Networking Academy

CCNA Cybersecurity Operations

- Workshop: Netzwerk ganz praktisch

18. Nationaler Akademietag in Hamburg

Almut Leykauff-Bothe, MMBbS Hannover
Stefan Krieger BBS Rotenburg

04. Mai 2019

Worum gehts

- Kahoot!
- Security courses
- CCNA Cyber Ops Kursdesign
- Erfahrungsaustausch
- Cisco CyberOps Skills Challenge Game

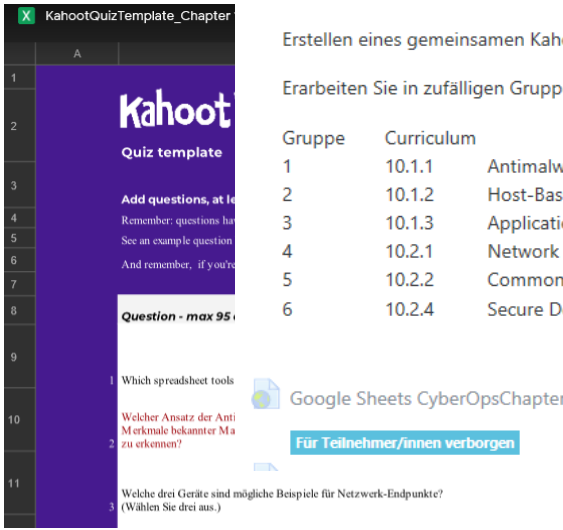
Kahoot!

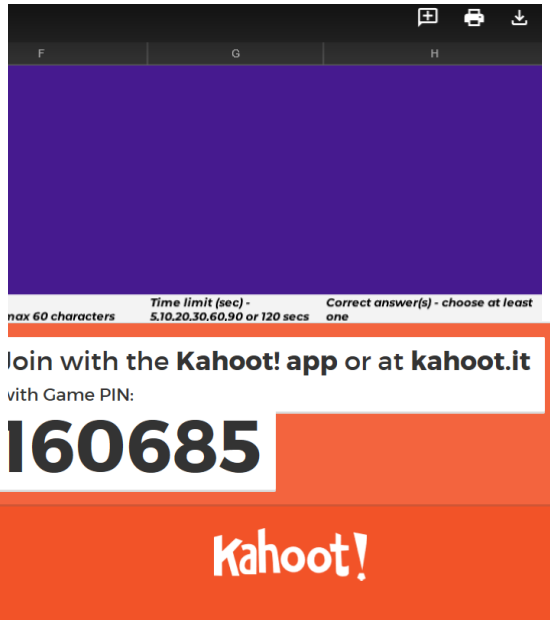
Aufgabe 10

Erstellen eines gemeinsamen KahootQuiz zum Chapter 10.

Erarbeiten Sie in zufälligen Gruppen Antworten zu vorgegeben Fragen aus den Abschnitten:

Gruppe	Curriculum		Kahoot Fragenzeile
1	10.1.1	Antimalware Protection	2- 5
2	10.1.2	Host-Based Intrusion Protection	6 - 9
3	10.1.3	Application Security	10 - 13
4	10.2.1	Network and Server Profiling	14 - 17
5	10.2.2	Common Vulnerability Scoring System (CVSS)	18 - 21
6	10.2.4	Secure Device Management	22 - 25





Kahoot!

Grundlagen der Cybersicherh

Leykauff

Created 11 months ago • 5 plays

Visible to only you

Play

Challenge

https://create.kahoot.it/create - /edit/cc6e7d64-7600-4850-8e05-3d0e0ce2ce2b/done

Security courses

Networking Academy

Instructor-led, Online self-paced

Introduction to Cybersecurity

The introductory course for those who want to explore the world of cybersecurity.

Beginning

Learn More

Instructor-led, Online self-paced

Cybersecurity Essentials

For those planning to study for CCNA Routing & Switching or CCNA Security certifications.

Intermediate

Learn More

Instructor-led

CCNA Cybersecurity Operations

Develop the know-how to monitor, detect and respond to cybersecurity threats.

Advanced

Learn More

Instructor-led

CCNA Security

Develop the skills needed to design and support the integrity of network devices.

Advanced

Learn More

Introduction to Cybersecurity

Einführung in die Cybersicherheit

Kursübersicht

Der Kurs untersucht Cyber-Trends, Bedrohungen und die Sicherheit im Cyberspace, um den Schutz von persönlichen Daten und Unternehmensdaten zu gewährleisten.

