

COMPTIA INDUSTRY CERTIFICATES

WHAT TO EXPECT AND HOW TO PREPARE

CYNTHIA THOMAS,

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UNIVERSITY OF LOUISVILLE



AGENDA

- CompTIA Foundational Certificate Series Overview
- Good study practices
- CompTIA CTF



CompTIA Certification Foundational Series

ITF+

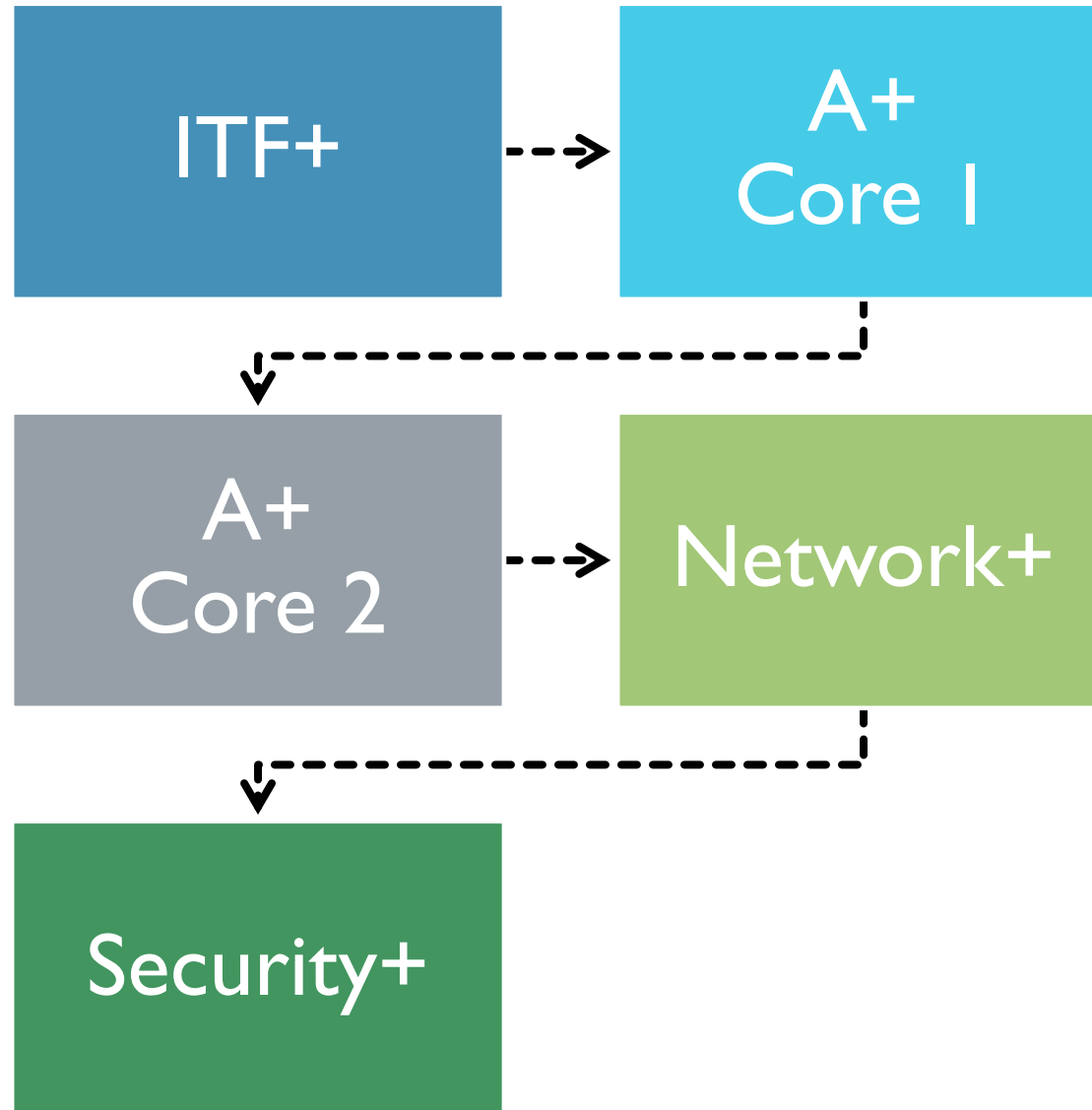
A+
Core 1

A+
Core 2

Network+

Security+

Certifications build on each other and introduce new information



CERTIFICATION KNOWLEDGE, SKILLS AND ABILITIES

ITF+

Computing

IT infrastructure

Software development

Database use

Installing software

Establishing basic network connectivity

Identifying/Preventing basic security risks

A+

Install, configure and maintain computer equipment, mobile devices and software for end users

Service components based on customer requirements

Understand networking basics and apply basic cybersecurity methods to mitigate threats

Properly and safely diagnose, resolve, and document common hardware and software issues

Apply troubleshooting skills and provide customer support using appropriate communication skills

Understand the basics of scripting, cloud technologies, virtualization, and multi-OS deployments in corporate environments

Network+

Establish network connectivity by deploying wired and wireless devices

Understand and maintain network documentation

Understand basic datacenter, cloud, and virtual networking concepts

Monitor network activity, identifying performance and availability issues

Implement network hardening techniques

Manage, configure, and troubleshoot network infrastructure

Security+ (SY0-701)

Assess the security posture of an enterprise environment and recommend and implement appropriate security solutions.

Monitor and secure hybrid environments, including cloud, mobile, and Internet of Things (IoT)

Operate with an awareness of applicable regulations and policies, including principles of governance, risk, and compliance

Identify, analyze, and respond to security events and incidents.

