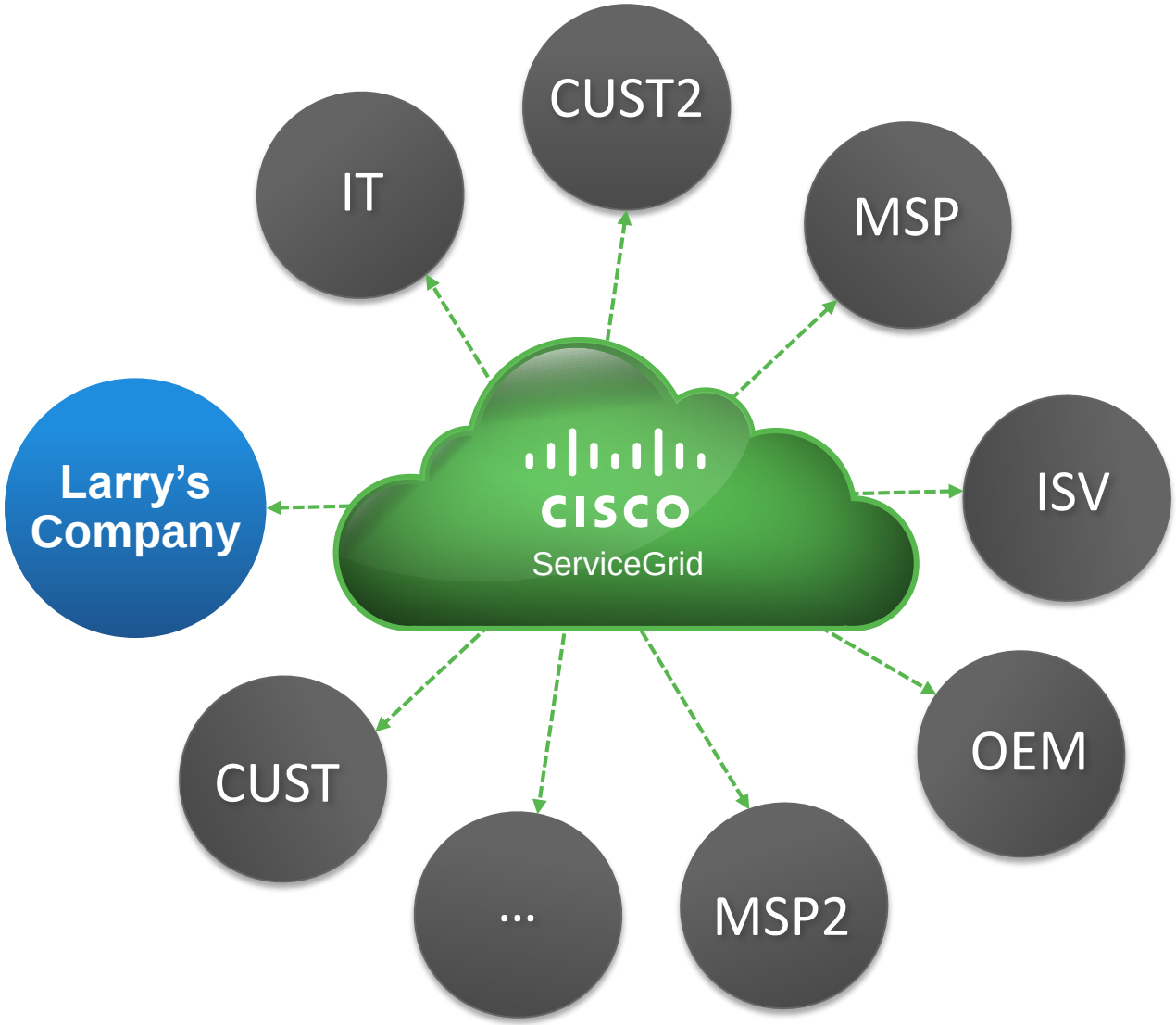
ServiceGrid – Connect Once – Connect All!



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ServiceGrid – Technical Details

How and where we are using Linux and Open Source technology.

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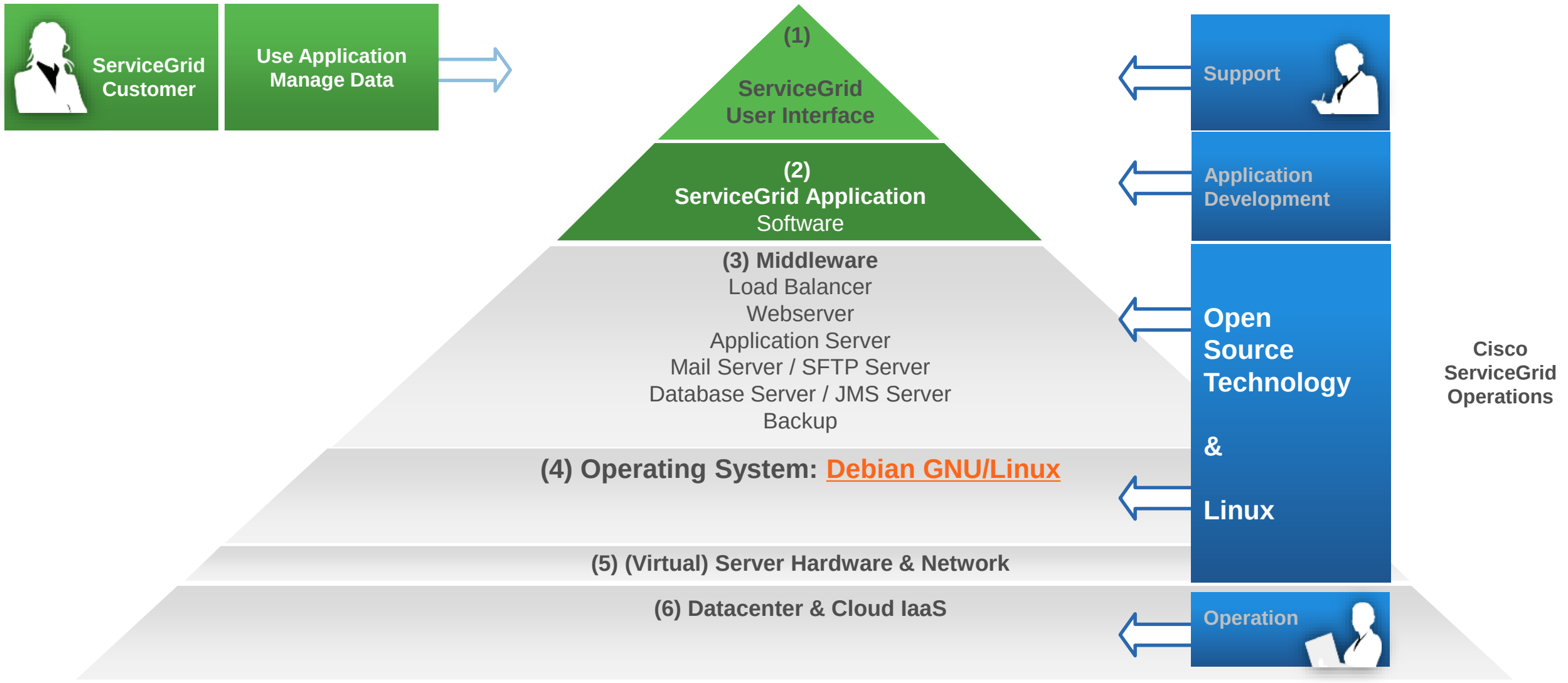
Where Linux is used



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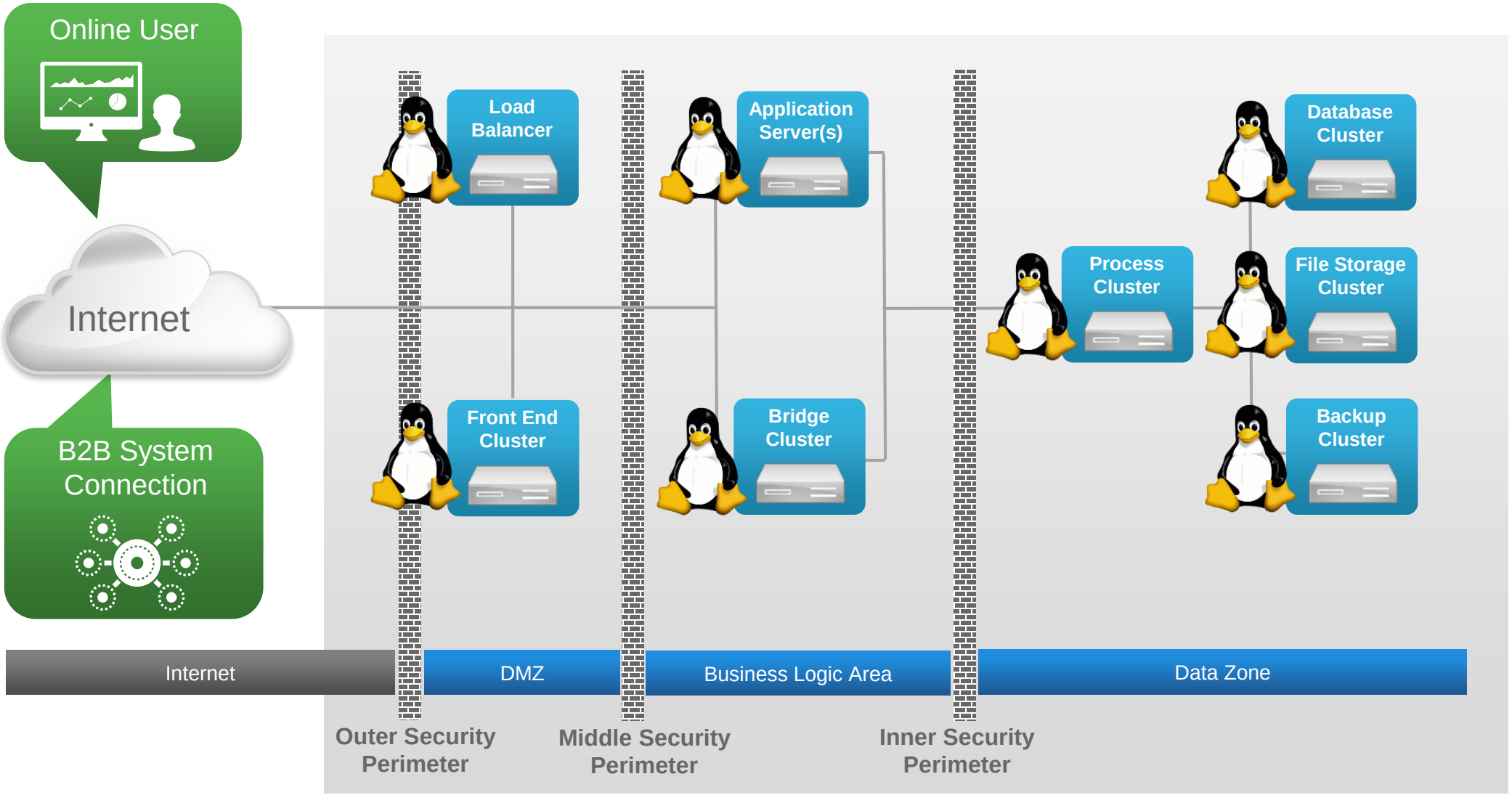
Let’s Peek into the Data Center …



