



Welcome to

# It-sikkerhedsupdate

2019

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Slides are available as PDF, kramse@Github  
it-sikkerhedsupdate-2019.tex in the repo security-courses

slides are available on Github

# Goal for today



FreeFoto.com

What are the things on the table for a responsible it-security strategy for 2019. Which subjects are most important, and what are the threats, if you dont get started immediately with the top 10 priorities.

- Plan:
- Approx 4h, with breaks
- Less presentation, more dialog
- Inspiration for solving the tasks, prioritizing the tasks
- I dont have tailer made solutions or easy answers for your organisation

# Happy New Year 2019



- Same problems
- Repeat last year?
- ... or try something new!
- 2019 will become a nightmare of break-ins and data leaks
- GDPR is here and the snow ball is rolling



**Try not to panic, but there are lots of threats**

# Paranoia defined



## par·a·noi·a

/parə'noiə/ ◄)

*noun*

noun: paranoia

1. a mental condition characterized by delusions of persecution, unwarranted jealousy, or exaggerated self-importance, typically elaborated into an organized system. It may be an aspect of chronic personality disorder, of drug abuse, or of a serious condition such as schizophrenia in which the person loses touch with reality.  
*synonyms:* persecution complex, delusions, obsession, psychosis [More](#)
- suspicion and mistrust of people or their actions without evidence or justification.  
"the global paranoia about hackers and viruses"

## Origin

GREEK

para  
irregular

GREEK

GREEK

MODERN LATIN

noos

mind

paranoos  
distracted

early 19th cent.

More

Source: google paranoia definition

# Hackers don't give a shit

Your system is only for testing, development, ...

Your network is a research network, under construction, being phased out, ...

Try something new, go to your management

Bring all the exceptions, all of them, update the risk analysis figures - if this happens it is about 1mill DKK

Ask for permission to go full monty on your security

**Think like attackers - don't hold back**

# Hackers don't give a shit:

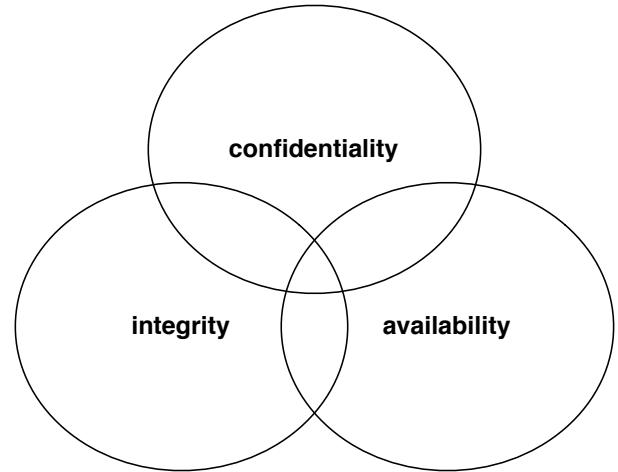


**KIWICON III**  
28<sup>TH</sup> & 29<sup>TH</sup> NOVEMBER 2009

New Zealand's Hacker con - Wellington

- About your project's scope
- It's managed by a third party
- It's a legacy system
- It's "too critical to patch"
- About your outage windows
- About your budget
- You've always done it that way
- About your Go-Live Date
- It's only a pilot/proof of concept
- About Non-Disclosure Agreements
- It wasn't a requirement in the contract
- It's an internal system
- It's really hard to change
- It's due for replacement
- You're not sure how to fix it
- It's handled in the Cloud
- About your Risk Register entry
- The vendor doesn't support that configuration
- It's an interim solution
- It's [insert standard here] compliant
- It's encrypted on disk
- The cost benefit doesn't stack up
- "Nobody else could figure that out"
- You can't explain the risk to "The Business"
- You've got other priorities
- About your faith in the competence of your internal users
- You don't have a business justification
- You can't show Return on Investment
- You contracted out that risk

# Confidentiality Integrity Availability



We want to protect something

Confidentiality - data holdes hemmelige

Integrity - data ændres ikke uautoriseret

Availability - data og systemet er tilgængelige når de skal bruges

# What is data?



Personal data you dont want to loose:

- Wedding pictures
- Pictures of your children
- Sextapes
- Personal finances

Source: picture of my son less than 24 hours old - precious!