MMBbS Kurs

MMBbS – Einführung in die Cybersicherheit - SJ 2018/2019

Link zur Selbsteinschreibung

Features

Zielgruppe : Alle SchülerInnen der MMBbS

Voraussetzungen : Keine

Sprache : Deutsch, Englisch

Kosten : Keine

Kursart : Selbststudium

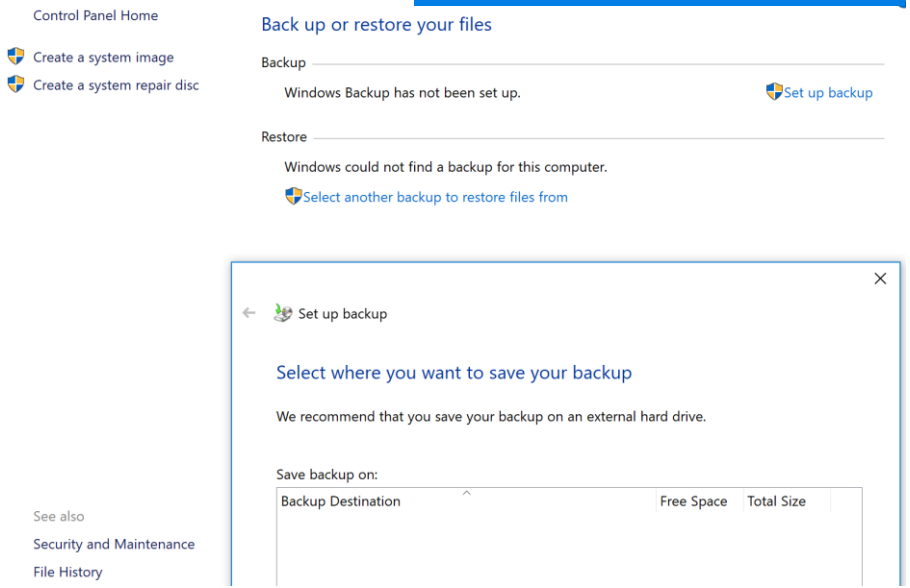
Geschätzter Zeitaufwand : 15 Stunden

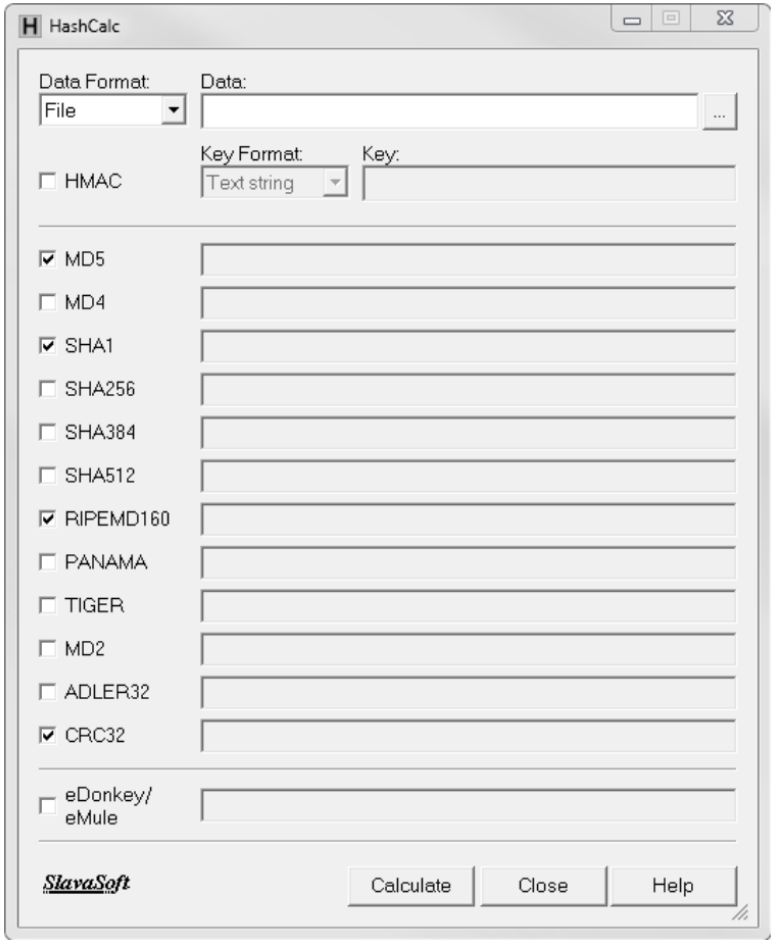
Multi Media
Berufsbildende Schulen

Course Structure: Introduction to Cybersecurity

	Chapters	Labs (selected)	Other
1	The Need for Cybersecurity	Compare Data vs Hash	No PT labs
2	Attacks, Concepts and Techniques		Some videos
3	Protecting Your Data and Privacy	Creating strong passwords, Backing up your data	
4	Protecting the Organization		
5	Will Your Future Be in Cybersecurity?		

Labs





What's in it for me?

Upon completion of this course student is able to:

- Stop sticking his password to a monitor
- Think about password management
- Think before sharing any information
- Implement backup before Data is lost
- Be a Cybersecurity ambassador

Aktionsplan für Introduction to Cybersecurity

- Erstellen einer Self-Enroll-Seite mit dem Logo der Schule. Veröffentlichung und Verbreitung des Links
- Mails, Aushänge, News, Infos auf Webseite

Link zur Selbsteinschreibung

Umsetzung Introduction to Cybersecurity an den BBS ROW

- Der Kurs wird genutzt zu Beginn des 2. Ausbildungsjahrs der Informationstechnischen Assistenten, als Crashkurs vorm vierwöchigen Praktikum
- Niveau angemessen für diese Schulform
- Schnelldurchlauf bei der Zielgruppe möglich,
  pro chapter ca. 45-90 min (ohne Übungen)
- nur wenige Labs (Hash-Calc, sichere Passwörter, Backup)

Vorteile Introduction to Cybersec

- Kurs eignet sich als Einstieg ins LF 5
- gute Vorbereitung fürs Praktikum (Wiederholung für die fitten Schüler, solide Basis für die weniger fitten…)
- dieser Kurs geht nicht in die Tiefe, recht kurzweilig
- Labs könnten ausgebaut werden

Cybersecurity Essentials

Grundlagen der Cybersicherheit

Kursübersicht

Der Kurs umfasst grundlegendes Wissen und grundlegende Fähigkeiten für alle Bereiche der Cybersicherheit, einschließlich Informationssicherheit, Systemsicherheit, Netzwerksicherheit, Ethik und Gesetze sowie Verteidigungs- und Entschärfungstechniken, die zum Schutz von Unternehmen eingesetzt werden.

MMBbS Kurs

MMBbS - Cybersecurity Essentials - SJ 2018/2019

Link zur Selbsteinschreibung

Features

Zielgruppe : SchülerInnen der Berufsschulen MMBbS

Voraussetzungen : Einführung in die Cybersicherheit

Sprache : Deutsch, Englisch

Kosten : Keine

Kursart : Selbststudium

Geschätzter Zeitaufwand : 30 Stunden

Empfohlener nächster Kurs : CCNA R&S Introduction to Networks

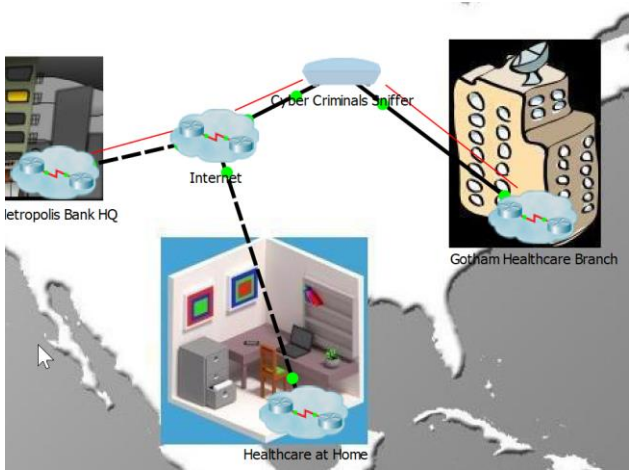
MultiMedia
Berufsbildende Schulen

Course Structure: Cybersecurity Essentials

	Chapters	Labs (selected)	Other
1	Cybersecurity – A World of Experts and Criminals	Threat Identification	10+ PT Labs
2	The Cybersecurity Cube	Exploring AAA	No Videos
3	Cybersecurity Threats, Vulnerabilities and Attacks	Detecting Threats and Vulnerabilities	
4	The Art of Protecting Secrets	Using Steganography	
5	The Art of Ensuring Integrity	Password Cracking in Linux, Remote access	
6	The Five Nines Concept		
7	Protecting a Cybersecurity Domain	Hardening a Linux System	
8	Becoming a Cybersecurity Specialist		