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How Linux is used in our Team

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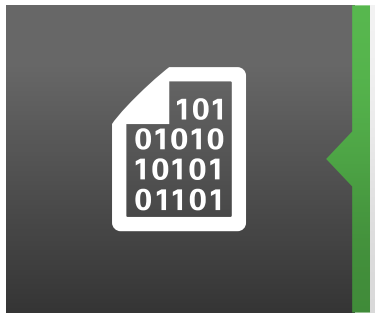
How Linux is used in our Team

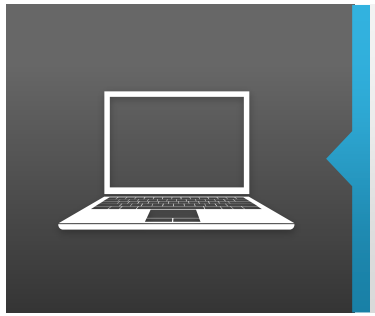
Linux on the Server

- Debian GNU/Linux – for many internal & external services
- *Other Linux Distributions throughout Cisco include CEL, RHEL, SuSE, etc.*



COSI

- Open Source at Cisco



Linux on the Desktop

- Linux available as a Desktop OS of choice
- Adhere to company policies (Security, encryption, backup, etc.)

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Linux on the Server

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Examples of Open Source Software

- **Debian GNU/Linux (Operating System)**

- Nginx & ldirectord (Webserver, Load balancer)
- Postfix (Mailserver)
- ProFTPD (SFTP Server)
- Apache Tomcat (Java Application Server)
- HornetQ & Apache Artemis (JMS Server)
- PostgreSQL (Database)

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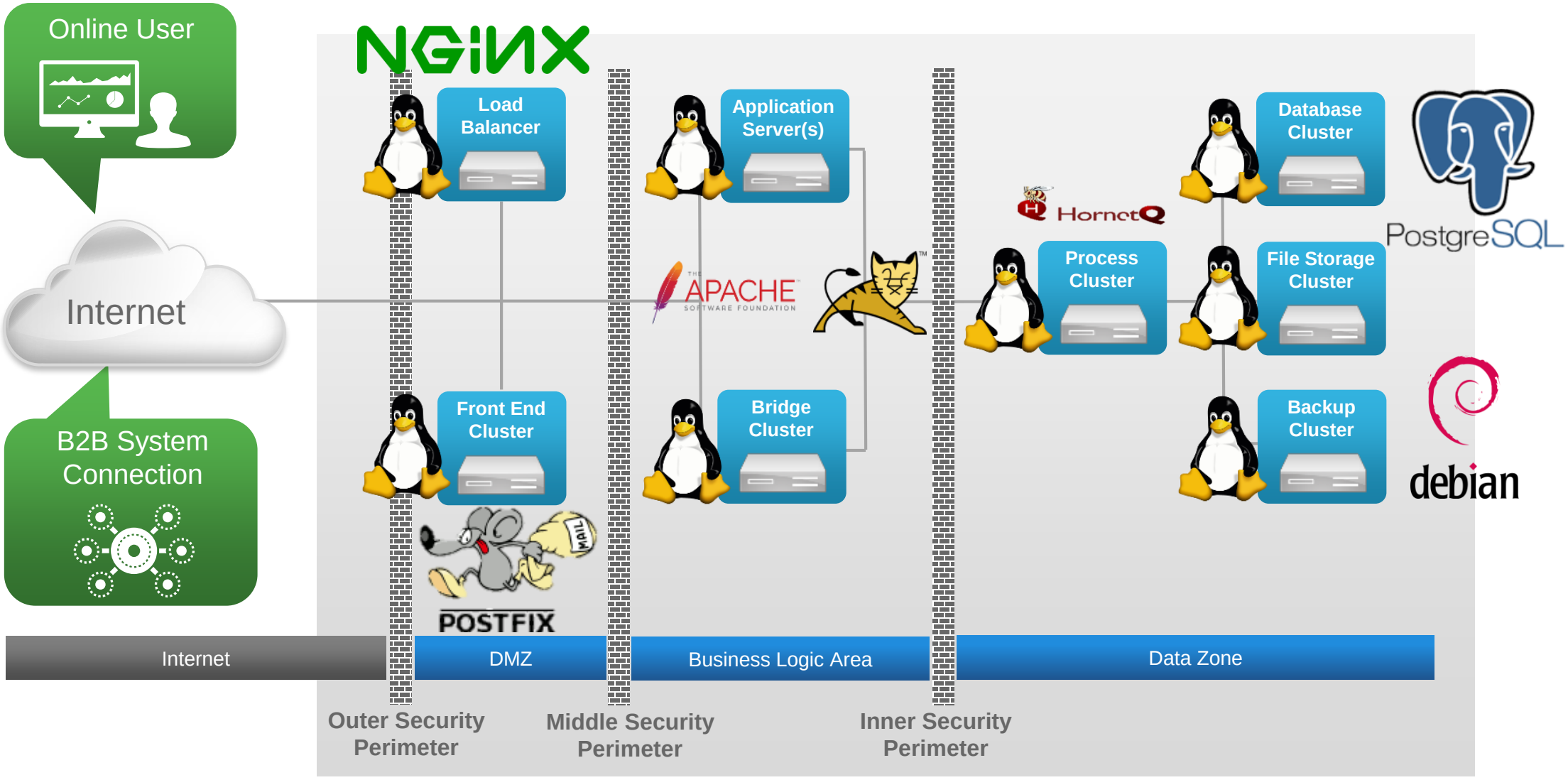
Back into the data center …



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Examples of Supporting Infrastructure

- OpenStack (IaaS)
- Libvirt & KVM (Virtualization)
- Puppet (Configuration Management, Infrastructure as a Code)
- “LAMP” Stack (Management Webinterface)
- Git (Version Control System)
- Gitlab (Git repository management)
- NRPE (Monitoring)
- Shell Scripts - Wherever we need a quick solution ;-)

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COSI -
Open Source at Cisco

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Cisco Commercial and Open Source Initiative (COSI)

Goal

- Use of and contributions in Open Source
- Third party software & license compliance

What Cisco does

- Use of Open Source software in Cisco products, i.e. Cisco ServiceGrid
- Givebacks to the open source community
  - i.e. Eclipse Foundation, Linux Foundation, Apache Foundation, Letsencrypt, OpenStack, SpamAssassin, Puppet, gazillion of small contributions, etc.
- Support standards development (i.e. RFCs)

cisco.com/c/en/us/about/open-source
cisco.com/c/en/us/about/open-source/contributions

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Linux on the Desktop

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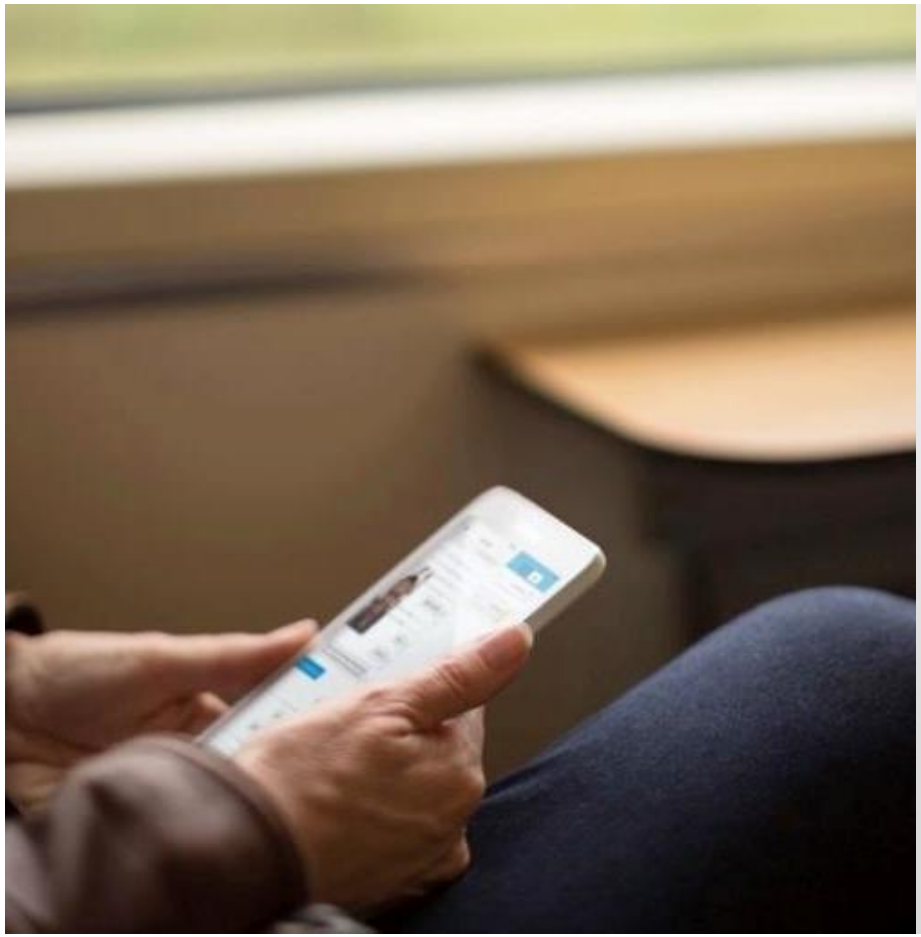
Linux on the Desktop