# Security engineering som job rolle



On any given day, you may be challenged to:

- Create new ways to solve existing production security issues
- Configure and install firewalls and intrusion detection systems
- Perform vulnerability testing, risk analyses and security assessments
- Develop automation scripts to handle and track incidents
- Investigate intrusion incidents, conduct forensic investigations and incident responses
- Collaborate with colleagues on authentication, authorization and encryption solutions
- Evaluate new technologies and processes that enhance security capabilities
- Test security solutions using industry standard analysis criteria
- Deliver technical reports and formal papers on test findings
- Respond to information security issues during each stage of a project's lifecycle
- Supervise changes in software, hardware, facilities, telecommunications and user needs
- Define, implement and maintain corporate security policies
- Analyze and advise on new security technologies and program conformance
- Recommend modifications in legal, technical and regulatory areas that affect IT security

Source: <https://www.cyberdegrees.org/jobs/security-engineer/>

also [https://en.wikipedia.org/wiki/Security\\_engineering](https://en.wikipedia.org/wiki/Security_engineering)

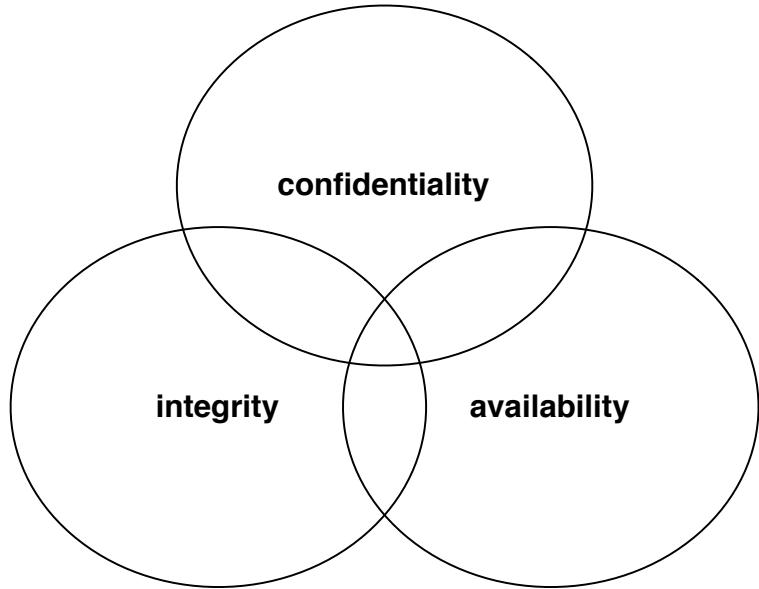
# Fokus 2020



- Brugerstyring
- Asset management
- Laptop sikkerhed
- VPN alle steder
- Penetration testing
- Firewalls og segmentering
- TLS og VPN indstillinger
- DNS og email
- Syslog og monitorering
- Incident Response og reaktion

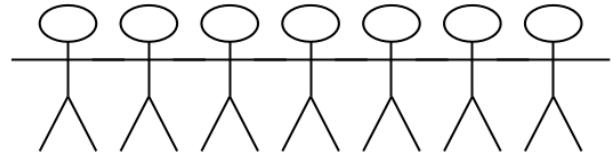
Håber ikke I er alene om det, ellers vælg et par stykker ad gangen

# Fokus 2019: Brugerstyring



- Relevant for alle organisationer
- Er måden vi sikrer godkendte brugere kan udføre opgaver
- Kodeord bruges til at forhindre uautoriseret adgang

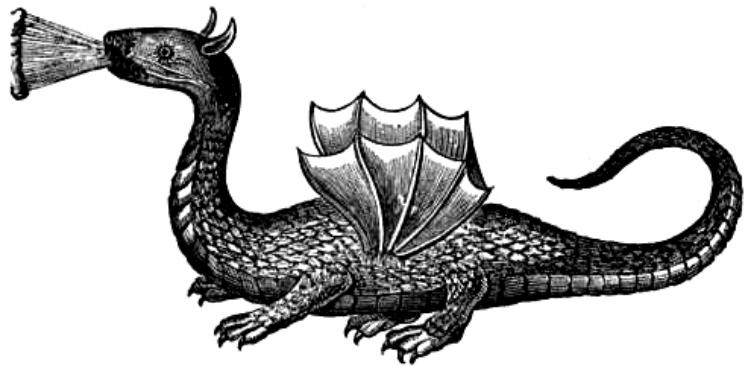
# Brugerstyring



- Har I styr på brugerid?
- Hvor er brugere oprettet?
- Hvor hurtigt kan I fjerne "een bruger" eller "deaktivere en bruger" alle steder!
- Er det et kludetæppe - ja, mange steder er det

Du er FYRET!!!!

# Local administrator?



- Findes der systemer som er helt åbne, med lokal administrator
- Er det stadig nødvendigt

# Centraliseret brugerstyring



Active Directory, mange danske virksomheder bruger det  
LDAP central brugerstyring

... men brug det endnu mere

- Konfigurer applikationer til central styring
- Fjern applikationer som ikke tillader central styring
- Overvågning på fejlslagne logins, og godkendte logins

Generelt minimer brugere andre steder end i den centrale database

Hvad med ILO, DRAC, temperaturovervågning - en fælles password database, med begrænset adgang, måske?