Labs

```
[+] Users, Groups and Authentication
------------------------------------
  - Search administrator accounts                    [ OK ]
  - Checking for non-unique UIDs                     [ OK ]
  - Checking consistency of group files (grpck)      [ OK ]
  - Checking non unique group ID's                   [ OK ]
  - Checking non unique group names                  [ OK ]
  - Checking password file consistency               [ OK ]
  - Query system users (non daemons)                 [ DONE ]
  - Checking NIS+ authentication support             [ NOT ENABLED ]
  - Checking NIS authentication support              [ NOT ENABLED ]
  - Checking sudoers file                            [ FOUND ]
    - Check sudoers file permissions                 [ OK ]
  - Checking PAM password strength tools             [ SUGGESTION ]
  - Checking PAM configuration files (pam.conf)      [ FOUND ]
  - Checking PAM configuration files (pam.d)         [ FOUND ]
  - Checking PAM modules                             [ FOUND ]
  - Checking LDAP module in PAM                      [ NOT FOUND ]
  - Checking accounts without expire date            [ OK ]
  - Checking accounts without password               [ OK ]
  - Checking user password aging (minimum)           [ DISABLED ]
  - Checking user password aging (maximum)           [ DISABLED ]
  - Checking expired passwords                       [ OK ]
```




```
cisco@ubuntu: ~/Downloads/john-1.8.0/run
cisco@ubuntu:~/Downloads/john-1.8.0/run$ ./john --wordlist=password.lst
mypass2
Loaded 6 password hashes with 6 different salts (crypt, generic crypt(3)
 [?/64])
Press 'q' or Ctrl-C to abort, almost any other key for status
password1        (Eric)
12345            (Bob)
123456           (Alice)
password         (cisco)
password         (Eve)
5g 0:00:00:08 31% 0.5561g/s 106.7p/s 160.1c/s 160.1C/s meggie..seattle
5g 0:00:00:11 42% 0.4500g/s 120.9p/s 164.1c/s 164.1C/s deedee..grizzly
5g 0:00:00:13 53% 0.3782g/s 130.7p/s 167.0c/s 167.0C/s rockie..surfing
5g 0:00:00:18 83% 0.2714g/s 151.1p/s 177.1c/s 177.1C/s Johnson..buzz
5g 0:00:00:22 100% 0.2267g/s 160.8p/s 182.5c/s 182.5C/s !@#$%..sss
Use the "--show" option to display all of the cracked passwords reliably
Session completed
cisco@ubuntu:~/Downloads/john-1.8.0/run$
```

Equipment

Lab PC Hardware Requirements

- Computer with a minimum of 2 GB of RAM and 8 GB of free disk space, 1 Virtual Machine used
- High speed Internet access to download Oracle VirtualBox and the virtual machine image file
- Packet Tracer

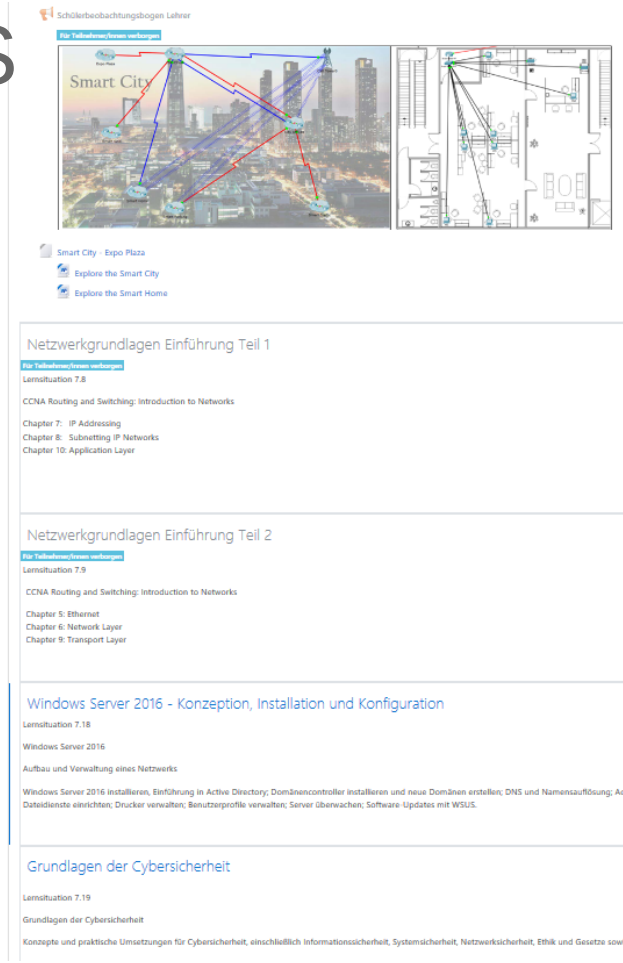
Aktionsplan für Cybersecurity Essentials

- Erstellen einer Self-Enroll-Seite mit dem Logo der Schule. Veröffentlichung und Verbreitung des Links
- Mails, Aushänge, News, Infos auf Webseite

Link zur Selbsteinschreibung

Lernsituation an der MMBbS

LF7: Vernetzte IT-Systeme 2.AJ - LB - SJ 18-19



Grundlagen der Cybersicherheit

Lernsituation 7.19

Grundlagen der Cybersicherheit

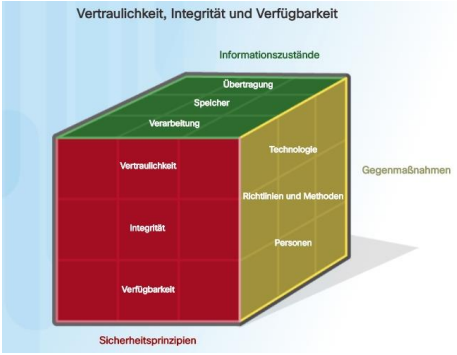
Konzepte und praktische Umsetzungen für Cybersicherheit, einschließlich Informationssicherheit, Systemsicherheit, Netzwerksicherheit, Ethik und Gesetze sowie Verteidigungs- und Entschärfungstechniken, die zum Schutz von Unternehmen eingesetzt werden.