- Personal Preference (10 years)
  - Firefox, Thunderbird, LibreOffice
  - Huge software repositories
  - Tools that I love: Shell scripts, SSH, ...
- Security is important
- Comply to Cisco policies
  - I.e. Full disk encryption

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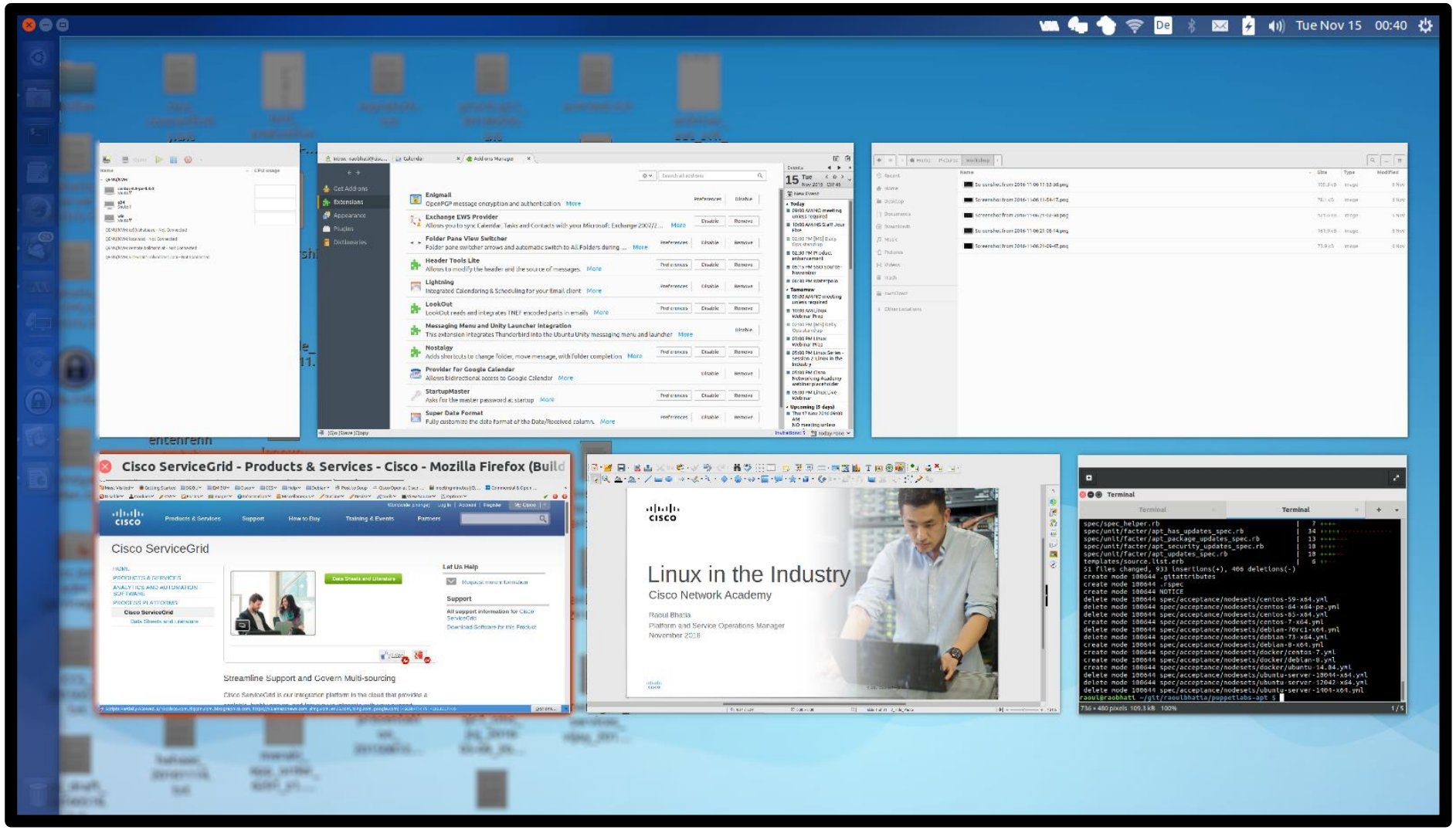
My Linux Desktop



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Linux Rocks!

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ServiceGrid Resources

cisco.com/go/servicegrid

YouTube ServiceGrid

@ ServiceGrid

CONTACT

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Platform and Service Operations

Email: raobhati@cisco.com

LinkedIn: https://at.linkedin.com/in/raoulbhatia
Xing:
https://www.xing.com/profile/Raoul_Bhatia

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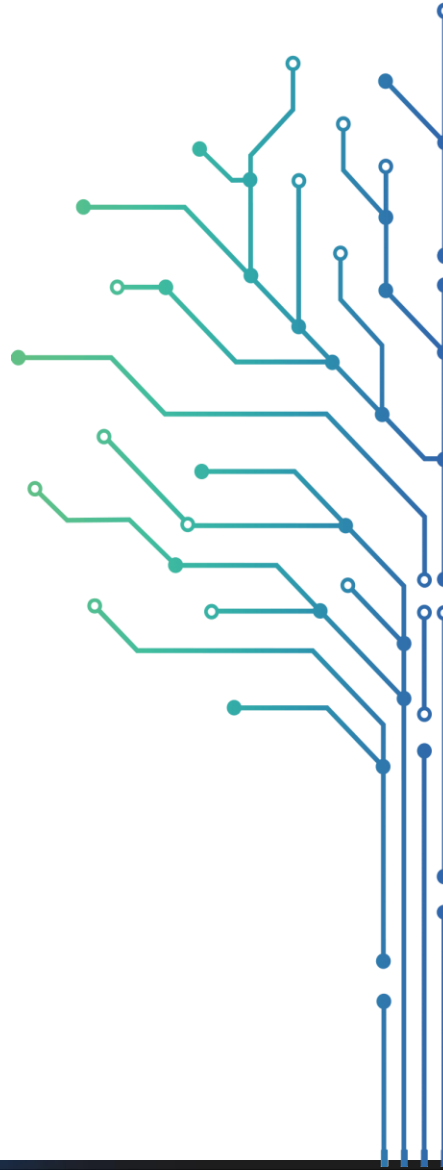

Linux and Wireless

Helmut Heise

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Introduction

Who am I?

- Cisco TAC (Technical Assistance Center) Wireless Engineer
- My team currently operates
  - Wireless controllers
  - Access points
  - Wireless phones
  - Large layer 2 and 3 deployments
- I have about 8 years working very close with Linux servers

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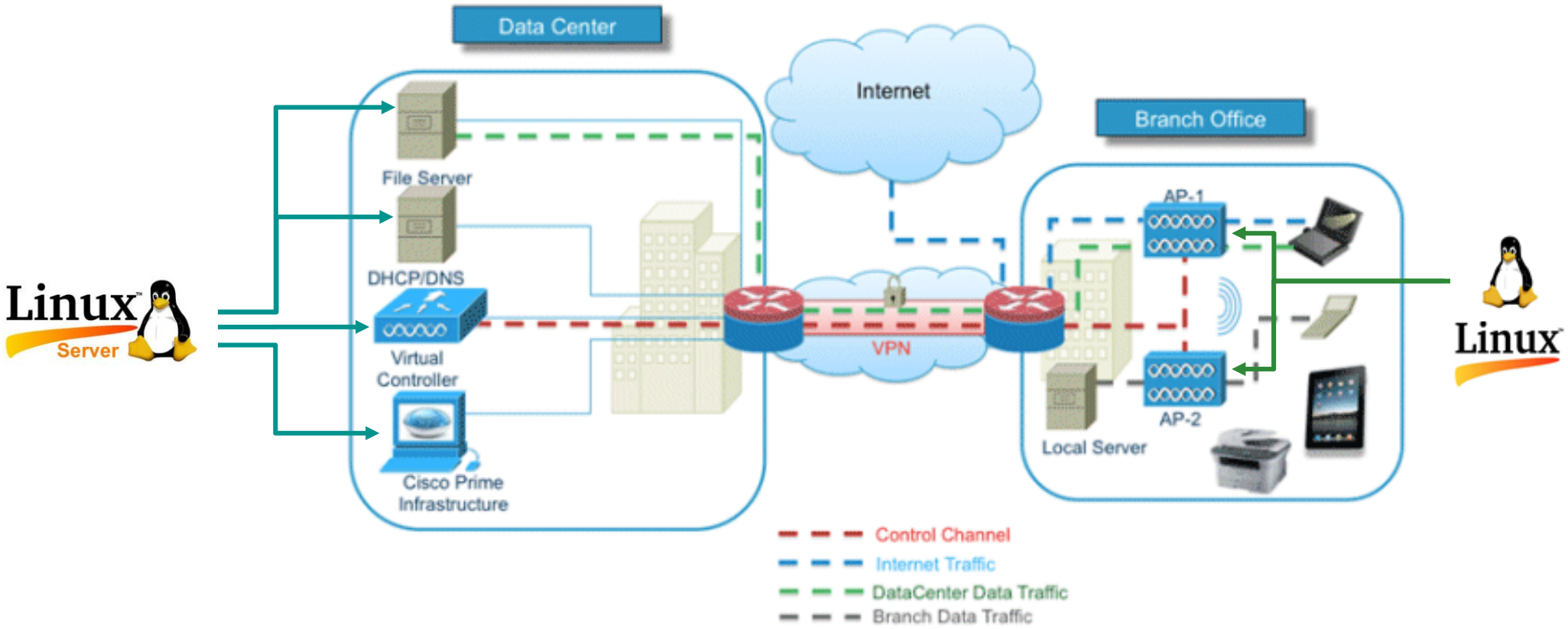
Linux in a regular Wireless TAC Day