# Passwords vælges ikke tilfældigt



## The 50 Most Used Passwords

- |              |              |                |              |             |
|--------------|--------------|----------------|--------------|-------------|
| 1. 123456    | 11. 123123   | 21. mustang    | 31. 7777777  | 41. harley  |
| 2. password  | 12. baseball | 22. 666666     | 32. f*cky*u  | 42. zxcvbnm |
| 3. 12345678  | 13. abc123   | 23. qwertyuiop | 33. qazwsx   | 43. asdfgh  |
| 4. qwerty    | 14. football | 24. 123321     | 34. jordan   | 44. buster  |
| 5. 123456789 | 15. monkey   | 25. 1234...890 | 35. jennifer | 45. andrew  |
| 6. 12345     | 16. letmein  | 26. p*s*y      | 36. 123qwe   | 46. batman  |
| 7. 1234      | 17. shadow   | 27. superman   | 37. 121212   | 47. soccer  |
| 8. 111111    | 18. master   | 28. 270        | 38. killer   | 48. tigger  |
| 9. 1234567   | 19. 696969   | 29. 654321     | 39. trustno1 | 49. charlie |
| 10. dragon   | 20. michael  | 30. 1qaz2wsx   | 40. hunter   | 50. robert  |

Source: <https://wpengine.com/unmasked/>

# Your data has already have been owned by criminals



A screenshot of a web browser displaying the 'haveibeenpwned.com' website. The URL in the address bar is 'https://haveibeenpwned.com'. The main heading is '';--have i been pwned?' in a large, white, rounded rectangle. Below it is a subtitle 'Check if you have an account that has been compromised in a data breach'. A search input field contains the email 'hlk@kramse.org'. To its right is a dark blue button labeled 'pwned?'. Below the search area, a large red banner displays the message 'Oh no — pwned!' in white. Underneath the banner, smaller text reads 'Pwned on 7 breached sites and found no pastes (subscribe to search sensitive breaches)'.

Your data is already being sold, and resold on the Internet

Stop reusing passwords, use a password safe to generate and remember

Check your own email addresses on <https://haveibeenpwned.com/>

Go ahead try the web site - hold up your hand if you are in those dumps

# Brug mere sikre passwords



## Pwned Passwords overview

Pwned Passwords are more than half a billion passwords which have previously been exposed in data breaches. The service is detailed in the launch blog post then further expanded on with the release of version 2. The entire data set is both downloadable and searchable online via the Pwned Passwords page.

I kan forhindre brugere i at vælge passwords der ALLEREDE er lækket

I kan bruge deres API eller download

<https://www.troyhunt.com/introducing-306-million-freely-downloadable-pwned-passwords/>

# Formål: sund paranoia - Opbevaring af passwords



## The 5<sup>th</sup> Wave

By Rich Tennant



**"Don't be silly — of course my passwords are safe. I keep them written on my window, but then I pull the shade if anyone walks in the room."**

# Github Public passwords?



The screenshot shows a search results page on GitHub. The search bar at the top contains the query "-----BEGIN RSA PRIVATE KEY-----". Below the search bar, there is a sidebar with three main categories: "Repositories" (277), "Code" (77,468, which is highlighted in orange), and "Users". A repository named "kordless/zoto-server" is listed under the "Code" section. The repository page shows a snippet of code:

```
1 -----BEGIN RSA PRIVATE KEY-----  
2 -----END RSA PRIVATE KEY-----
```

## Sources:

<https://twitter.com/brianaker/status/294228373377515522>

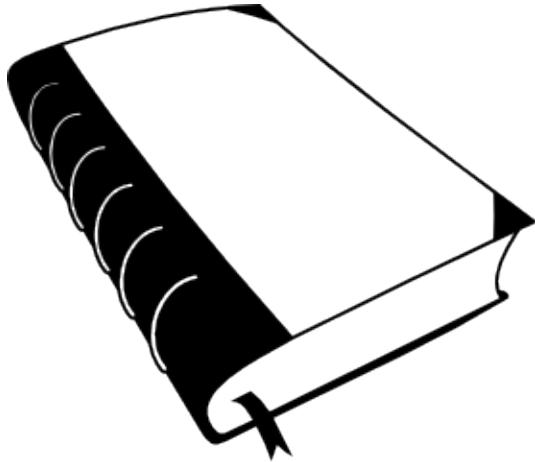
<http://www.webmonkey.com/2013/01/users-scramble-as-github-search-exposes-passwords-security-details/>

<http://www.leakedin.com/>

<http://www.offensive-security.com/community-projects/google-hacking-database/>

Use different passwords for different sites, yes - every site!