Umsetzung Cybersecurity Essentials an den BBS ROW

- deutlich umfangreicher als Introd. to Cybersec
- deutlich höheres Niveau, für Informations-technische Assistenten zunächst nicht geeignet
- ABER: als Abschluss am Jahresende für diese Schulform sehr gut geeignet
- es gibt geringe Doppelungen mit dem Intro-Kurs – aber durch den langen Zeitraum zwischen den beiden Kursen fällt das gar nicht so auf…

Vorteile Cybersecurity Essentials

- kompakte und spannende LABs
- sehr viele der behandelten Themen aus LF 5 werden aufgegriffen und erweitert: Serverfunktionen, Linux, Absicherung eines Geräts, VPN-Tunnel anwenden, Verschlüsselung, Hash-Verfahren, uvm.
- der Kurs passt am Ende des Jahres sehr gut vom Niveau her zu dieser Schulform



CCNA Security

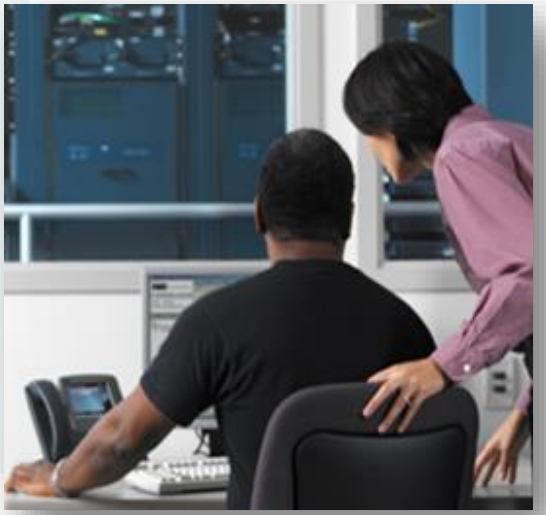
CCNA Security 2.0 Course Outline

Course Chapters and Goals	
Chapter 1	**Modern Network Security Threats** Goal: Explain security threats in modern network infrastructures and how to mitigate them.
Chapter 2	**Securing Network Devices** Goal: Secure Cisco routers.
Chapter 3	**Authentication, Authorization and Accounting** Goal: Implement AAA on Cisco routers using local router database and server-based ACS or Identity Service Engine (ISE).
Chapter 4	**Implementing Firewall Technologies** Goal: Implement firewall technologies to secure network perimeter.
Chapter 5	**Implementing Intrusion Prevention** Goal: Implement IPS to mitigate attacks on networks.
Chapter 6	**Securing the Local Area Network** Goal: Secure endpoints and mitigate common Layer 2 attacks.
Chapter 7	**Cryptographic Systems** Goal: Secure communications to ensure integrity, authenticity and confidentiality.
Chapter 8	**Implementing Virtual Private Networks** Goal: Implement secure Virtual Private Networks.
Chapter 9	**Implementing the Cisco Adaptive Security Appliance (ASA)** Goal: Implement an ASA firewall configuration using the CLI.
Chapter 10	**Advanced Cisco Adaptive Security Appliance (ASA)** Goal: Implement an ASA firewall configuration and VPNs using ASDM.
Chapter 11	**Managing a Secure Network** Goal: Test network security and create a technical security policy.

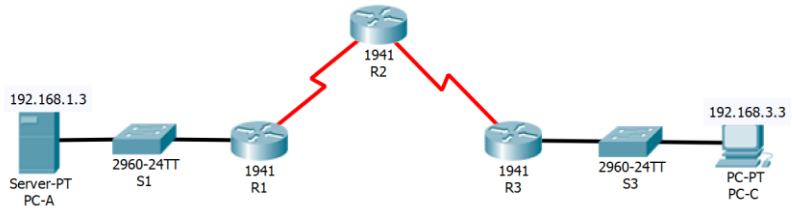
CCNA Security 2.0 Key Competencies

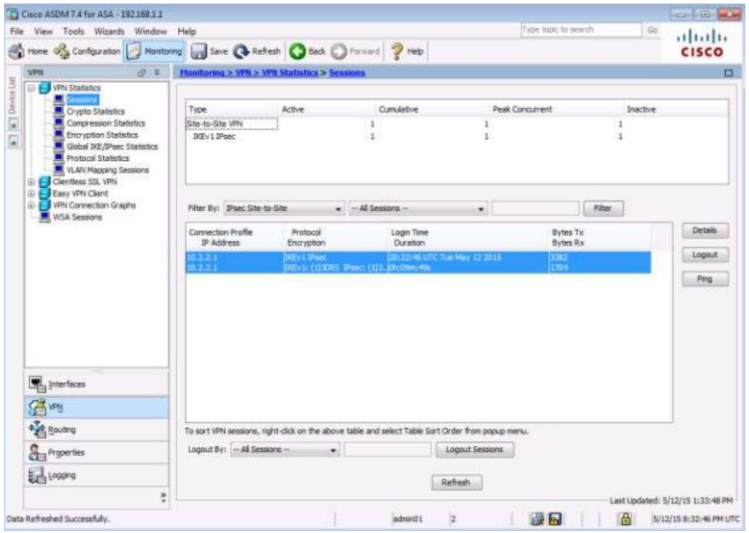
Upon completion of this course, students will be able to:

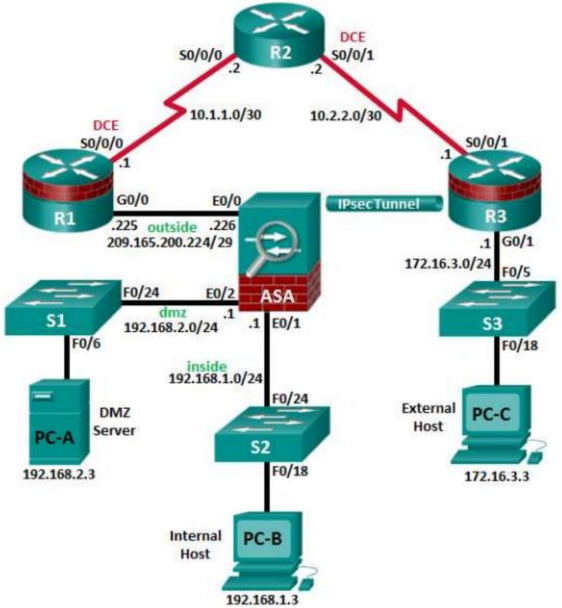
- Describe security threats facing **modern network infrastructures**
- Secure **Cisco routers and switches**
- Describe **AAA** functionalities and implement AAA on Cisco routers using local router database and server-based **ACS** or **ISE**
- Mitigate threats to networks using **ACLs and stateful firewalls**
- **Implement IPS and IDS** to secure networks against evolving attacks
- Mitigate threats to email, web based and endpoints attacks and common Layer 2 attacks
- Secure communications to ensure integrity, authenticity and confidentiality
- Describe the purpose of VPNs, and **implement** Remote Access and **Site-to-Site VPNs**
- Secure networks using **Cisco ASA**



Labs








```
R1(config)# crypto isakmp policy 10
R1(config-isakmp)# hash sha
R1(config-isakmp)# authentication pre-share
R1(config-isakmp)# group 14
R1(config-isakmp)# lifetime 3600
R1(config-isakmp)# encryption aes 256
R1(config-isakmp)# end
```

Equipment

Qty	Product Number	Description
3	ISR4221-SEC/K9	Cisco ISR 4221 SEC Bundle with Security License (SL-4220-SEC-K9)
	Or ISR4321-SEC/K9	Cisco ISR 4321 Sec bundle w/SEC license
	Or ISR4331-SEC/K9	Cisco ISR 4331 Sec bundle w/SEC license
3	NIM-2T=	2-Port Serial WAN Interface card
3	CAB-SS-V35MT=	V.35 Cable, DTE Male to Smart Serial, 10 Feet
3	CAB-SS-V35FC=	V.35 Cable, DCE Female to Smart Serial, 10 Feet
3	WS-C2960+24TC-L	Catalyst 2960 Plus 24 10/100 + 2T/SFP LAN Base
1	ASA5506-K9	ASA 5506-X with FirePOWER services, 8GE, AC, 3DES/AES
	ACS-4220-RM-19=	19 inch rack mount kit for Cisco ISR 4220

What's in it for me?

CCNA Security enables students:

- Understand core security concepts and how to develop and implement security policies to mitigate risks
- Configure, monitor, and troubleshoot network security
- Prepare for the Cisco CCNA Security Certification exam
- Develop themselves as network and security engineer

CCNA Security an der MMBbS

WFK: CCNA Security

Kursangebot Schuljahr 2018/2019 für das 3. Ausbildungsjahr

CCNA Security
Kurszeiten: **Donnerstags** von 15:20 – 20:30
01.11., 08.11., 15.11., 22.11., 29.11., 06.12., 13.12.2018 und 10.01.2019

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CCNA Cyber Ops Kursdesign

Networking Academy

Course Structure: CCNA Cyber Ops

Chapter	Title	Theme	Student Profile
1	Cybersecurity and the Security Operations Center	Introduction	
2	Windows Operating System	OS Fundamentals	Students with ITE, Linux Essentials knowledge
3	Linux Operating System		
4	Network Protocols and Services	Networking Fundamentals	Students with CCNA R&S (ITN) knowledge
5	Network Infrastructure		
6	Principles of Network Security	Cybersecurity Fundamentals	Students with Cybersecurity Essentials and CCNA Security knowledge
7	Network Attacks: A Deeper Look		
8	Protecting the Network		
9	Cryptography and the Public Key Infrastructure		
10	Endpoint Security and Analysis		
11	Security Monitoring	Cybersecurity Operations	
12	Intrusion Data Analysis		
13	Incident Response and Handling		

CCNA Cyber Ops

Course Design

- Easy-to-navigate graphical user interface
- 13 chapters, modifiable chapter quizzes and chapter exams
- 13 terms & concepts practice quizlets
- 13 chapters containing accessible text and media text
- 54 interactive activities
- 45 hands-on labs (27 labs use VM)
- 5 Cisco Packet Tracer activities, require PT 7.x or above
- 1 skills-based assessment
- 2 certification practice exams
    - 1x 210-250 SECFND
    - 1x 210-255 SECOPS
- 1 practice final exam and final exam
- Accessibility compliant to WCAG 2.0 AA level
- Certificate of Completion, Letter of Merit
- Certification voucher

CCNA Cyber Ops
Equipment Requirements

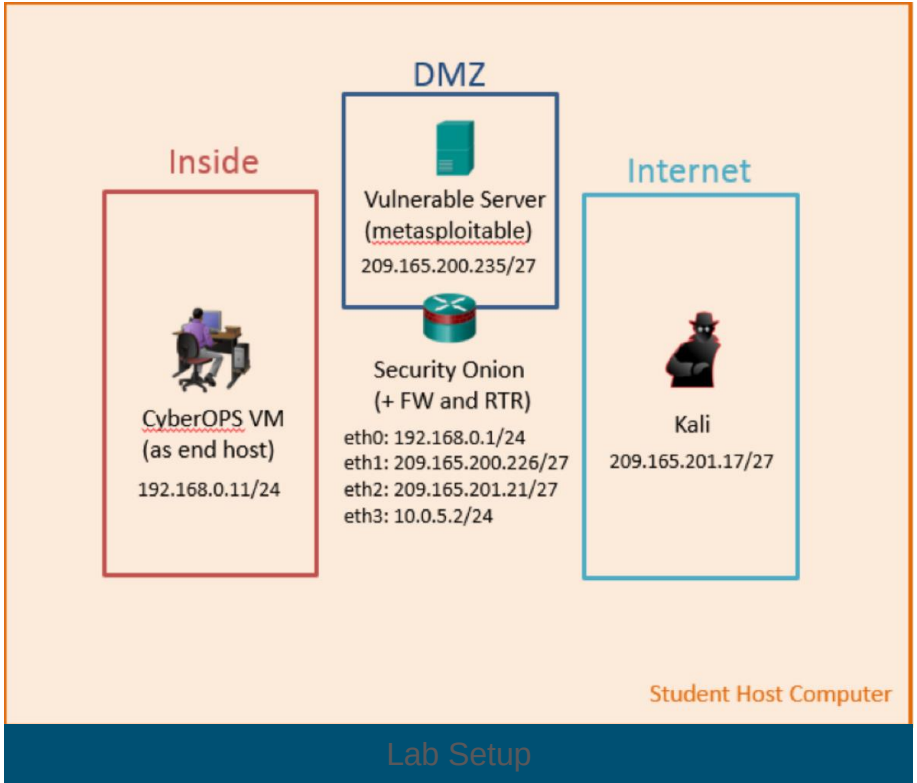
Curriculum requirements: 1 student PC per student (recommended), at most 2 students per PC