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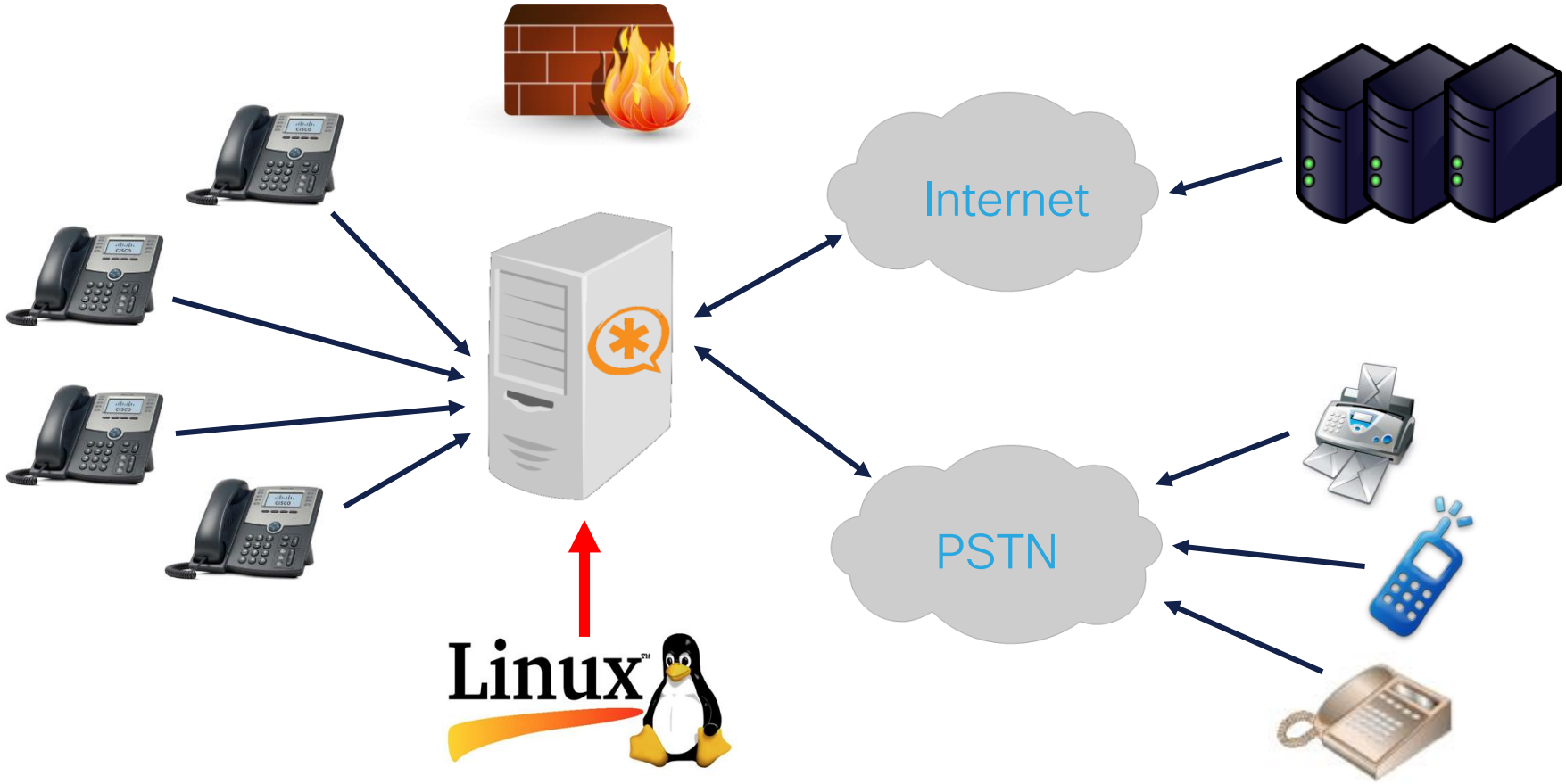
Linux in a regular Wireless TAC Day



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Linux @ Work

Why is Linux important?

Nick Goldwater
ngoldwat@cisco.com

WAAS

Nexus

ASA

IOS-XE
ASR1K

UCS

IOS-XE ISR-4400

VIRTUALLY ALL CISCO PRODUCTS MAKE USE OF OPEN SOURCE.

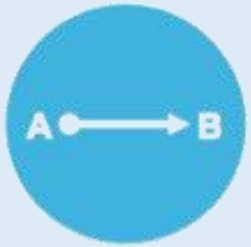
I support a product called APIC-EM

In a nutshell:

APIC-EM is the mechanism to separate the **what** from the **how**.

In other words, you tell APIC-EM what it is you want to do and then it does it for you.

APIC-EM – Controller based Automation



SIMPLE

Manual	Automated
Box-Centric	Network-wide
Provision in Months	Hours

OPEN

Static	Programmable API
Greenfield	Brownfield + Greenfield
Expert CLI	Policy + GUI

Welcome to the Cisco APIC-EM Appliance - Powered by Grapevine

System information as of Sun Nov 13 21:26:59 UTC 2016

System load: 0.97 Processes: 546
Usage of /: 8.6% of 428.79GB Users logged in: 1
Memory usage: 50% IP address for eth0: 172.18.123.11
Swap usage: 0% IP address for grape-br0: 169.254.0.1

APIC-EM Version: 1.3.0.4383
Grapevine Version: 1.3.0.14944.dev1017-ge97cc63

Last login: Thu Nov 3 21:36:13 2016 from 172.18.123.130
(grapevine)
[Sun Nov 13 21:27:00 UTC] grapevine@172.18.123.11 (grapevine-root-1) ~

Links

http://opensource.cisco.com/

Cisco Engineers Win Awards for Open Source Spam Filtering - Doing Business With Cisco

Cisco Open SDN Controller

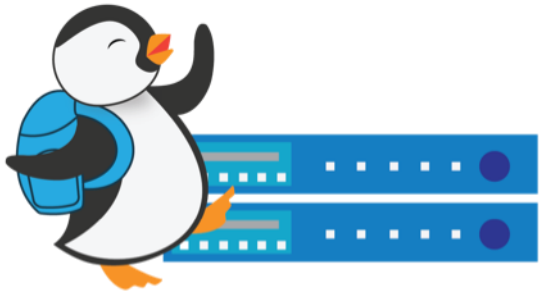
Cisco Application-Centric Infrastructure (ACI) and Linux Containers