Certification Knowledge, Skills and Abilities: Domains and Objectives

	Domain	# of Objectives
ITF+	1.0 – IT Concepts and Terminology	6
	2.0 – Infrastructure	8
	3.0 – Applications and Software	6
	4.0 – Software Development	3
	5.0 – Database Fundamentals	3
	6.0 – Security	7

	Domain	# of Objectives
A+ (Core 1)	1.0 – Mobile Devices	4
	2.0 – Networking	8
	3.0 – Hardware	7
	4.0 – Virtualization and Cloud Computing	2
	5.0 – Hardware and Network Troubleshooting	7

	Domain	# of Objectives
A+ (Core 2)	1.0 – Operating Systems	11
	2.0 – Security	10
	3.0 – Software Troubleshooting	5
	4.0 – Operational Procedures	9

	Domain	# of Objectives
Network+	1.0 – Networking Fundamentals	8
	2.0 – Network Implementations	4
	3.0 – Network Operations	3
	4.0 – Network Security	5
	5.0 – Network Troubleshooting	5

	Domain	# of Objectives
Security+	1.0 – General Security Concepts	4
	2.0 – Threats, Vulnerabilities, and Mitigations	5
	3.0 – Security Architecture	4
	4.0 – Security Operations	9
	5.0 – Security Program Management and Oversight	6

CERTIFICATION KNOWLEDGE, SKILLS AND ABILITIES: DOMAINS AND OBJECTIVES

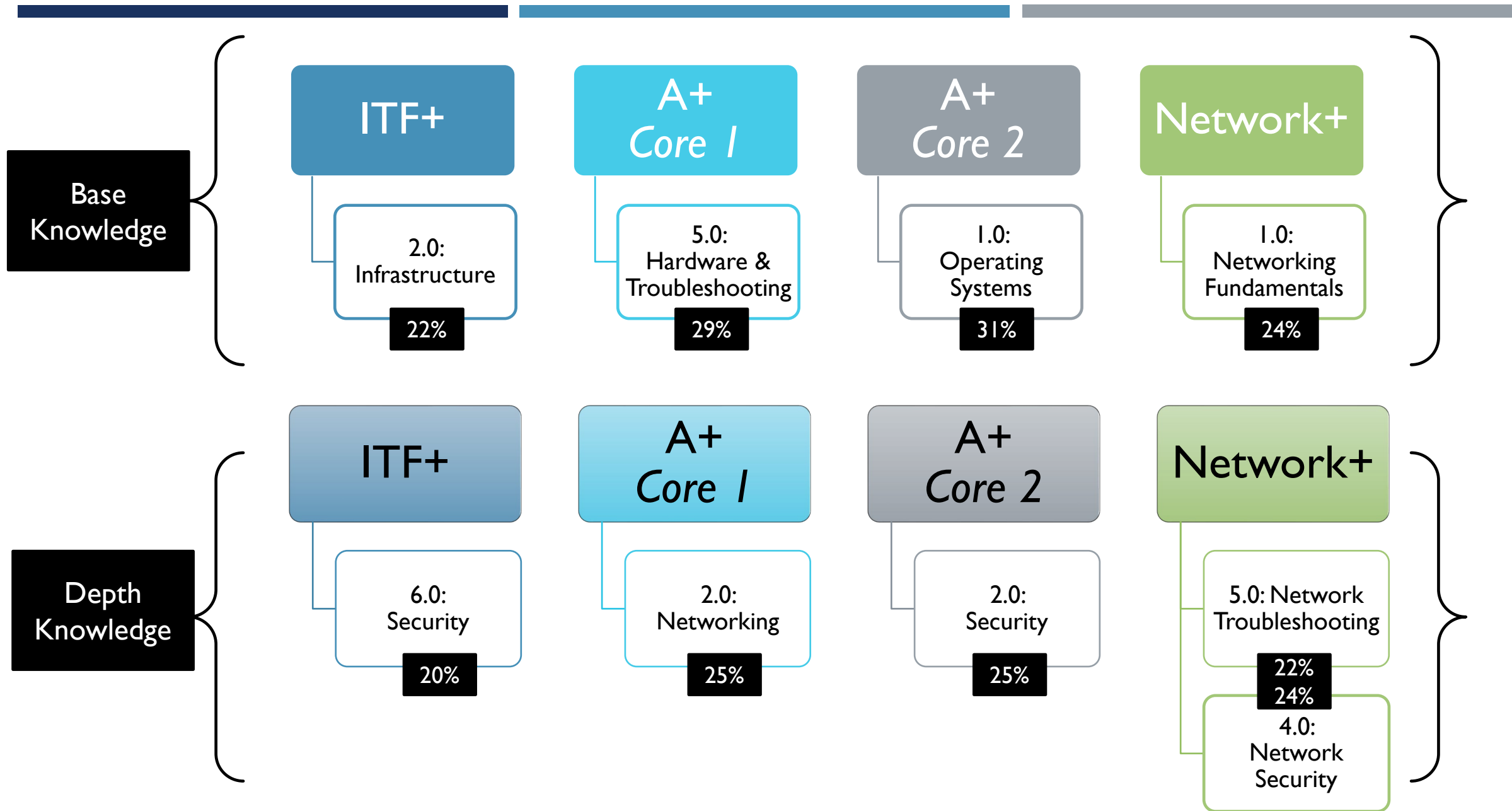
	Domain	Objectives
ITF+	1.0 – IT Concepts and Terminology	2.1 – Classify common types of input/output device interfaces
	2.0 – Infrastructure (22%)	2.2 – Set up and install common peripheral devices to a laptop/PC
	3.0 – Applications and Software	2.3 – Explain common internal computing components
	4.0 – Software Development	2.4 – Compare and contrast Internet service types
	5.0 – Database Fundamentals	2.5 – Compare and contrast storage types
	6.0 – Security	2.6 – Compare and contrast common computing devices and their purposes
		2.7 – Explain basic networking concepts
		2.8 – Install, configure and secure a basic wireless network