Platform	Description
Computer	• OS: Any • Processor: Intel Core i7 4600U 2.7GHz (with Virtualization Support) • Memory: 8 gigabyte (GB) RAM (standard) or 4 GB RAM (alternative option) • Display Adapter: PCI, PCIe (recommended), or AGP video card (DirectX 9 graphics device with WDDM driver) • Disk: 45 GB hard drive (minimum). See table in the next slide for details. • Network: 1 Ethernet Card or 1 Wireless Ethernet Card
Web Browser	The most recent version of Microsoft Internet Explorer, Google Chrome, or Mozilla Firefox with the most recent versions of Java and Flash Player installed.
Oracle VirtualBox	The latest version
Windows Experience Index (WEI)	6.5 (recommended)
Packet Tracer	Min. Version 7.0

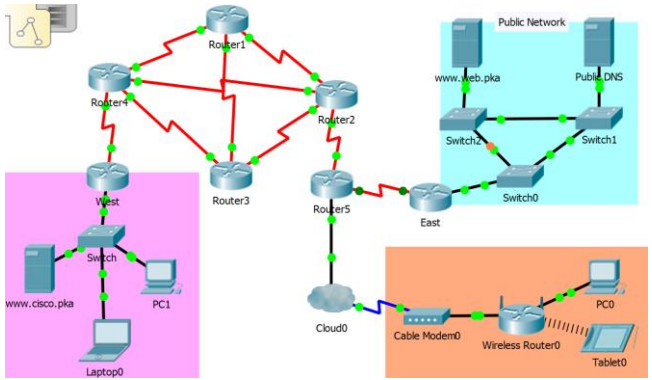
CCNA Cyber Ops

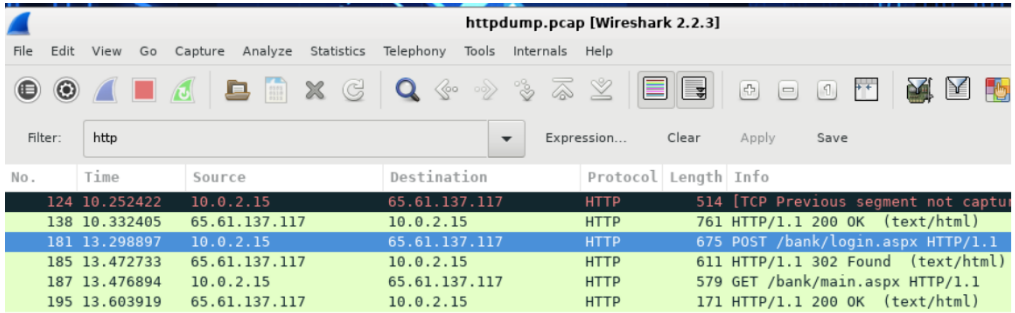
Equipment Requirements

Virtual Machine Name	Disk Space	RAM
CyberOps Workstation VM	7 GB	1 GB
Kali Linux VM	10 GB	1 GB
MetaSploitable VM	8 GB	512 MB
Security Onion VM	10 GB	4 GB (standard)



Labs





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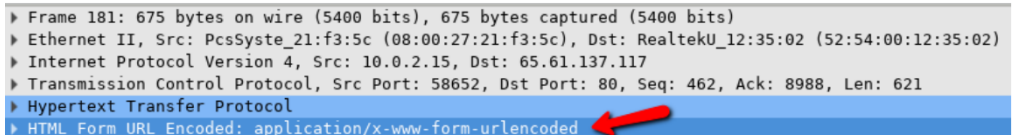
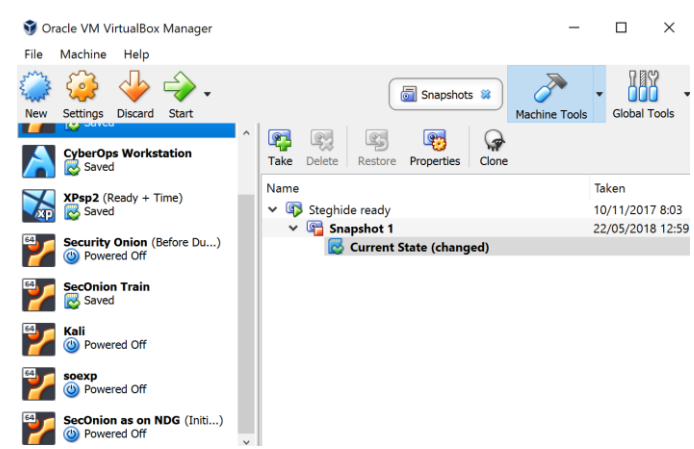
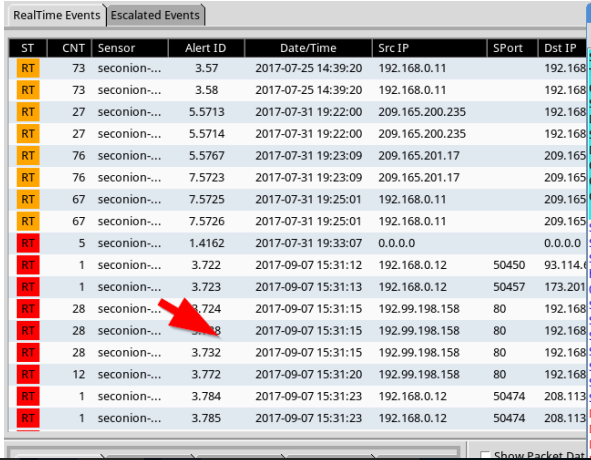
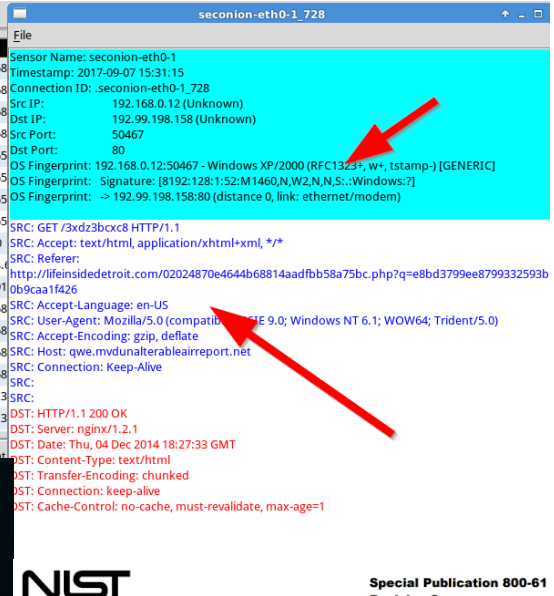