Linux Containers: Why They’re in Your Future and What Has to Happen First

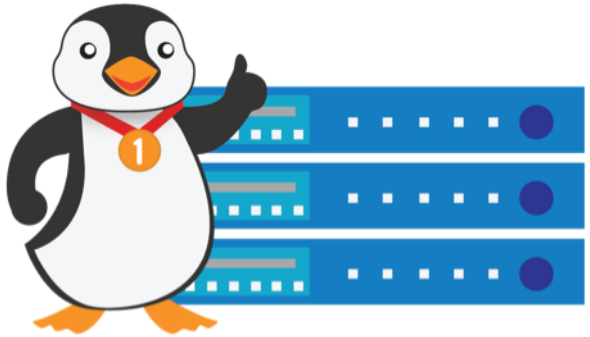
CISCO

NDG Linux Courses Offered to Cisco Networking Academies

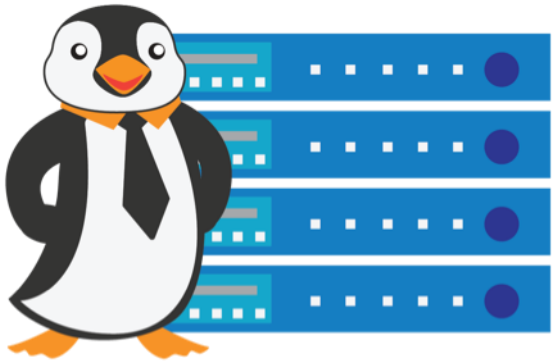
NDG Linux Unhatched



NDG Linux Essentials



NDG Linux 1



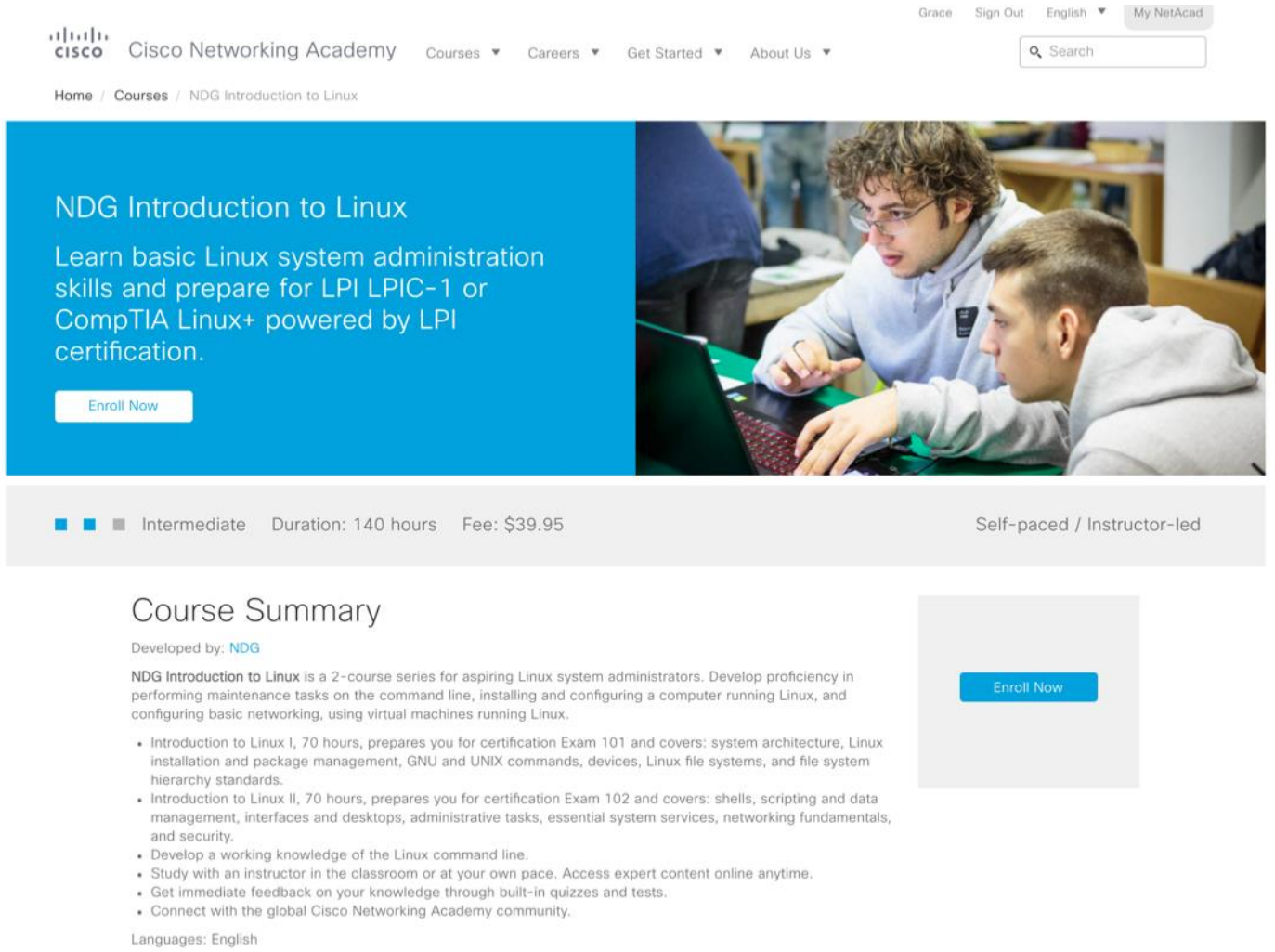
NDG Linux 2

Economical

Course Title	Cost to Instructors	Cost to Students
NDG Linux Unhatched	**FREE**	**FREE**
NDG Linux Essentials	**FREE**	**FREE**
NDG Linux I	**FREE**	$39.95*
NDG Linux II	**FREE**	$39.95*

** Paid by the learning institution or the individual*

Available in Networking Academy



Learn By Doing!

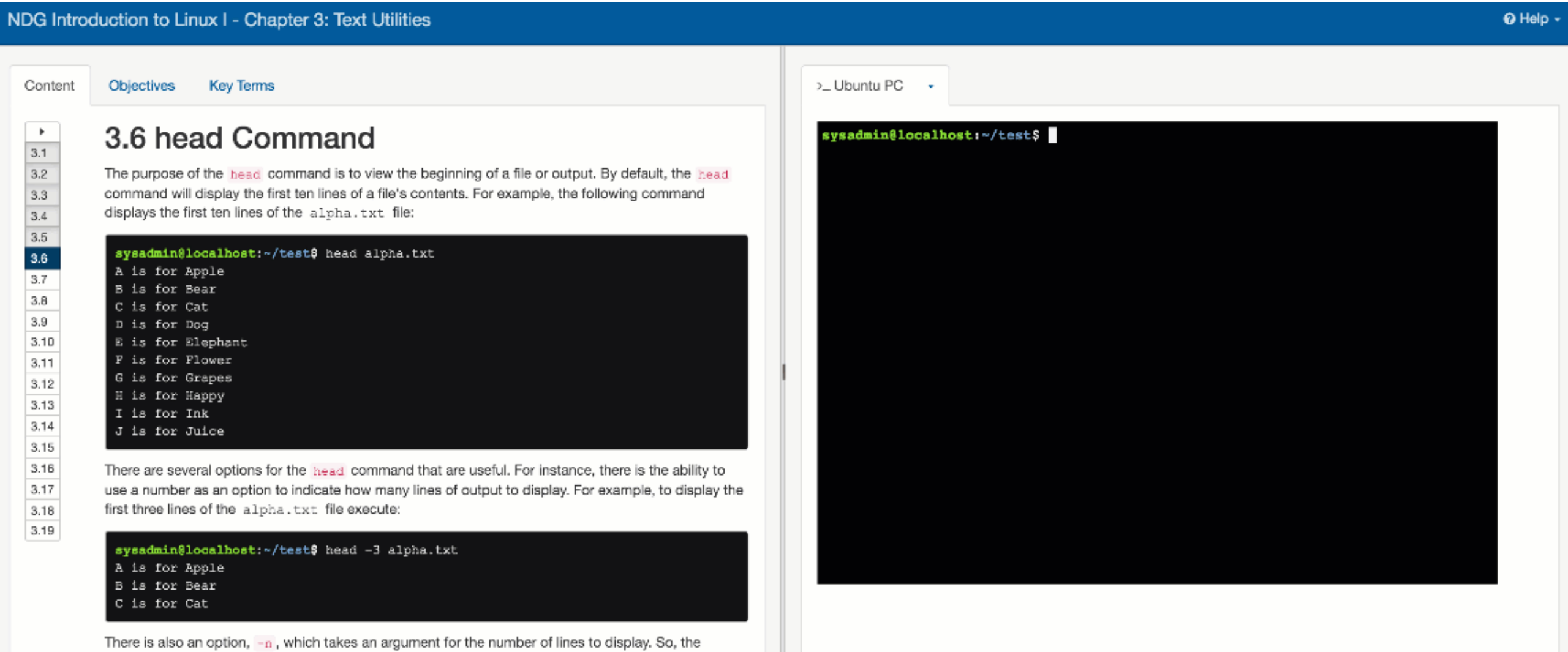
“I hear and I forget.

I see and I remember.

I do and I understand.”

Confucius

Course Content with Virtual Machine

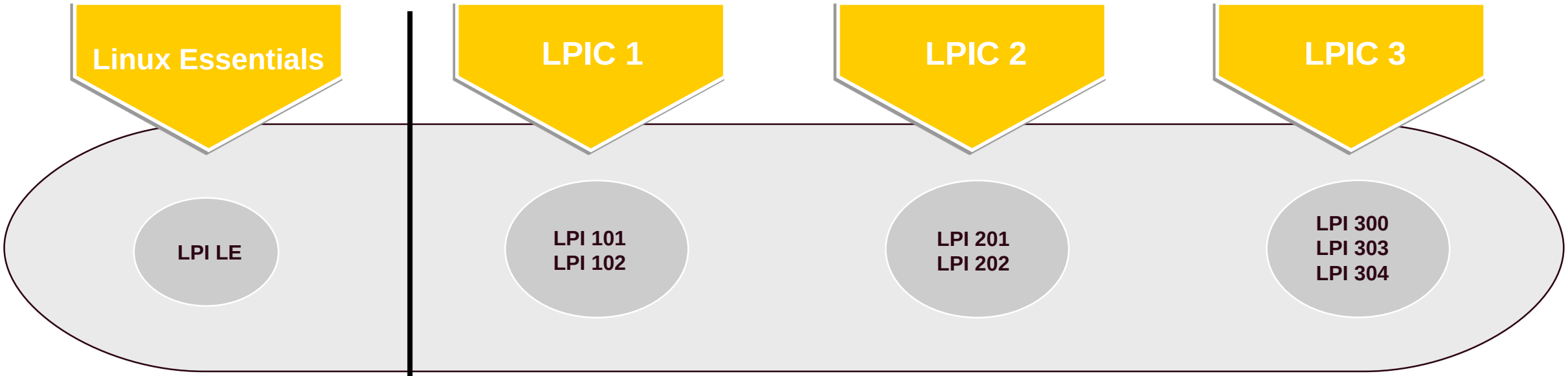


Certifications Help Students Stand Out

44% of hiring managers are more likely to hire a candidate with Linux certification.