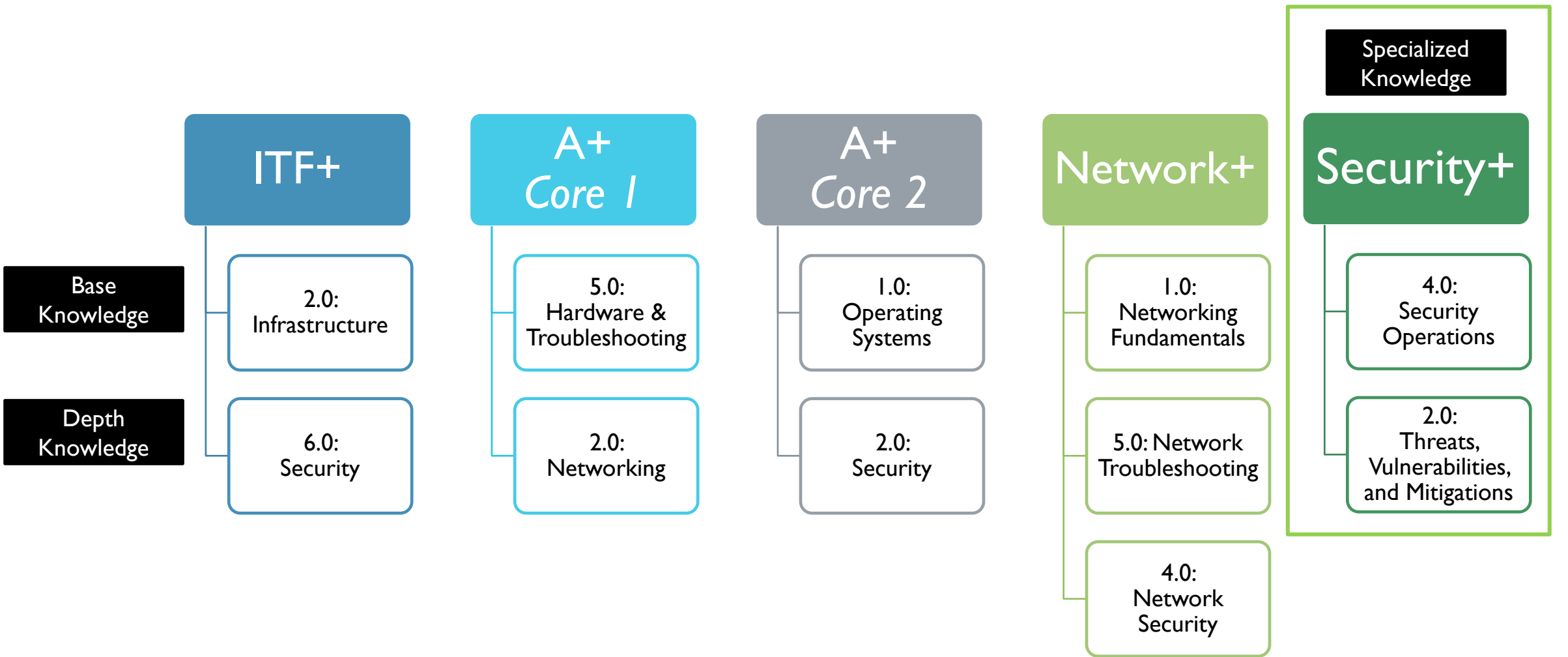
Certification Knowledge, Skills and Abilities: Domains, Objectives and Percent covered on Exam

	# of Domains	# of Objectives per Domain	Domain % on Certification Exam	Est. # of Questions on Exam
ITF+ 75 questions	6	6	17%	12
		8	22%	16
		6	18%	13
		3	12%	9
		3	11%	8
		7	20%	15
A+ (Core 1) 90 questions & PBQs	5	4	15%	13
		8	20%	18
		7	25%	22
		2	11%	9
		7	29%	26
A+ (Core 2) 90 questions & PBQs	4	11	31%	27
		10	25%	22
		5	22%	19
		9	22%	19

	# of Domains	# of Objectives per Domain	Domain % on Certification Exam	Est. # of Questions on Exam
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Security+ 90 questions & PBQs	5	4	12%	10
		5	22%	19
		4	18%	16
		9	28%	25
		6	20%	18

Performance Based Questions (PBQs) for A+, Network+ and Security+ make up remaining exam questions





Security+ Example Question

The IT department receives a call one morning about users being **unable to access files** on the **network shared drives**. An IT technician investigates and determines the **files became encrypted** at 12:00am. While the files are being **recovered from backups**, one of the IT supervisors realizes the day is the birthday of a **technician who was fired** two months prior. Which of the following describes what MOST likely occurred?

- A. The fired technician placed a **logic bomb**
- B. The fired technician installed a **rootkit** on all the affected users' computers
- C. The fired technician installed **ransomware** on the file server
- D. The fired technician left a **network worm** on an only work computer

Base Knowledge		Knowledge Depth		Specialized Knowledge
IFT+	A+ Core I	A+ Core 2	Network+	Security+
Domain 2.0 Infrastructure	Domain 5.0 Hardware and Network Troubleshooting	Domain 2.0 Security	Domain 4.0 Network Security	Domain 2.0 Threats, Vulnerabilities, and Mitigations
Objective 2.5 Compare and contrast storage types	Objective 5.1 Apply best practice methodology to resolve problems	Objective 2.4 Common social-engineering attacks, threats, and vulnerabilities	Objective 4.1 Common security concepts	Objective 2.1 Common threat actors and motivations
Domain 6.0 Security	Domain 2.0 Networking		Objective 4.2 Common types of attacks	Objective 2.4 Analyze indicators of malicious activity
Objective 6.6 Explain common uses of encryption	Objective 2.4 Services provided by networked hosts			