# Fokus 2019: Asset management



Free graphics by Lumen Design Studio

- Specielt relevant for mellemstore til store organisationer
- Hvilke assets har vi?
- Hvordan sikrer vi at vi ikke mister værdierne

# Hvad er asset management



CIS Control 1:

Inventory and Control of Hardware Assets Actively manage (inventory, track, and correct) all hardware devices on the network so that only authorized devices are given access, and unauthorized and unmanaged devices are found and prevented from gaining access.

Source: <https://www.cisecurity.org/>

- Hardware - både indkøbte, opkoblede, udlånte, stjålne ...
- Software - licenser, indkøb, brug, opgraderingspriser
- Virtuelle arkiver - eksempelvis forretningskritiske data
- ...

# Hardware asset management



The screenshot shows the RackTables 0.17.0 main page. At the top, it says "Hello, RackTables Administrator. This is RackTables 0.17.0. Click here to logout". Below that is a search bar. The main area has seven navigation links with icons: "Rackspace" (racking unit icon), "Objects" (server icon), "IPv4 space" (IP address icon), "Files" (file folder icon), "Configuration" (wrenches icon), "Reports" (graph icon), and "IPv4 SLB" (load balancer icon). The "Reports" link is currently active.

- Der findes mange systemer
- Det anbefales at bruge specialiserede systemer, a la RackTables:  
Have a list of all devices you've got, Have a list of all racks and enclosures, Mount the devices into the racks, Maintain physical ports of the devices and links between them

# Software asset management - virtuelle arkiver



Flere detaljer i gigantisk hotel-hack: 5,25 mio. ukrypterede pasnumre taget  
Jakob Møllerhøj | Sikkerhed | 07. jan 2019

7,6 millioner spillerkonti løkket fra populært onlinespil  
Niels Møller Kjemstrup | Sikkerhed | 07. jan 2019

Største løk i tysk historie: Politikeres og kunstneres data smidt på nettet  
Morten Egedal | Sikkerhed | 04. jan 2019

Gentleman-aftale mellem politiske partier skal danne mur mod dataløk, hacking og fake news  
Louise Holst Andersen | Sikkerhed | 04. jan 2019

Boligfond beklager løk af følsomme persondata: En menneskelig fejl  
Sikkerhed | 28. dec 2018

- Software - licenser, indkøb, brug, opgraderingspriser
- Virtuelle maskiner - er en server et asset, eller er det data?
- IP adresser
- Data arkiver - GDPR

# IP Address Management IPAM



NIPAP

127.0.0.1:5000/prefix/list#query\_string=test&search\_opt\_parent=undefined&search\_opt\_child=undefined&explicit=false

VRFs prefixes pools Log out

Add prefix

test

Query took 0.64 seconds.

Search interpretation: test: text matching "test"

VRF	Prefix	Order	FQDN	Description
No VRF	+ 1.0.0.0/8	R		
	+ 1.0.0.0/16	R		
	1.0.1.0/24	A		test
	- 1.0.5.0/24	A		bla bla bla4
	1.0.5.1/24	H		test host 1
	1.0.5.2/24	H		test host 2
	1.0.5.3/24	H		test host 3
	1.0.5.4/24	H		test host 4
	1.0.5.5/24	H		test host 5
	1.0.5.6/24	H		test host 6
	1.0.5.7/24	H		test host 7
	- 1.3.0.0/16	R		bla bla
	1.3.0.0/24	A		test
	1.3.3.0/24	A		blahona
	2.0.1.0/24	A		test
	2.0.5.0/24	A		test
	2.0.6.0/24	A		test
	2.0.7.0/24	A		test
	2.0.8.0/24	A		test