Courses align to, LPI Linux Essentials, LPI LPIC-1 or CompTIA Linux+

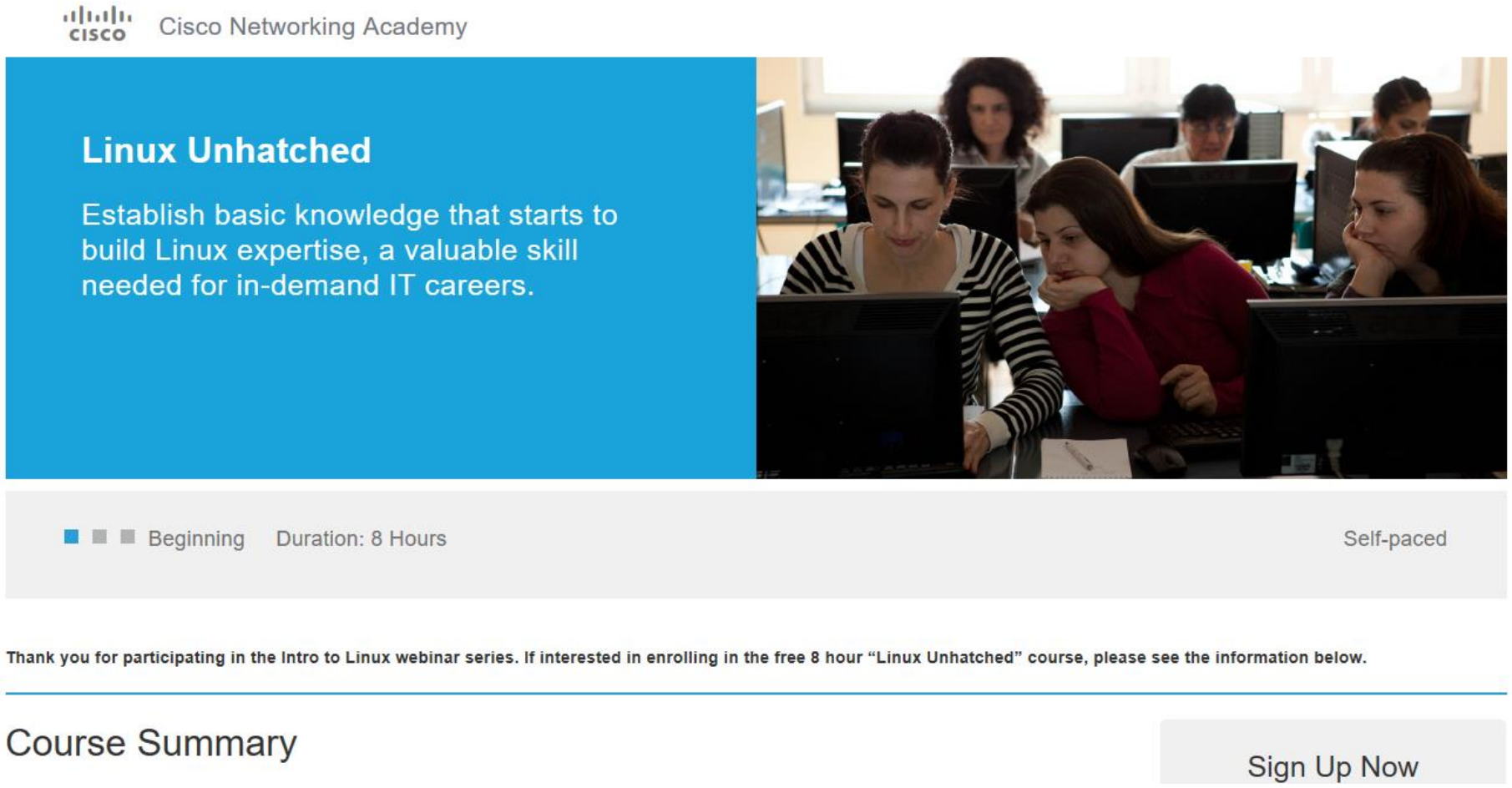
Linux Professional Institute



More info	More info	More info	More info
Entry Level	Junior Level	Advanced Level	Senior Level / Specialty Areas
Certificate Program	Professional Certification	Professional Certification	Professional Certification
0-12 Months	1-2 Years	2-3 Years	3+ Years