Security+ Example Question

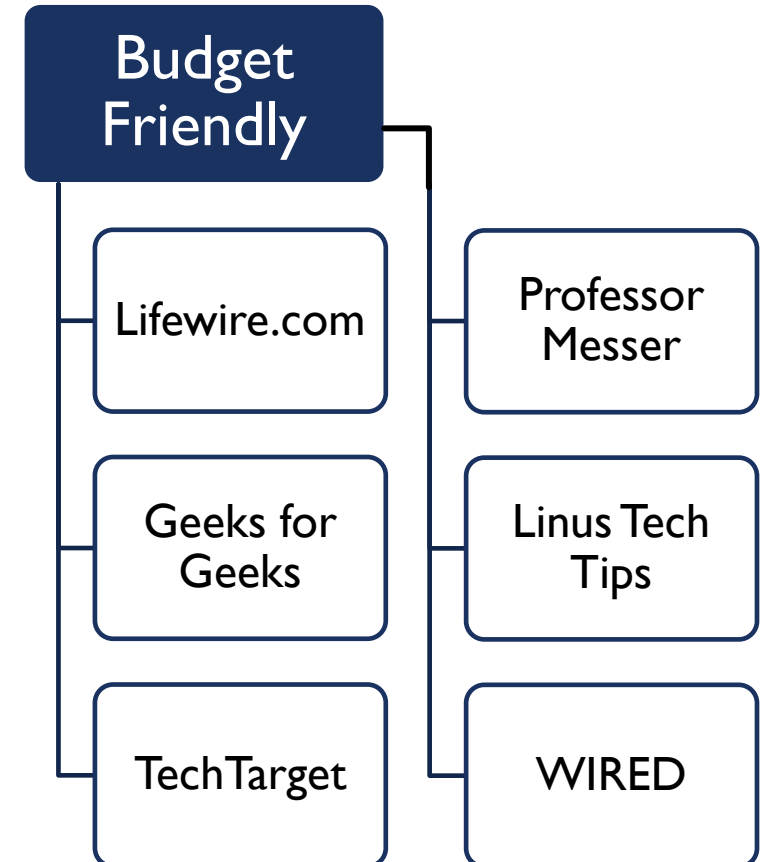
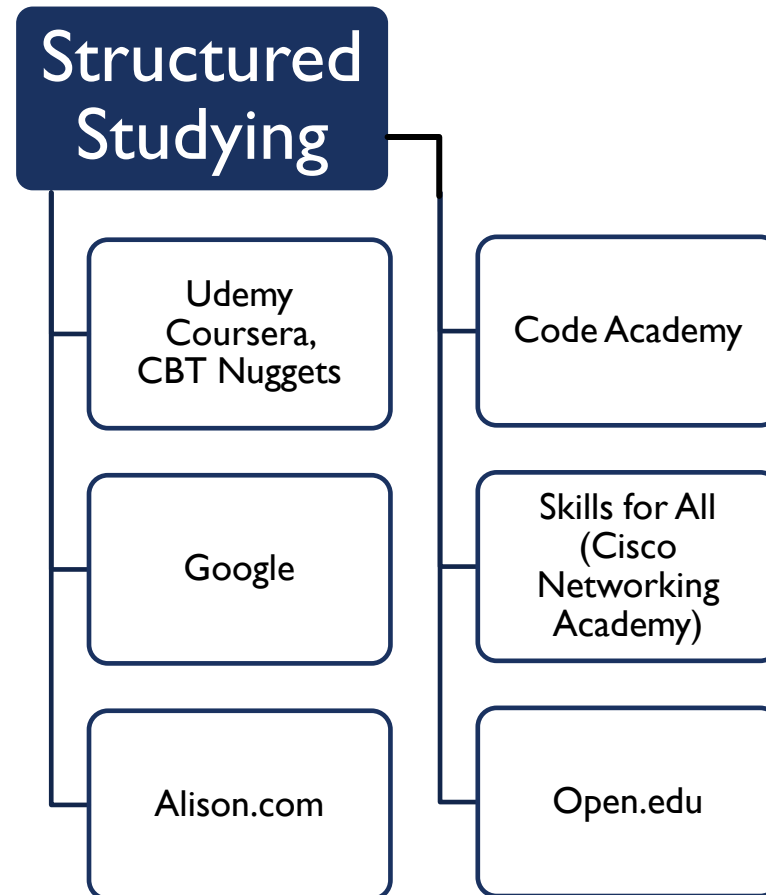
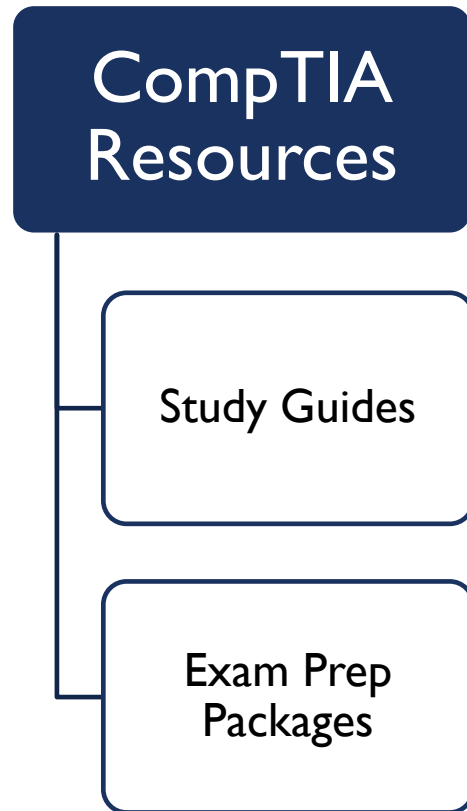
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Base Knowledge		Knowledge Depth		Specialized Knowledge
IFT+	A+ Core 1	A+ Core 2	Network+	Security+
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Objective 6.6 Explain common uses of encryption	Objective 2.4 Services provided by networked hosts			

HOW TO PREPARE: FINDING RESOURCES

What are your go-to study methods or habits? (put it in the chat?)

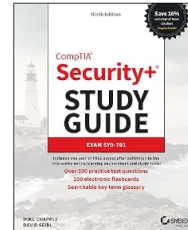
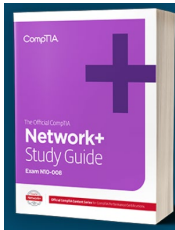
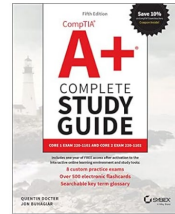


HOW TO PREPARE: FINDING RESOURCES

CompTIA Resources

Study Guides

Exam Prep Packages



- Mike Chapple
- Mike Meyers
- Omar Santos
- David Seidl

ELEARNING

VIRTUAL LABS

EXAM PREP


	CertMaster Labs Starting at \$87/mo with affirm (USA only). Prequalify now	Basic Bundle Starting at \$65/mo with affirm (USA only). Prequalify now	eLearning Bundle Starting at \$131/mo with affirm (USA only). Prequalify now	Complete Bundle Starting at \$149/mo with affirm (USA only). Prequalify now
CompTIA A+ Exam Voucher (2)		✓	✓	✓
CompTIA A+ Exam Voucher Retake (2)		✓	✓	✓
CompTIA A+ Core 1 & Core 2 (220-1101 & 220-1102) eBooks		✓		
CompTIA CertMaster Practice for A+ Core 1 & Core 2 (220-1101 & 220-1102)				✓
CompTIA Integrated CertMaster Learn + CompTIA Labs for A+ Core 1 & Core 2 (220-1101 & 220-1102)	✓		✓	✓

INSTRUCTOR-LED TRAINING

Comfortable & Flexible Environment

Get hands-on test preparation from CompTIA for CompTIA certifications. Join one of our two-week training sessions, and get hands-on instruction live from a certified CompTIA instructor, all with the comfort and flexibility of an online environment. Online instructor-led test preparation simulates the traditional classroom learning experience, getting you trained on everything you need to know to pass your CompTIA certification exam while saving you time and money!