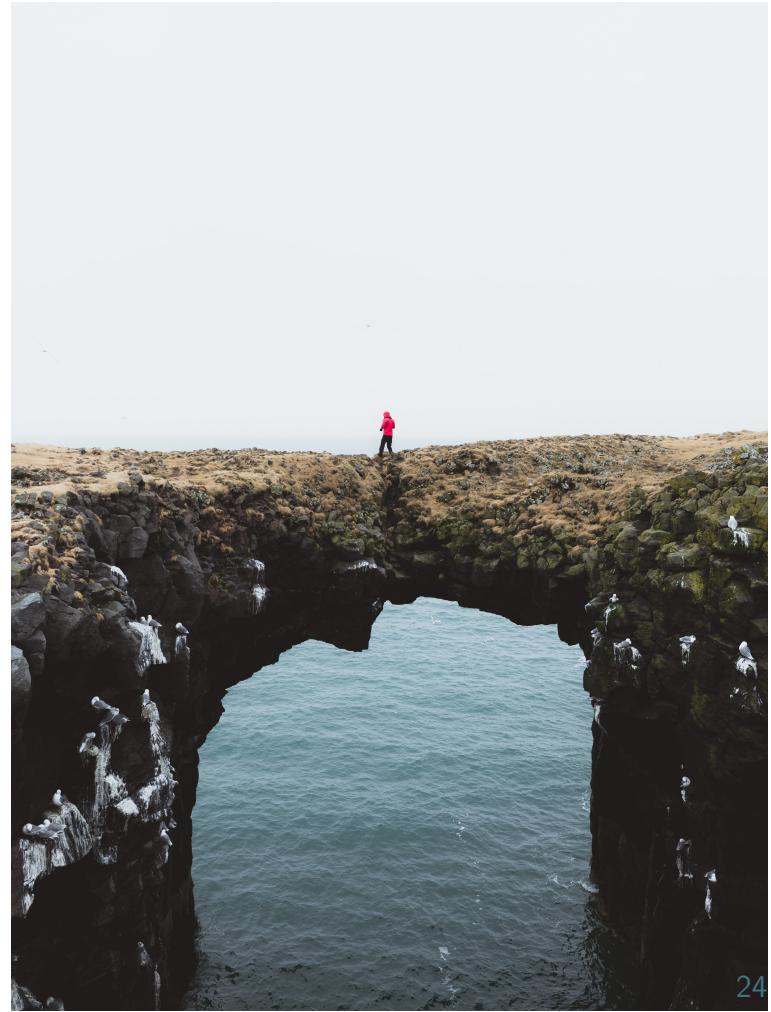
http://127.0.0.1:5000/prefix/list#query\_string=test&search\_opt\_parent=undefined&search\_opt\_child=undefined&explicit=false

- Anbefaler Nipap <http://spritelink.github.io/NIPAP/>

# Har du styr på dependencies



- Skal det være helt flot så få også styr på dependencies
- Er jeres produktion afhængig af andres moduler, biblioteker osv.
- Tænk tilbage til Heartbleed, gik flere år før de sidste opdateringer kom



# Fokus 2019: Laptop sikkerhed



- Relevant for alle
- Hvordan sikrer vi at vi ikke mister værdierne, hardware og data typisk

# Secure Laptops



- Laptops (og mobile enheder)
- Hvad kendetegner en laptop?
- Hardware naturligvis, en Macbook koster officielt mere end en brugt mellemklassebil
- - og husk brugen af laptops
- Er laptops sikre, og hvad betyder det?

## Are your data secure - data at rest



Etiam invenimus quae egen ium impend. Officia deserunt mollit animorum Et harumq; dexter expedit distinct. Gothicā quam nunc putamus parum litterarum formas humanitatis per seacula quarta; modo typi sollemnes in futurum; litterarum fūlūmēnes in futurū cima et quinta decima, modo typi qui nūtūrū parurū sollemnes in futuru rit ! Nam liber te conscient to factor tum pioque civili ēque pecun mōc honor et imper rū et, conse ng elit, secūtūt dolore magna aliquam is nostrud exercitatio lo conse e in voluptate verit esse cillum dolore eu fugiat nulla pariatur. At vverē am dignissum qui blandit est praesent.

Stolen laptop, tablet, phone - can anybody read your data?

Do you trust "remote wipe"

How do you in fact wipe data securely off devices, and SSDs?

Encrypt disk and storage devices before using them in the first place!

## Circumvent security - single user mode boot



Unix systems often allows boot into singleuser mode  
press command-s when booting Mac OS X

Laptops can often be booted using PXE network or CD boot

Mac computers can become a Firewire disk  
hold t when booting - firewire target mode

Unrestricted access to un-encrypted data

Moving hard drive to another computer is also easy

Physical access is often - **game over**

# Encrypting hard disk



Becoming available in the most popular client operating systems

- Microsoft Windows Bitlocker
- Apple Mac OS X - FileVault
- FreeBSD GEOM og GBDE - encryption framework
- Linux LUKS distributions like Ubuntu ask to encrypt home dir during installation
- Some vendors have BIOS passwords, or disk passwords

## Attacks on disk encryption



Firewire, DMA & Windows, Winlockpwn via FireWire

Hit by a Bus: Physical Access Attacks with Firewire Ruxcon 2006

Removing memory from live system - data is not immediately lost, and can be read under some circumstances

Lest We Remember: Cold Boot Attacks on Encryption Keys

<http://citp.princeton.edu/memory/>

This is very CSI or Hollywoord like - but a real threat

VileFault decrypts encrypted Mac OS X disk image files

<https://code.google.com/p/vilefault/>

FileVault Drive Encryption (FVDE) (or FileVault2) encrypted volumes

<https://code.google.com/p/libfvde/>

So perhaps use both hard drive encryption AND turn off computer after use?