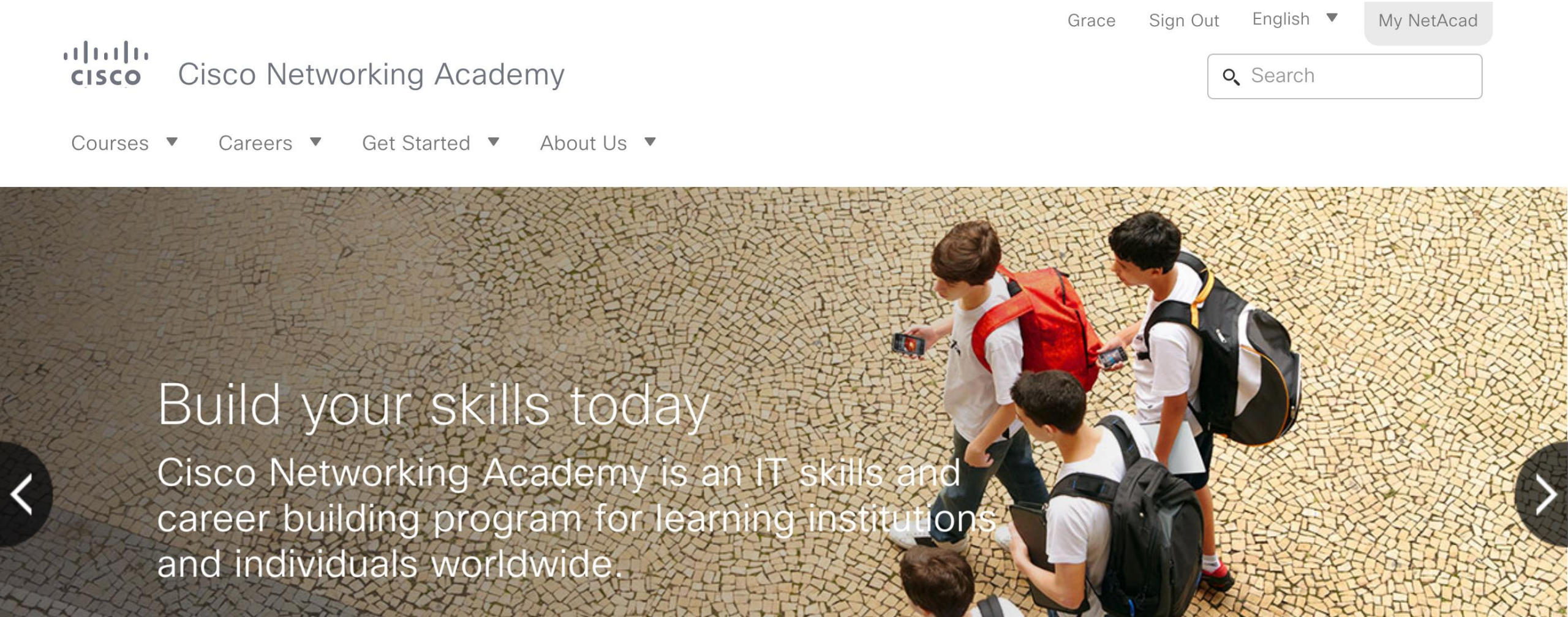
How To Access Linux Unhatched

Website: netacad.com/campaign/443092



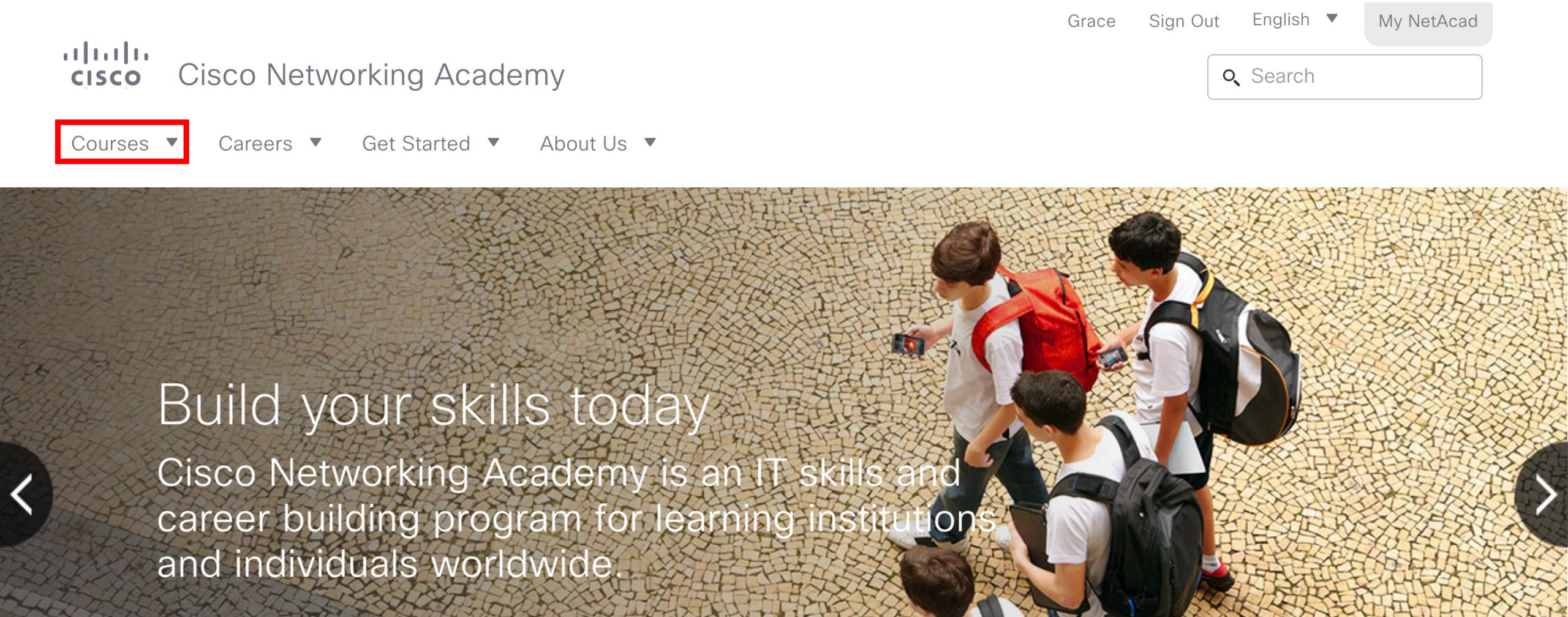
How To Access

1. Go to http://netacad.com



How To Access

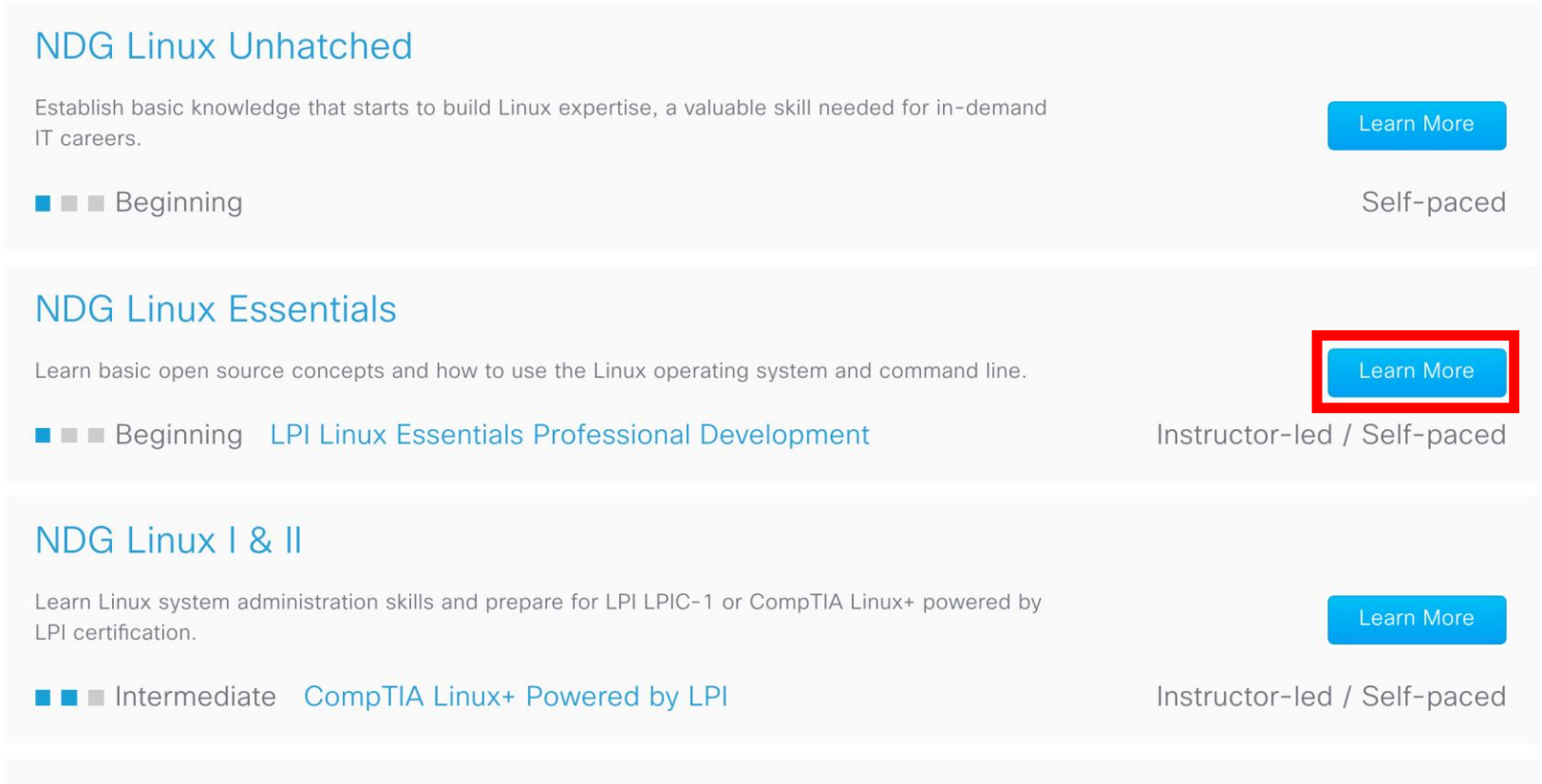
2. Click **Courses**



How To Access

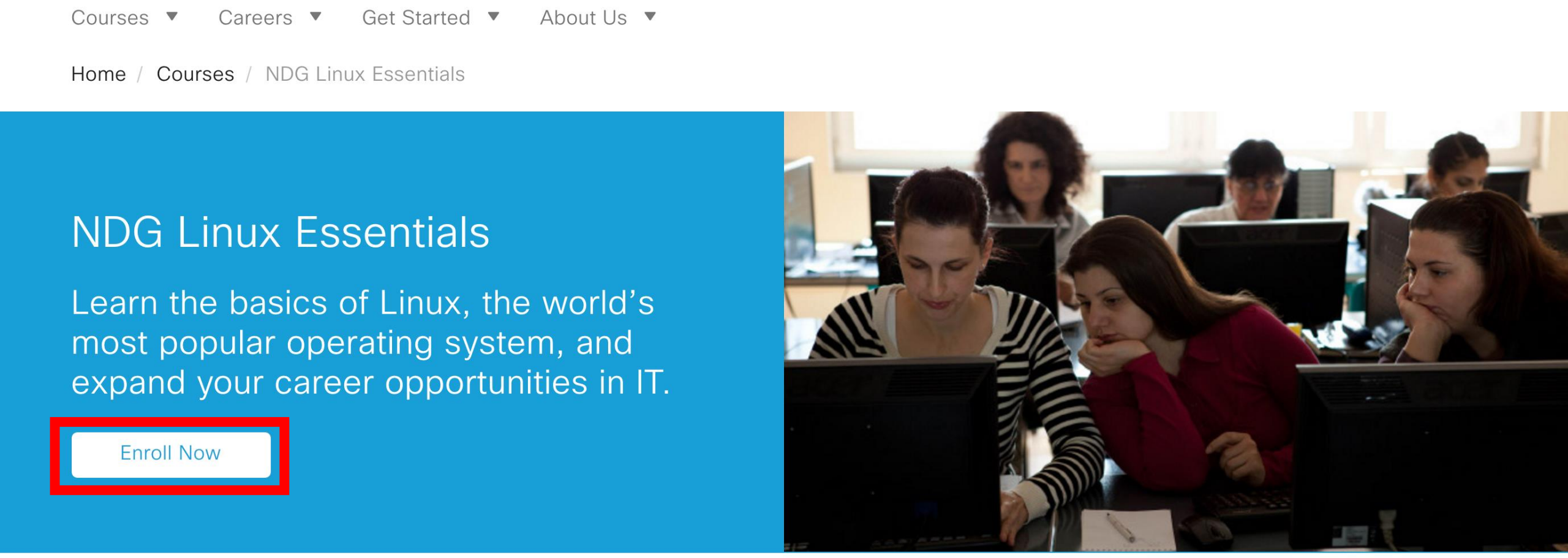
3. Choose Course

If you are not part of the Cisco Networking Academy, you can only enroll in Linux Essentials.