 Studies indicate that students retain 50% of the content they hear and see, as compared to only 10% of what they read.

HOW TO PREPARE: FINDING RESOURCES

Structured Studying

Udemy
Coursera,
CBT Nuggets

Code Academy

Google

Skills for All
(Cisco
Networking
Academy)

Alison.com

Open.edu
(Open Learn)

	Courses in:
Udemy	A+, Security+
Coursera	Networking, Cloud, Security
CBT Nuggets	ITF+, A+, Network+, Security+

OpenLearn

1 LEVEL
Digital & Computing
An introduction to computers and computer systems
This free course, An introduction to computers and computer systems, challenges how we view computers through the examples of processors in...

1 LEVEL
Digital & Computing
Introducing computing and IT
This free course, Introducing computing and IT, provides a general overview of how digital technologies have come to dominate virtually every aspect of the...

3 LEVEL
Digital & Computing
Network security
Encryption of files and firewalls are just some of the security measures that can be used in security. This free course, Network security, which assumes you...

Alison
EMPOWER YOURSELF

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Free Online IT and Computing Courses

IT is one of our most popular categories, with in-depth courses and tutorials across all aspects of information technology. Sign up today to learn about cryptocurrency, blockchain, computer networking and server management. You can take free classes for in-demand languages like Python, JavaScript and C++, applying for official certification to take your programming career to the next level. We also cover growing skills like pentesting. [...Read More](#)

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- 25,121,988 Learners
- 3,766,932 Certificates & Diplomas Earned

Explore Top Subjects

CompTIA Security Network Security Microsoft Computer Networking CCNA Data Security

Software Development Data Science Small Business Administration DevOps Business Management

Skills for All with Cisco
Your window to a world of opportunity.

Networking
CISCO Academy

Networking Basics

This course is part of the **Career Path - Network Technician**

Start learning the basics of computer networking and discover how networks operate.

LANGUAGES AVAILABLE
Deutsch, English, Español, Français, Português, Український.

English (English)

BUDGET FRIENDLY

Budget Friendly

Lifewire.com

Geeks for Geeks

TechTarget

Professor Messer

Linus Tech Tips

WIRED

Lifewire
TECH FOR HUMANS

NEWS HOW TO

HOW TO

ALL CATEGORIES

- Phones
- Computers
- Smart & Connected Life
- Streaming
- Gaming
- Social Media
- Software & Apps
- Home Theater
- Internet & Security
- Email & Messaging



ACCESSORIES & HARDWARE
What is a GPU (Graphics Processing Unit)?



ACCESSORIES & HARDWARE
What is a GPU (Graphics Processing Unit)?



ACCESSORIES & HARDWARE
What is VRAM?

The TechTarget network of technology-specific websites give you access to industry experts, independent content and analysis.

TechTarget Network Unified Communications Mobile Computing Data Center IT Channel

News Features Tips Webinars 2023 IT Salary Survey Results

Cloud & Data Center Infrastructure Management

Narrow Your Search 381 Results for: SSH

- Articles (991)
- Definitions (23)
- Resources (2)

How to set up PowerShell remoting over SSH

Microsoft recommends using WinRM to manage Windows machines over other alternatives, particularly in organizations that also use Linux system hardware.

www.geeksforgeeks.org

GeeksforGeeks | A computer science portal for geeks

Explore Community. A Computer Science portal for geeks. It contains well written, well thought and well explained computer science and programming articles, quizzes and practice/competitive...

computer networks

Click here for recent suggestions:

Basics of Computer Networking - GeeksforGeeks

May 17, 2023 ... Basic Terminologies of Computer Networks: Network: A network is a collection of computers and devices that are connected together to enable ...

Computer Network Tutorial

Last Updated: 15 May, 2023

Read Discuss(20) Courses

A computer network is a collection of computers or devices connected to share resources. Any device which can share or receive the data is called a Node. Through which the information or data propagate is known as channels. It can be guided or unguided.

In this Computer network tutorial, you'll learn basic to advanced concepts like the Basics of computer networks, data link layer, network layer, network security and cryptography, compression techniques, etc.

Recent Articles on Computer Networks

- Basics
- Network Security and Cryptography

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CompTIA 220-1102 A+ Training Course



CompTIA N10-008 Network+ Training Course



CompTIA Security+ SY0-601 Training Course



CompTIA SY0-701 Security+ Training Course

YouTube

LINUS TECH TIPS



Linus Tech Tips

@LinusTechTips · 15.4M subscribers · 6.6K videos

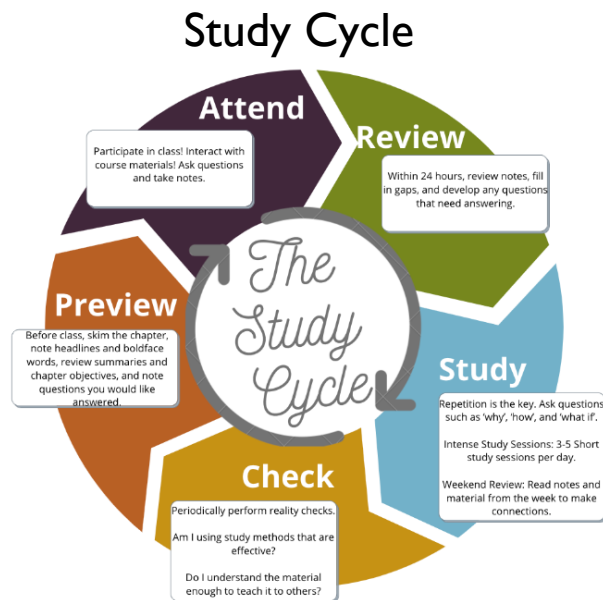
Linus Tech Tips is a passionate team of "professionally curious" experts in consumer tech. >

linustechtips.com and 4 more links

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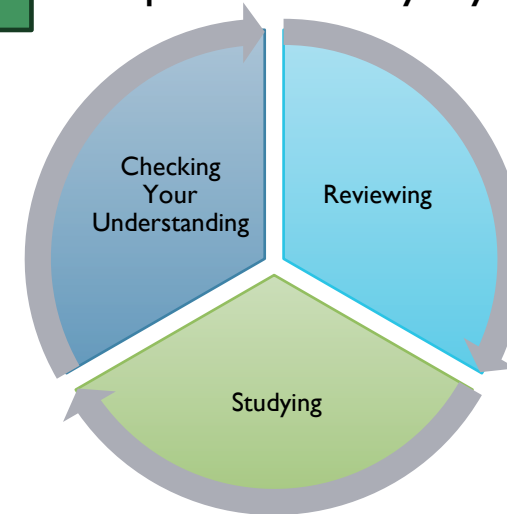
HOW TO PREPARE: USING YOUR TIME WISELY



