



# Remote Delivery of Hands-on Networking Courses Using Zoom

Hi-Tec National Conference 2019



# WHY REMOTE DELIVERY?

- Northark needs to produce more IT Networking graduates to meet area, regional, and state needs - based on information from Northark's BILT, the Arkansas Department of Workforce Services, and the Bureau of Labor Statistics.
- Rural residents need opportunities for high tech degrees that lead to employment
  - Arkansas is typically next to last in both educational attainment and per capita income
  - Even higher poverty rates in Northark's service area, especially for women and Hispanics



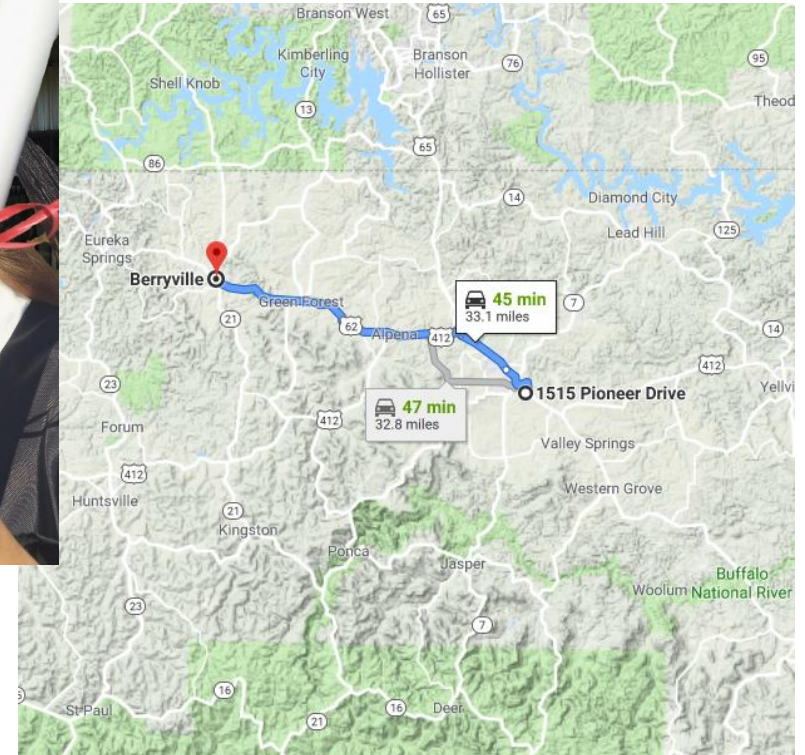
# WHY REMOTE DELIVERY?

College that is  
Convenient

Carroll County Center  
804 W. Freeman  
Berryville, AR



**North Arkansas College**



Existing remote site – the Carroll County Center – doesn't have enrollment yet to support face-to-face classes



# COURSES DELIVERED REMOTELY 2018-2019

- IT Essentials Hardware
  - IT Essentials Software
  - Network Fundamentals (CCNA1)
  - Routing Protocols & Concepts (CCNA2)
- } A+ Curriculum





# ALTERNATIVE DELIVERY - ONLINE

CIT 1103 MC

2019 FALL SEMESTER

**CIT 1103 MC - NETWORK FUNDAMENTALS (CCNA1)**

Course Status: Unpublished | Publish

Import from Commons

Choose Home Page

View Course Stream

New Announcement

Student View

Coming Up: Nothing for the next week

Instructor: Rick Williams, CIT  
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Email: [rickw@northark.edu](mailto:rickw@northark.edu)  
Office Hours: By Appointment

Welcome to Network Fundamentals or CCNA1. This is a 16 week course that is offered each of the A.A.S. degree in Network System and Security Administration.

CIT 1253(1)

**Network Security 1.2**

If this is your first time in the course, click [here](#) for more information.