How To Access

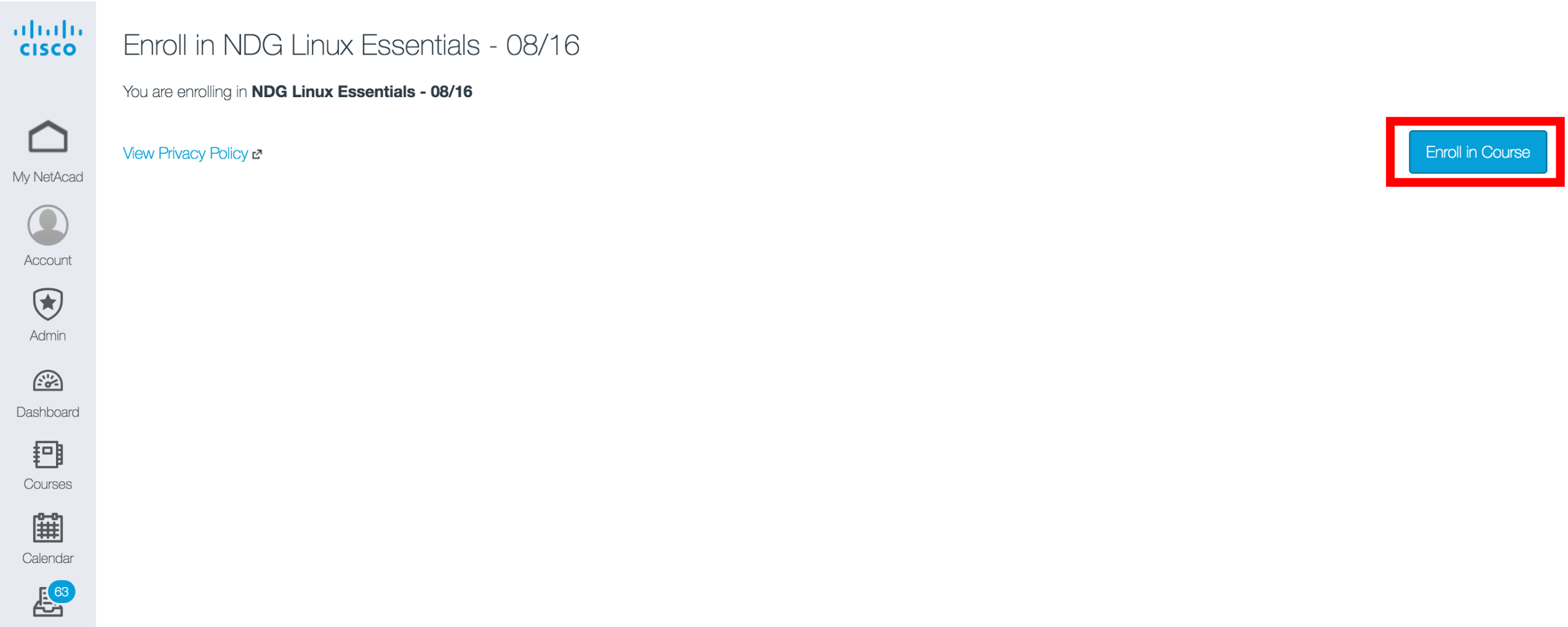
4. Click **Enroll Now**



How To Access

If you are part of Cisco Networking Academy…

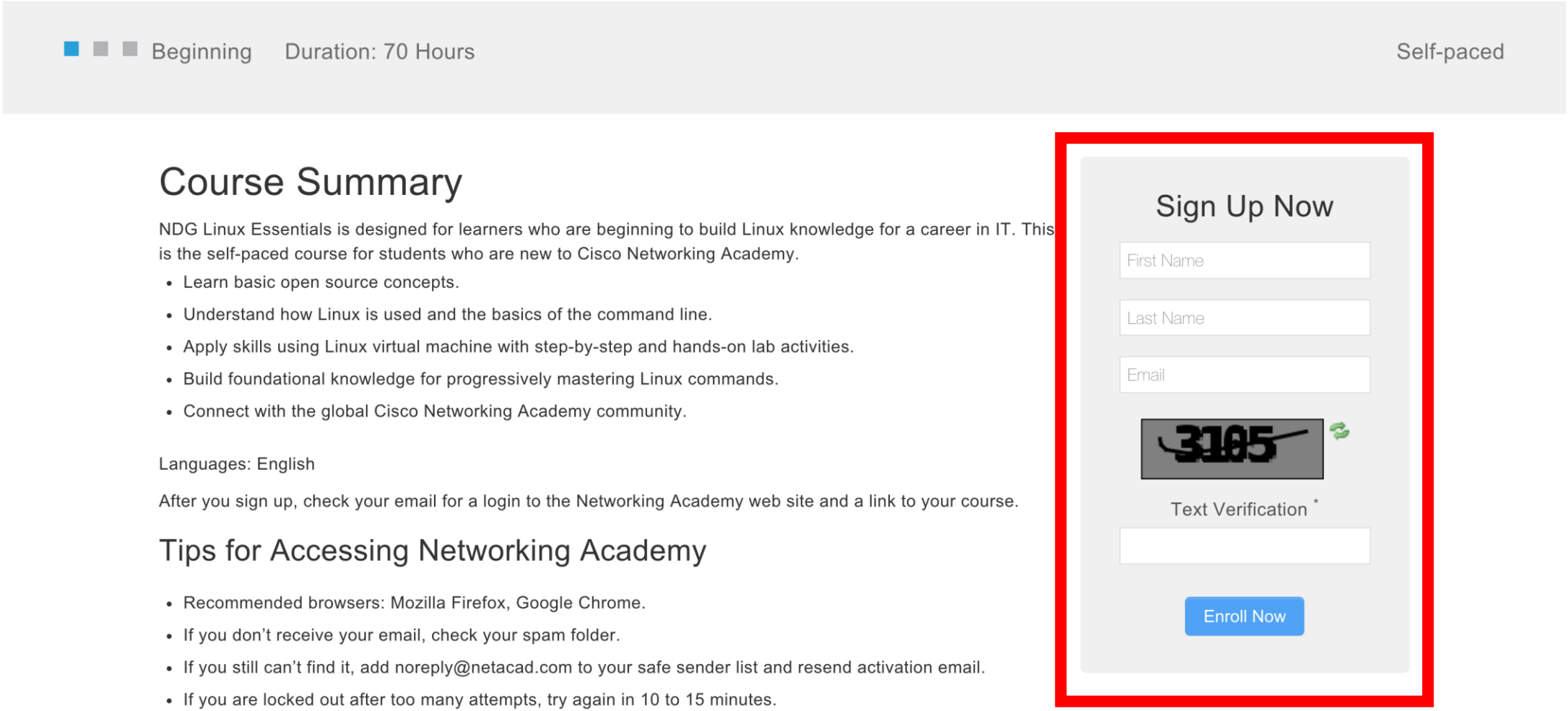
5. Click **Enroll in Course**



How To Access

If you are **NOT** part of Cisco Networking Academy…

5. Fill out the **Sign Up Now** box.



For more info visit: ndg.tech/linux1

Linux System Administrator

Salary Range: $41,000 to $105,000

41K — 105K

National Average: $67,000

Linux System Engineer

Salary Range: $59,000 to $118,000

59K — 118K

National Average: $89,018

Network Administrator

Salary Range: $48,000 to $82,000

48K — 82K

National Average: $63,584

Network Engineer

Salary Range: $54,000 to $108,000

54K — 108K

National Average: $73,165

Support Technician

Salary Range: $23,000 to $51,000

23K

National Average: $36,337

Support Engineer

Salary Range: $43,000 to $97,000

43K

National Average: $70,000

DevOps Engineer

Salary Range: $68,000 to $142,000

68K — 142K

National Average: $100,000

Cloud Engineer/Developer

Salary Range: $50,000 to $120,000

50K — 120K

National Average: $95,000

Software Engineer

Salary Range: $67,000 to $132,000

67K — 132K

National Average: $95,195

Software Developer

Salary Range: $44,000 to $127,000

44K — 127K

National Average: $85,000

IT Manager

Salary Range: $41,000 to $131,000

41K — 131K

National Average: $70,628

IT Technician

Salary Range: $23,000 to $57,000

23K — 57K

National Average: $35,839

Q&A: Linux is a core skill for all IT professionals.

Interested in Joining Cisco Networking Academy?

- Go to netacad.com
- Scroll Down to

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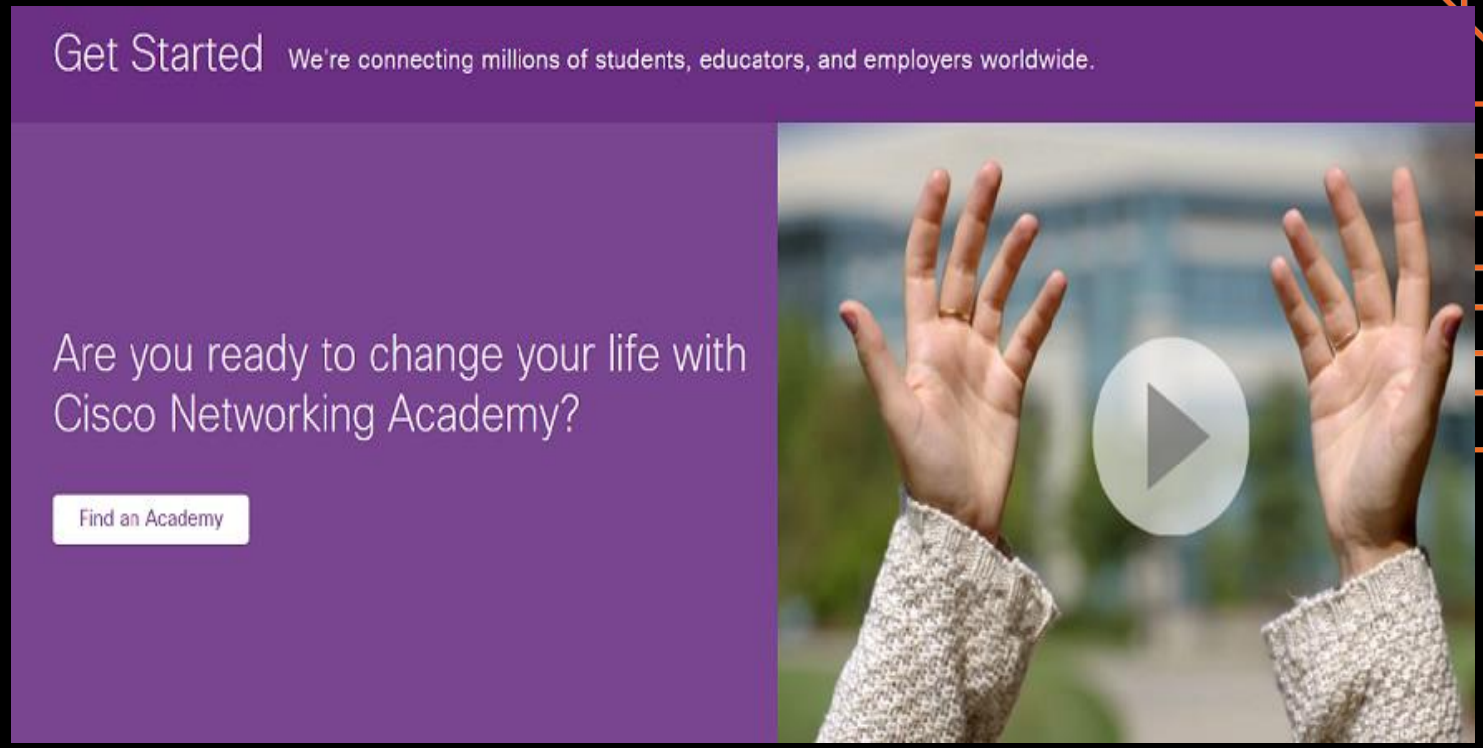
- Click *Find an Academy*
- *Need Help?*

  karsulli@cisco.com



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