Source: <https://www.umass.edu/studentsuccess/plan/skills/study-cycle>

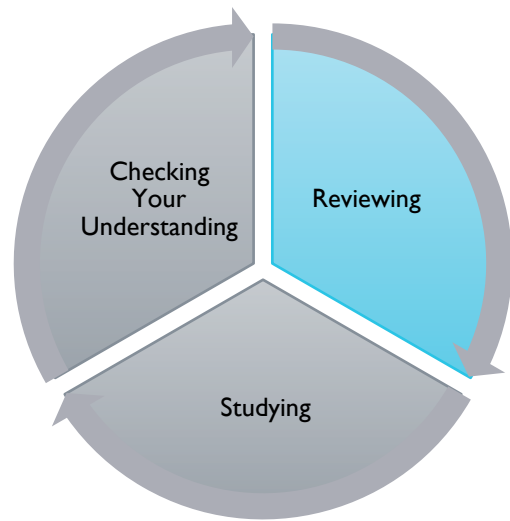


Independent Study Cycle



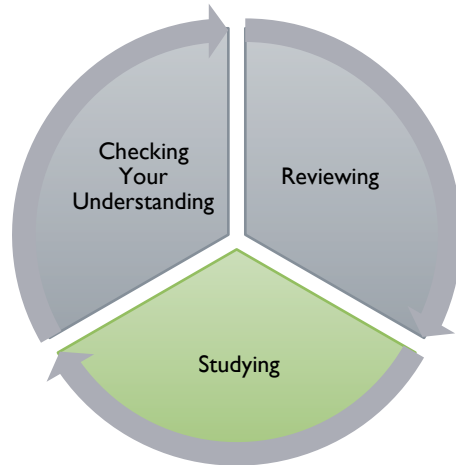
1. Reviewing	2. Studying	3. Checking your Understanding
Getting the big picture, adding context	Study at objective level, objective by objective	Utilize different practices.
	Spend most of your time on parts were feel least prepared	Active engagement

HOW TO PREPARE: INDEPENDENT STUDY CYCLE ~ REVIEWING



I. Reviewing		
Getting the big picture, adding context	Review each domain and objective	Review where you can take the exam and what to expect when sitting for the exam
	Make a study plan	Organize your go-to resources

HOW TO PREPARE: INDEPENDENT STUDY CYCLE ~ STUDYING (THINGS TO DO)



■ Mix things up!

- Read while taking notes
- Read from different sources
- Watch videos (long and short)
- Review message boards

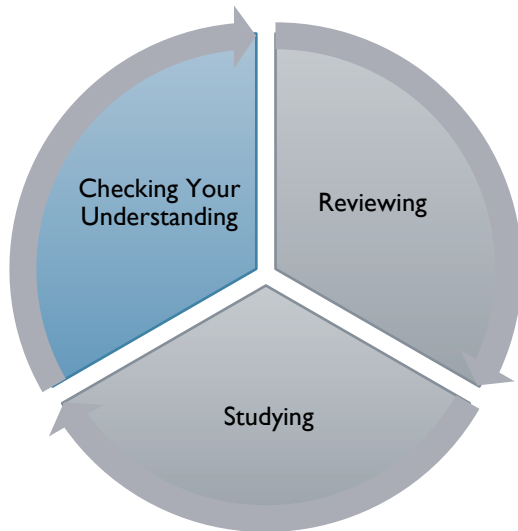
■ Active Study Engagement

- Create concept maps
- Create your own study guide
- Become a teacher
- Explain concepts using an analogy or metaphor

Misc. Strategies

Think about how you study best	Spread out and mix up your study times
Organize what you'll cover before a study session	Treat your study time as an appointment you can't break
Limit multitasking	Set goals for your study session
Take breaks; Reward yourself (within reason) 😊	

HOW TO PREPARE: CHECKING YOUR UNDERSTANDING



- Book Chapter Review Questions
- Practice Tests

Performance Based Questions (PBQs)

“Performance-based questions...allows IT pros to execute their skills and knowledge in a hands-on simulation...question types within the exam are built and designed based on the typical job roles...”

Learn tasks (i.e., how to do it)

Get hands-on

Organize what you learn

Use what you have

Use the Internet

- CompTIA Labs
- TryHackMe
- Simulators
 - Cybrary
 - CORE – Common Open Research Emulator
 - GNS3 – Graphical Network Simulator
- Itpro.tv/vlabs (ITF+, A+, Net+, Sec+)
- Cybersecurity CTFs
 - CyberFast Track

Certification Knowledge, Skills and Abilities: Domains, Objectives and Percent covered on Exam

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		7	25%	22
		2	11%	9
		7	29%	26
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		5	19%	17
		5	22%	19
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		5	22%	19
		4	18%	16
		9	28%	25
		6	20%	18

Performance Based Questions (PBQs) for A+, Network+ and Security+ make up remaining exam questions

TEST QUESTION

Security Scenario

After experiencing attacks on its servers, Company A hired a cybersecurity analyst to configure a DMZ and increase security measures.

Important Info

Shortly after the network was reconfigured, an assistant on the 2nd floor reported that one of the executives could not access the Internet (more specifically <https://compia.org>).

However, he said, they can send internal Email, use the intranet, and print on the local area network printer.

INSTRUCTIONS

Task 1
Task 2

Check the IP addresses and connectivity for each of the workstations to determine which is the affected machine.

Task 3
Task 4

Use that information to ensure that the Access Control List (ACL) is properly configured to allow all workstations access to the Internet.

The router's ACL implements an implicit deny.