Labs








```
msf > search 234

Matching Modules
================

   Name                                                  Disclosure Date  Rank       Description
   ----                                                  ---------------  ----       -----------
   auxiliary/scanner/http/bavision_cam_login                              normal     BAVision IP Camera Web Server Login
   auxiliary/scanner/http/coldfusion_locale_traversal                     normal     ColdFusion Server Check
   auxiliary/server/pxeexploit                                            normal     PXE Boot Exploit Server
   exploit/linux/misc/hp_vsa_login_bof                   2013-06-28       normal     HP StorageWorks P4000 Virtual SAN Appliance Login
r Overflow
   exploit/multi/browser/java_jre17_reflection_types     2013-01-10       excellent  Java Applet Reflection Type Confusion Remote Code
tion
   exploit/multi/misc/java_jmx_server                    2013-05-22       excellent  Java JMX Server Insecure Configuration Java Code
ion
   exploit/unix/ftp/vsftpd_234_backdoor                  2011-07-03       excellent  VSFTPD v2.3.4 Backdoor Command Execution
   exploit/unix/webapp/basilic_diff_exec                 2012-06-28       excellent  Basilic 1.5.14 diff.php Arbitrary Command Executi
   exploit/unix/webapp/clipbucket_upload_exec            2013-10-04       excellent  ClipBucket Remote Code Execution
   exploit/windows/brightstor/lgserver                   2007-01-31       average    CA BrightStor ARCserve for Laptops and Desktops L
r Buffer Overflow
   exploit/windows/browser/mcafeevisualtrace_tracetarget 2007-07-07       normal     McAfee Visual Trace ActiveX Control Buffer Overfl
   exploit/windows/browser/novelliprint_getdriversettings_2 2010-11-15    normal     Novell iPrint Client ActiveX Control Buffer Overf
```

Jobs for Security Specialists

CCNA Security
(“doing” things)

- Network Security Specialist
- Security Administrator
- Network Security Support Engineer

CCNA CyberOps
(“watching” things)

- Security SOC Analyst
- Incident Responder
- Cyber Security and Privacy Analyst

Erfahrungsaustausch

Networking Academy

Erfahrungsaustausch und Ideen für den Einsatz im Unterricht im Bereich Fachinformatiker und Wirtschaftsinformatik

Erfahrungsaustausch

Wahlpflichtkurse MMBbS
2.-3. AJ IT-Berufe

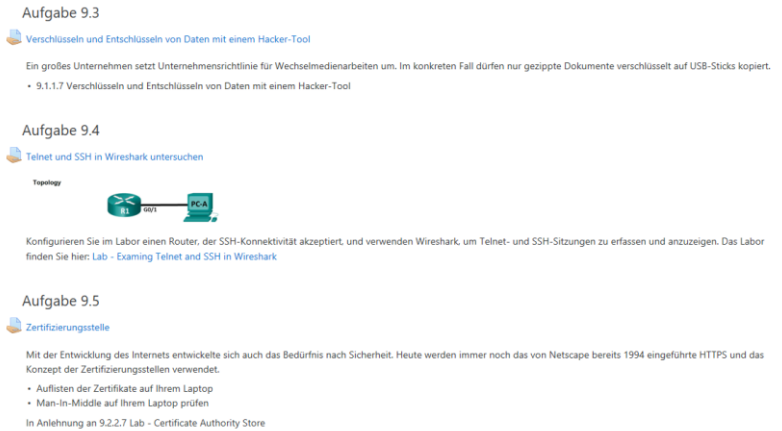
6 Blöcke a 4 Stunden

Es wird das CCNA Cybersecurity Operations online Curricula aus der Cisco Networking Academy zur Verfügung gestellt

Notwendige Vorkenntnisse

Das der Kurs als Blended Learning ausgeführt wird, ist ein hohes Maß an Eigenmotivation für die E-Learning Phasen notwendig.
In der Präsensphase wird es größten Teils um die Umsetzung gehen, daher sind Kenntnisse in den Betriebssystemen Windows und Linux, sowie in der Netzwerkinfrastruktur notwendig.

Es werden englisch sprachigen Unterlagen genutzt



Aufgabe 9.3

Verschlüsseln und Entschlüsseln von Daten mit einem Hacker-Tool

Ein großes Unternehmen setzt Unternehmensrichtlinie für Wechselmedienarbeiten um. Im konkreten Fall dürfen nur gezippte Dokumente verschlüsselt auf USB-Sticks kopiert.