## ... and deleting data



```
Darik's Boot and Nuke beta.2003052000
Options
Entropy: Linux Kernel (urandom)
PRNG: Mersenne Twister (mt19937ar-cok)
Method: DoD 5220-22.M
Verify: Last Pass
Rounds: 1
Statistics
Runtime: 00:00:21
CPU Load: 96%
Throughput: 5973 KB/s
Limiter: Disk I/O
Errors: 0

(IDE 0,0,0,-) VMware Virtual IDE Hard Drive
[04.33%, round 1 of 1, pass 1 of 7] (writing) [5973 KB/s]
```

Getting rid of data from old devices is a pain

Some tools will not overwrite data, leaving it vulnerable to recovery

Even secure erase programs might not work on SSD - due to reallocation of blocks

I have used Darik's Boot and Nuke ("DBAN") <http://www.dban.org/>

# 2018 attack



Drive	1	2	3	4	5	6	7	8	9	Impact
Crucial MX100 (all form factors)	X	X	X							X Compromised
Crucial MX200 (all form factors)	X	X	X							X Compromised
Crucial MX300 (all form factors)	✓	✓	✓		X	✓	✓	✓	✓	X Compromised
Samsung 840 EVO (SATA)	X	✓	✓		✓	✓	✓	X	✓	~ Depends
Samsung 850 EVO (SATA)	X	✓	✓		✓	✓	✓	✓	✓	~ Depends
Samsung T3 (USB)				X						X Compromised
Samsung T5 (USB)				X						X Compromised

<sup>1</sup> Cryptographic binding in ATA Security (High mode)

<sup>2</sup> Cryptographic binding in ATA Security (Max mode)

<sup>3</sup> Cryptographic binding in TCG Opal

<sup>4</sup> Cryptographic binding in proprietary standard

<sup>5</sup> No single key for entire disk

<sup>6</sup> Randomized DEK on sanitize

<sup>7</sup> Sufficient random entropy

<sup>8</sup> No wear leveling related issues

<sup>9</sup> No DEVSLP related issues

*self-encrypting deception: weakness in the encryption of solid state drives (SSDs)*

<https://www.ru.nl/publish/pages/909282/draft-paper.pdf>

# Recommendations - Comply Everywhere, Act Anywhere



## Laptop storage must be encrypted

Firewall must be enabled

Next suggestion:

- Try sniffing data from a laptop, setup Access Point/Monitor port
- Portscan your laptop networks - use Nmap
- Write an email to everyone in your organisation:  
"Hi All, we need to identify laptops without full disk encryption  
- come see us, we have christmas cookies left, Best regards IT"

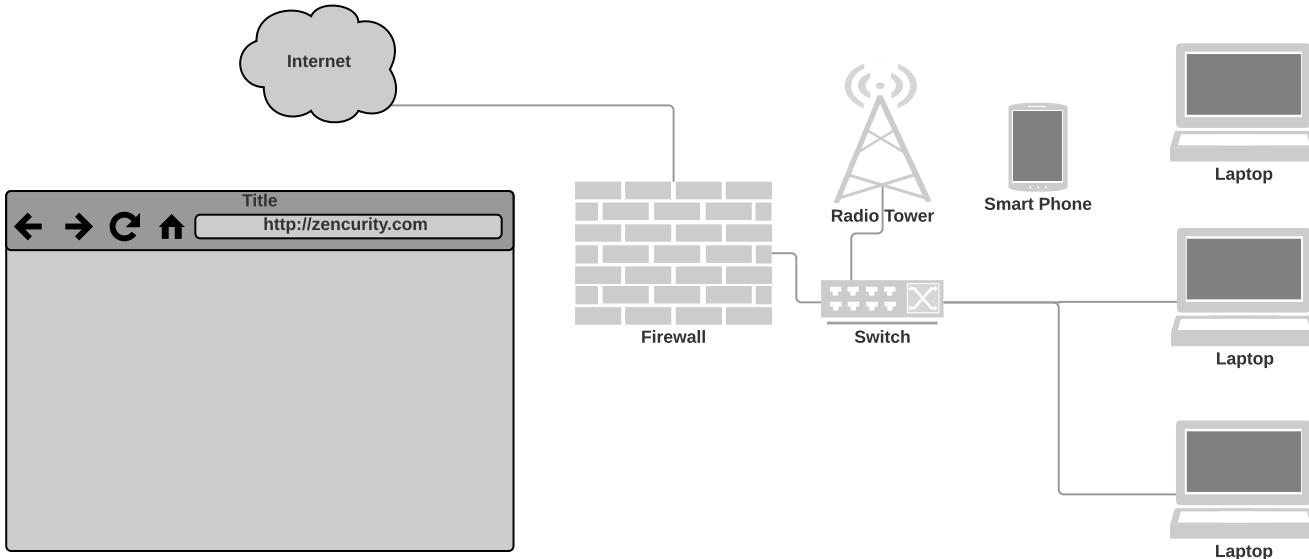


# Fokus 2019: VPN alle steder



- VPN er relevant for alle der har data af værdi
- Sikrer data der flyttes
- Virtual Private Network dækker over klienter der kobler op, og site-2-site