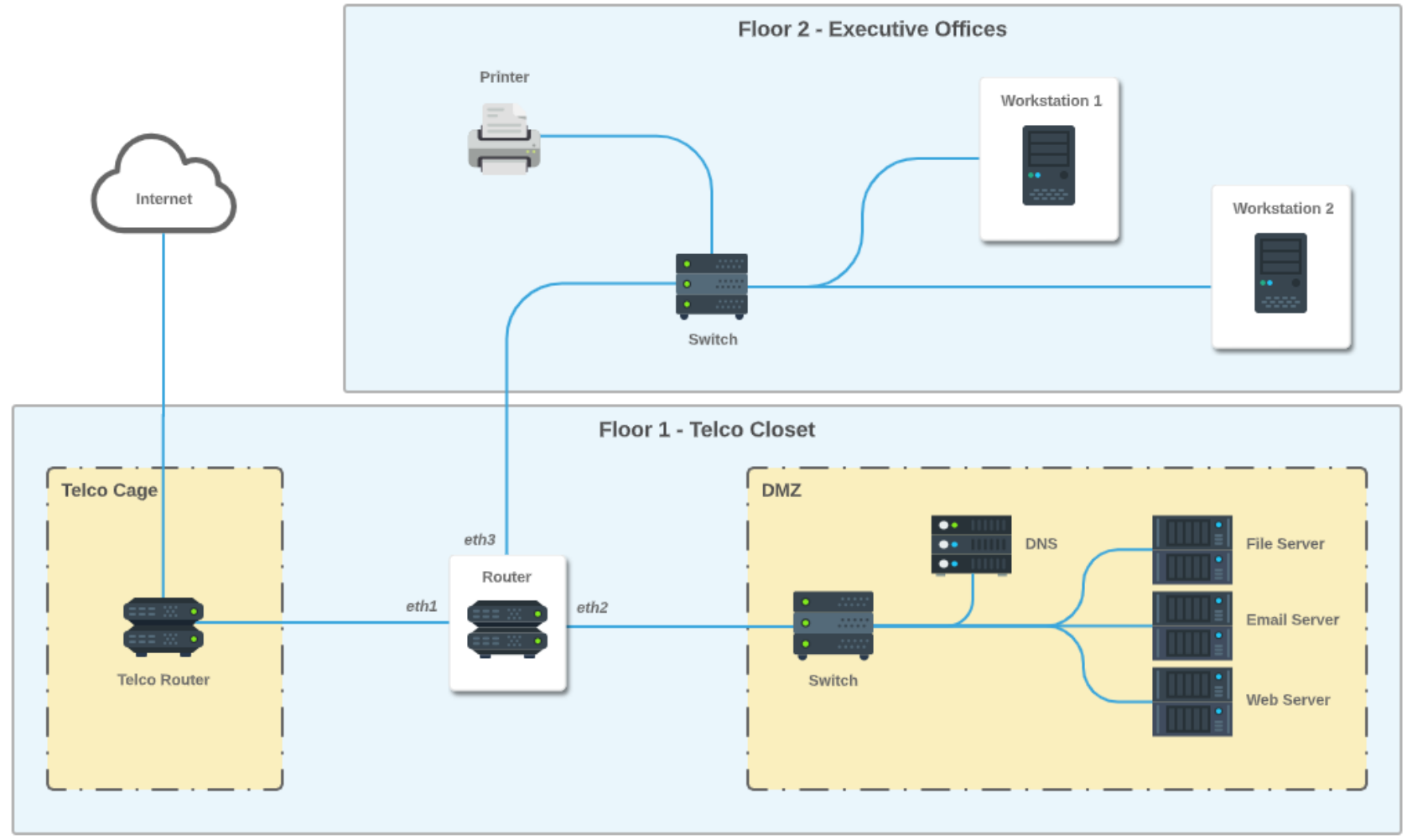
Only make changes to correct the connectivity issue.

If at any time you would like to bring back the initial state of the simulation, please click the Reset All button.

Network Diagram for Company A

Show Question

Reset All Answers



Security+ (SY0-601) PBQ

- Task 1** Workstation IPs
- Task 2** Workstation without Internet access
- Task 3** Check router interfaces and ACL rules
- Task 4** Check Internet connectivity for problem workstation

IPv4 Subnet Calculator

Network Class Any A B C

Subnet

IP Address

IPv4 Subnet Calculator

Result

IP Address:	192.168.0.80
Network Address:	192.168.0.80
Usable Host IP Range:	192.168.0.81 - 192.168.0.94
Broadcast Address:	192.168.0.95
Total Number of Hosts:	16
Number of Usable Hosts:	14



SECURITY+ PBQ EXAMPLE

Network+

- Domain 1.0: Networking Fundamentals
 - Objective 1.4: Given a scenario, configure a subnet and use appropriate IP addressing schemes
- Domain 5.0: Network Troubleshooting
 - Objective 5.1: Explain the network troubleshooting methodology
 - Objective 5.3: Given a scenario, use the appropriate network software tools and commands

Task 1

```
Workstation 2
C:\Users\admin> ipconfig

IP Configuration

Ethernet adapter:

IPv4 Address. . . . . : 192.168.0.82
Subnet Mask . . . . . : 255.255.255.224
Default Gateway . . . . . : 192.168.0.65
```

```
C:\Users\admin> ping 192.0.2.2
Pinging 192.0.2.2 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.0.2.2:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss)

C:\Users\admin>
```

Task 2

```
Router
Interfaces | Access Control List

eth1
Address      192.0.2.2
Netmask     255.255.255.252
Network     192.0.2.0/30
Broadcast   192.0.2.3

eth2
Address      192.168.0.33
Netmask     255.255.255.224
Network     192.168.0.32/27
Broadcast   192.168.0.63

eth3
Address      192.168.0.65
Netmask     255.255.255.224
Network     192.168.0.64/27
Broadcast   192.168.0.95
```

#	Source	Destination	Protocol	Port	Access
1	192.168.0.64/27	192.168.0.32/27	ANY	ANY	Accept
2	192.168.0.64/27	ANY	TCP/UDP	22,3389	Deny
3	ANY	192.168.0.32/27	TCP	80,443	Accept
4	ANY	192.168.0.32/27	ICMP	ANY	Deny
5	192.168.0.80/28	ANY	ANY	ANY	Deny
6	192.168.0.32/27	ANY	TCP/UDP	22,3389	Deny
7	192.168.0.64/27	ANY	UDP	161	Deny
8	192.168.0.64/27	ANY	TCP/UDP	25,465	Deny
9	192.168.0.64/27	ANY	ANY	ANY	Accept
10	ANY	ANY	ANY	ANY	Deny

Task 3

Security+ (SY0-701)

- Domain 2.0: Threats, Vulnerabilities and Mitigations
 - Objective 2.5: Explain the purpose of mitigation techniques used to secure the enterprise

TEST QUESTION

Security Scenario
After experiencing attacks on its servers, Company A hired a cybersecurity analyst to configure a DMZ and increase security measures.