- 9.1.1.7 Verschlüsseln und Entschlüsseln von Daten mit einem Hacker-Tool

Aufgabe 9.4

Telnet und SSH in Wireshark untersuchen

Topology

R1 G0/1 PC-A

Konfigurieren Sie im Labor einen Router, der SSH-Konnektivität akzeptiert, und verwenden Wireshark, um Telnet- und SSH-Sitzungen zu erfassen und anzuzeigen. Das Labor finden Sie hier: Lab - Examing Telnet and SSH in Wireshark

Aufgabe 9.5

Zertifizierungsstelle

Mit der Entwicklung des Internets entwickelte sich auch das Bedürfnis nach Sicherheit. Heute werden immer noch das von Netscape bereits 1994 eingeführte HTTPS und das Konzept der Zertifizierungsstellen verwendet.

- Auflisten der Zertifikate auf Ihrem Laptop
- Man-In-Middle auf Ihrem Laptop prüfen

In Anlehnung an 9.2.2.7 Lab - Certificate Authority Store

Erfahrungsaustausch

Networking Academy

Wahlpflichtfach

Studiengang Wirtschaftsinformatik CCNA Cyber Ops

Leibniz FH SCHOOL OF BUSINESS

CCNA Cyber Ops

Kontaktstunden (KS):	80 Std.	Studienabschnitt:	5. und 6. Semester (Sem)	ECTS (CP):	8 CP
Selbstlernzeit (SZ):	160 Std.	Lehrformen:	Ü/V/E-Learn	Gewichtung:	4%
Workload (WL):	240 Std.	Voraussetzung:	Studiengang Wirtschaftsinformatik	Modultyp:	Wahlpflicht
Modulverantwortung:	Prof. Dr. Norbert Gülke			Angebotsfrequenz:	>jährlich<

Name der Veranstaltung	Sem	CP	KS	SZ	WL	Prüfung		Gewichtung für Modulnote
						Art	Sem	
A CCNA Cybersecurity Operations Teil 1	5	4	40	80	120	Online Exam Hands On Skill Exam	5	50 %
B CCNA Cybersecurity Operations Teil 2	6	4	40	80	120	Online Exam Hands On Skill Exam	6	50 %

Erfahrungsaustausch

Networking Academy

Idee

CCNA CyberOps als Klammer über alle 3 AJ

für den Fachinformatiker Systemintegration ??

Erfahrungsaustausch

Networking Academy

CCNA Cybersecurity Operations

The student has successfully achieved student level credential for completing CCNA Cybersecurity Operations course administered by the undersigned instructor. The student was able to proficiently:

- Explain the role of the Cybersecurity Operations Analyst in the enterprise.
- Explain the Windows Operating System and Linux Operating System features and characteristics needed to support cybersecurity analyses.
- Explain the operation of network infrastructures.
- Analyze the operation of network protocols and services.
- Classify the various types of network attacks.
- Use network monitoring tools to identify attacks against network protocols and services.
- Use various methods to prevent malicious access to computer networks, hosts, and data.
- Explain the impacts of cryptography on network security monitoring.
- Explain how to investigate endpoint vulnerabilities and attacks.
- Evaluate network security alerts.
- Analyze network intrusion data to identify vulnerabilities and compromised hosts.
- Explain how security incidents are handled by CSIRTs.

Erfahrungsaustausch

Networking Academy

Zuordnung zu den Lernfeldern

LF4 - Einfache IT-Systeme

LF7 - Vernetze IT-Systeme

LF10 - Betreuung IT-Systeme

aus dem Rahmenlehrplan für den Fachinformatiker Fachrichtung Systemintegration
Stand 25.April 1997

-> Idee: CCNA CyberOps als Klammer über alle 3 Ausbildungsjahre

Erfahrungsaustausch

ToDo ?

Networking Academy

Cisco CyberOps Skills Challenge Game

Cyber Ops Skills Challenge Game

The Cyber Ops Skills Challenge game is an optional activity that allows students to use their skills and knowledge to compete with other students. It consists of two VMs. A classroom server VM and a client VM for game players and game administration. Instructions for installing and administering the game are provided in the Instructor Guide.

Instructions for playing the game are included in the Student Guide.

Server VM

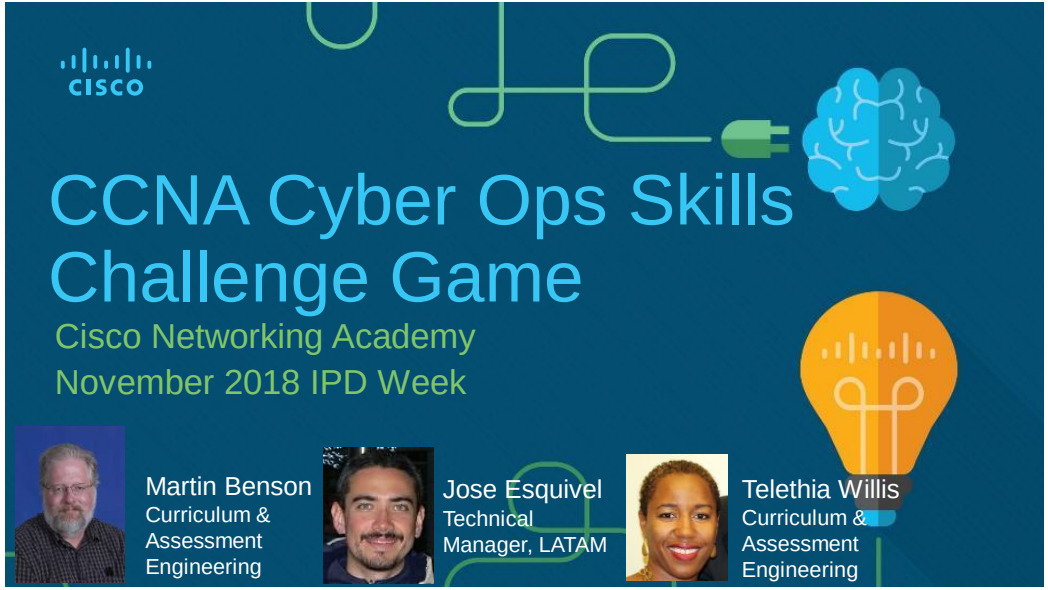
Client VM

Instructor Guide

Student Guide

Skills Challenge Game FAQ

Cisco CyberOps Skills Challenge Game



Almut Leykauff-Bothe, MMBbS Hannover

Stefan Krieger BBS Rotenburg