Choose Home Page

View Course Stream

Course Setup Checklist

New Announcement

Student View

View Course Analytics

Coming Up: Nothing for the next week

View Calendar

Introduction to Networks

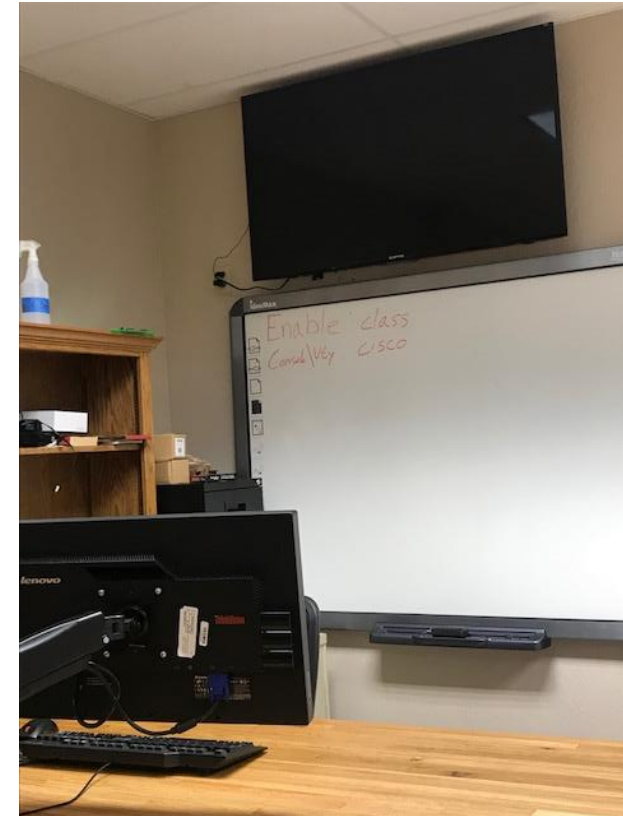
Networking  
CISCO Academy

- Chapter 0: Course Introduction
- Chapter 1: Explore the Network
- Chapter 2: Configure a Network Operating System
- Chapter 3: Network Protocols and Communications
- Chapter 4: Network Access
- Chapter 5: Ethernet
- Chapter 6: Network Layer
- Chapter 7: IP Addressing

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# HOME SITE – Front View





# HOME SITE – Back of Room



# REMOTE SITE – Front View





# REMOTE SITE – Rear View

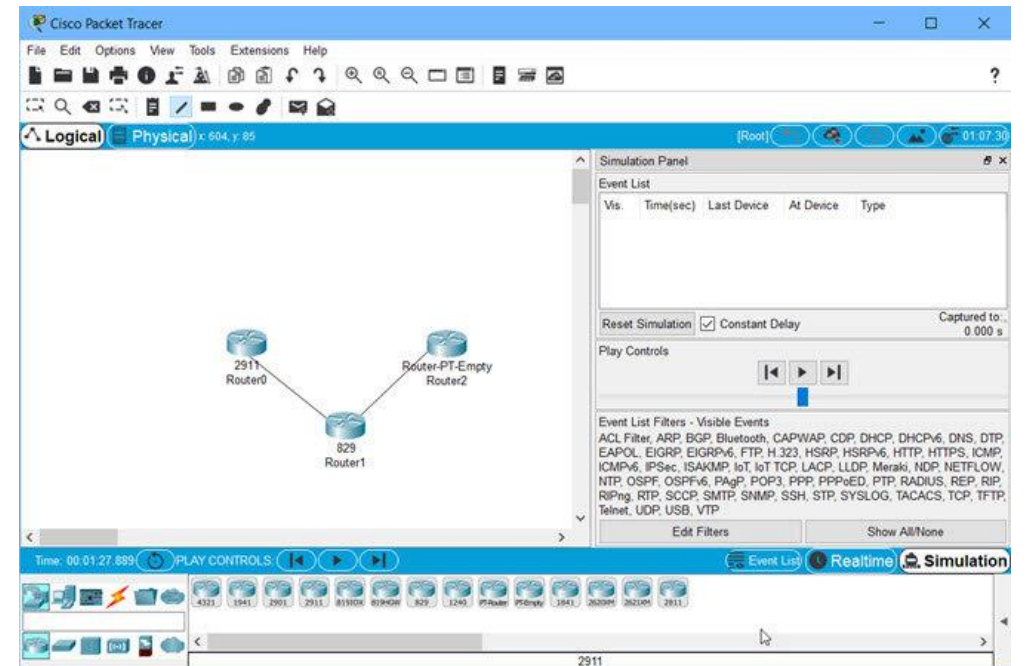


**VIDEO**



# ADDITIONAL SUPPORT FOR REMOTE DELIVERY

- Lab assistants
- Simulation software – e.g., Packet Tracer
- Virtual machines
- Virtual labs are an option
- Lecture recording





# COST OF OUR SETUP

Assumes that the room is preconfigured with instructor computer, projector, screen and network connectivity

## AV (per room)

Includes:

- TV's - \$300/ea including mount
  - Will need some video switching or distribution amps
- Insight (for local lab) – \$30/PC initial  
\$66/lab (renewal)
- Zoom - \$1,800 for 20 hosts
- Camera/Mic/Speaker Kit - \$900



# COST OF OUR SETUP

Assumes that the room is preconfigured with instructor computer, projector, screen and network connectivity

## Mobile Cart for Remote Site - \$3,600

Includes:

- 24U Rack - \$600
- 3 Routers (Cisco 1941) - \$750
  - HWIC - \$450
- 3 Switches (Cisco 2960 – 24 port) - \$450
- 3 Laptops - \$1200
- Power distribution switch - \$50
- Cables - \$100
  - Ethernet (RJ-45) straight and crossover patch cables
  - Console cables



# CHALLENGES

- Keeping remote students engaged
- Qualified lab help at the remote site
- Logistics: moving supplies back and forth between locations
- Technical Help
  - Updating equipment at remote site
  - Troubleshooting equipment issues
- Room scheduling
- Dependent on remote site facilities and connectivity





# FIRST YEAR RESULTS

## Fall 2018 at the CCC

- IT Essentials Hardware – two students
- Network Fundamentals (CCNA1) – two students started, three finished

## Spring 2019 at the CCC

- IT Essentials Software – two students
- Routing Protocols & Concepts (CCNA2) – three students

**All Students Successfully Completed the Courses!**



# NEXT STEPS

- Additional sites
  - High schools
  - Workplaces
- Improved Zoom Rooms
  - Better audio



# Remote Delivery of Hands-on Networking Courses Using Zoom

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