# Your Privacy



- Your data travels far
- Often crossing borders, virtually and literally

# Data found in Network data



Lets take an example, DNS

Domain Name System DNS breadcrumbs

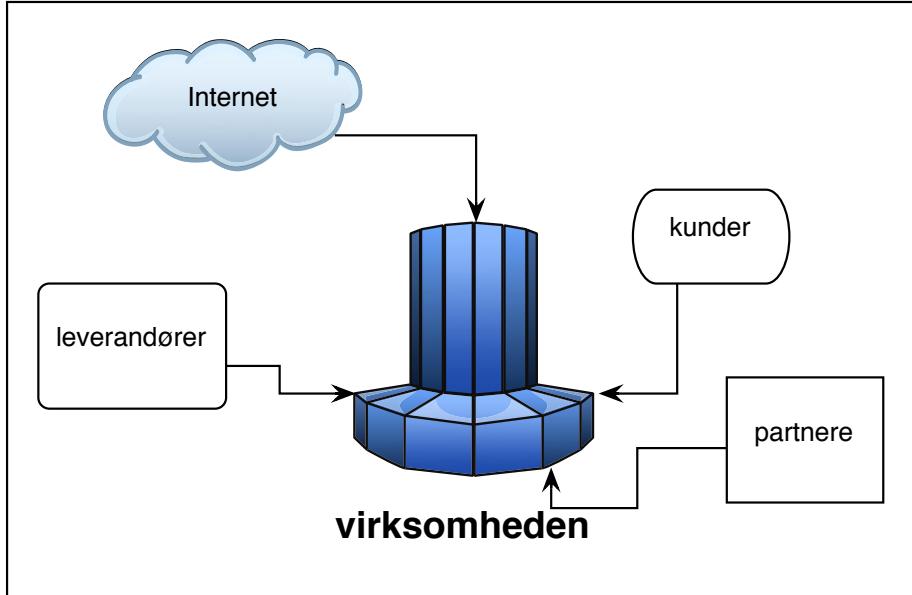
- Your company domain, mailservers, vpn servers
- Applications you use, checking for updates, sending back data
- Web sites you visit

Advice show your users, ask them to participate in a experiment

**Join this Wireless network SSID and we will show you who you are on the internet**

**Maybe use VPN more - or always!**

# Fokus 2019: Penetration testing



- Relevant hvis du driver et netværk, specielt hvis det er forbundet til internet eller stort
- Du bliver hele tiden testet - internet-tinnitus

# Pentesting as example



Penetration testing

Kontrol af sikkerheden

Bruger aktive værktøjer

Brug Nmap pakken til at checke åbne porte

# Start Attacking from the Inside



- Now imagine you were in control of a company laptop
- Do you have a large internal world wide network?  
Having a large open network may cost you 1.9 billion DKK - ref Maersk
- Try scanning everything, start in a small corner, expand
- Scan all your danish segments, one by one, then the nordic, then the world
- Yes, things may break - FINE, BREAKING is GOOD

**Better to break while we are ready to un-break**

# How to break stuff



Think like an attacker, and begin at the bottom.

I sit here, but where am I connected:

```
reading from file cisco-lldp-1.cap, link-type EN10MB (Ethernet)
16:39:43.468745 LLDP, length 328
    Chassis ID TLV (1), length 7
        Subtype MAC address (4): 70:ff:1a:01:03:02 (oui Unknown)
    Port ID TLV (2), length 8
        Subtype Local (7): Eth1/47
    Port Description TLV (4), length 12: Ethernet1/47
    System Description TLV (6), length 158
        Cisco Nexus Operating System (NX-OS) Software 14.0(2c) TAC support: http://www.cisco.com/tac Copyright (c) 2002-
2020, Cisco Systems, Inc. All rights reserved.
```

I love LLDP, but it does reveal software version, so which flaws available

# Hackertools are for everyone!



- Hackers work all the time to break stuff, Use hackertools:
- Nmap, Nping <http://nmap.org>
- Wireshark - <http://www.wireshark.org/>
- Aircrack-ng <http://www.aircrack-ng.org/>
- Metasploit Framework <http://www.metasploit.com/>
- Burpsuite <http://portswigger.net/burp/>
- Kali Linux <http://www.kali.org>

Most popular hacker tools <http://sectools.org/>

# Aktiv testing What happens now?



Think like a hacker

Recon phase – gather information reconnaissance

- Traceroute, Whois, DNS lookups
- Ping sweep, port scan
- OS detection – TCP/IP and banner grabbing
- Service scan – rpcinfo, netbios, ...
- telnet/netcat interact with services

# Kali Linux the pentest toolbox



The most advanced penetration testing distribution, ever.