Shortly after the network was reconfigured, an assistant on the 2nd floor reported that one of the executives could not access the Internet (more specifically <https://comptia.org>).

However, he said, they can send internal Email, use the intranet, and print on the local area network printer.

Task 4

```
5 192.168.0.80/28 ANY ANY ANY Deny
```

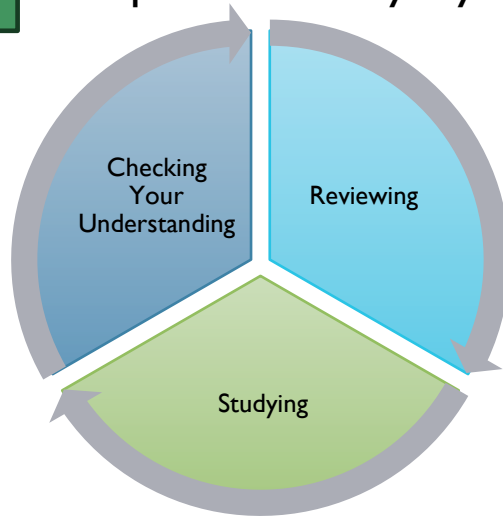
```
C:\Users\admin> ping 192.0.2.2
Pinging 192.0.2.2 with 32 bytes of data:
Reply from 192.0.2.2: bytes=32 time=51ms TTL=49
Reply from 192.0.2.2: bytes=32 time=51ms TTL=49
Reply from 192.0.2.2: bytes=32 time=51ms TTL=49
Reply from 192.0.2.2: bytes=32 time=51ms TTL=49

Ping statistics for 192.0.2.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss)
```

STUDY CYCLE FOR INDEPENDENT LEARNING



Independent Study Cycle



I. Reviewing	2. Studying	3. Checking your Understanding
Getting the big picture, adding context	Study at objective level, objective by objective	Utilize different practices.
Create plan of attack	Spend most of your time on parts were feel least prepared	Active engagement

COMPTIA CERT CTF: A CHECK YOUR UNDERSTANDING TOOL

Challenge ×

Exam and domain

ITF+ - Infrastructure1

Points

10



- DVI
- HDMI
- Ethernet
- Bluetooth

View Hint

Submit

Reading Hints

- [PCmag Searchable Encyclopedia](#)

Video Hints

- [CompTIA ITF+ - Device Interfaces](#)
- [Input/Output Interface Devices](#)

ITF+ Domain and Objective

- Domain 2.0: Infrastructure
- Objective 2.1: Classify common types of input/output device interfaces

Reading Hints

- [What is System Hardening? - Geeks for Geeks](#)
- [Block List, Deny List - CyberHoot](#)
- [Allowlisting vs Blocklisting: Benefits and Challenges - TechTarget](#)
- [Secure Cookie Attribute - OWASP](#)
- [What is Code Signing? The Definitive Roadmap to Secure Code Signing - Key Factor](#)

Security+ Domain and Objective

- Domain 4.0: Security Operations
- Objective 4.1: Given a scenario, apply common security techniques to computing resources

Extra Information

- [Web Server Security: Web Server Hardening - InfoSec](#)
- [Everything You Need to Know About Internet Cookies - Microsoft](#)
- [Windows Code-Signing Attacks Explained - CSO Online](#)
- [What Happens When You Click "Accept All" - Techquickie](#)



COMPTIA CERT CTF

- **Jeopardy-Style**

- Challenges are multiple-choice questions
- No Problem-Based Questions

- **Challenges cover**

- Top ITF+, A+, Network+, Security+ domains
- 30-minute time limit
- Can move between challenges

- **Challenge Hints available**

- No point penalty for using hints

- **Amazon e-gift card**

- 1st place = \$100
- 2nd place = \$75
- 3rd place = \$50

- **2nd Chance Opportunity**

- \$25 Amazon e-gift card
- 1st 40 completed surveys on classroom and learning experiences
 - Over 18 years of age
 - An Undergraduate
 - Currently enrolled in or have completed an online or hybrid Cybersecurity focused course

COMPTIA CERT CTF ~ LET'S GO!!

<https://comptiacerts.ctfd.io>

Registration Code:
NCSAcompTIA

Already
Registered

Need to
Register

Welcome to the CompTIA Cert CTF!



To get started


→ [Click here to login](#)

→ [Click here to register](#)

BUT FIRST...

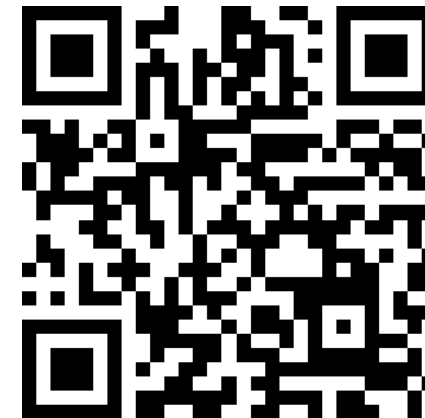
- **2nd Chance Opportunity**

- If you are:
 - Over 18
 - An Undergraduate student
 - Have taken or are currently enrolled in an online or hybrid Cybersecurity course

- **Take the**  Cybersecurity Student Experience Survey

- For a \$25 Amazon e-gift card
- 1st 40 **completed** surveys can win

<https://tinyurl.com/CybersecurityExperienceEG>

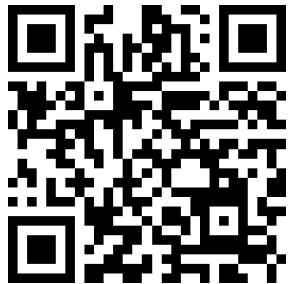


AND THE WINNERS ARE....



Cybersecurity Student Experience Survey

<https://tinyurl.com/CybersecurityExperienceEG>



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