From the creators of BackTrack comes Kali Linux, the most advanced and versatile penetration testing distribution ever created. BackTrack has grown far beyond its humble roots as a live CD and has now become a full-fledged operating system. With all this buzz, you might be asking yourself: - What's new ?

KALI LINUX  
"the quieter you become, the more you are able to hear"

PENETRATION TESTING,  
REDEFINED.

A Project By Offensive Security

Kali <http://www.kali.org/>

100.000s of videos on youtube alone, searching for kali and \$TOOL

Also versions for Raspberry Pi, mobile and other small computers

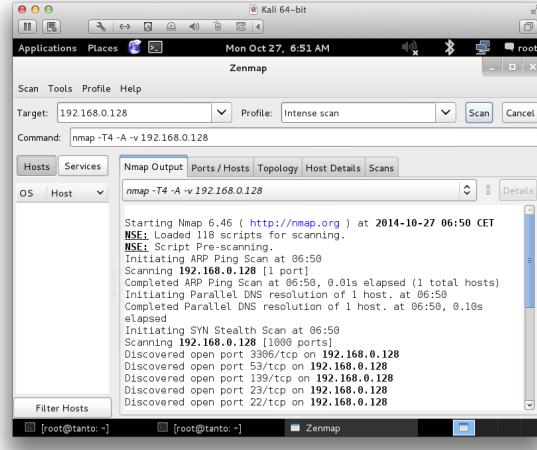
# Nmap the world



```
80/tcp      open     http  
81/tcp      open     basic2-nse  
10 [!] 8 nmap -v -sS -O 10.2.2.2  
11  
13 Starting nmap 0.2.54BETA2S  
13 Insufficient responses for TCP sequencing (3). OS detection is  
13 inaccurate.  
14 Interesting ports on 10.2.2.2:  
44 (The 1539 ports scanned but not shown below are in state: closed)  
51 Port      State      Service  
51 22/tcp    open       ssh  
58  
68 No exact OS matches for host  
68  
24 Nmap run completed -- 1 IP address (1 host up) scanned.  
50 $ sshnuke 10.2.2.2 -rootpw="Z10H0101"  
Connecting to 10.2.2.2:ssh ... successful.  
Reattempting to exploit SSHv1 CRC32 ... successful.  
1P Resetting root password to "Z10H0101".  
System open: Access Level <9>  
No. $ ssh 10.2.2.2 -l root  
root@10.2.2.2's password: █
```

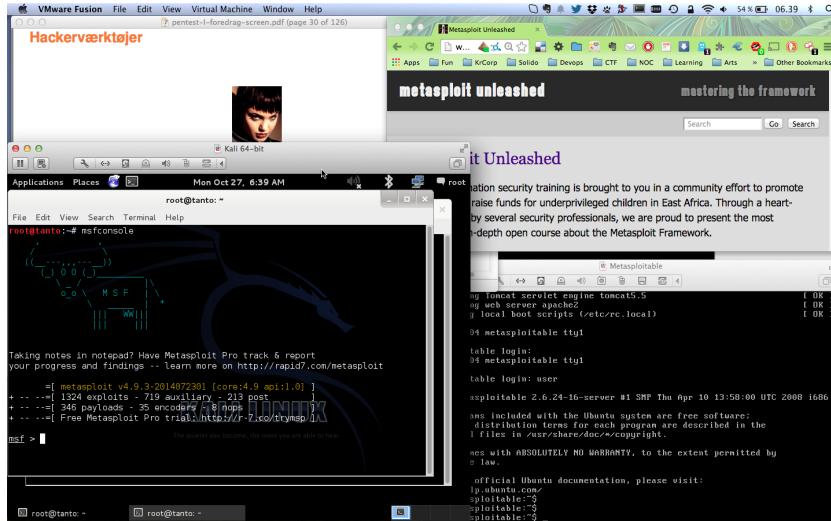


# Really do Nmap your world



- Nmap is a port scanner, but does more
- Finding your own infrastructure available from the guest network?
- See your printers having all the protocols enabled AND a wireless?

# Hackerlab setup



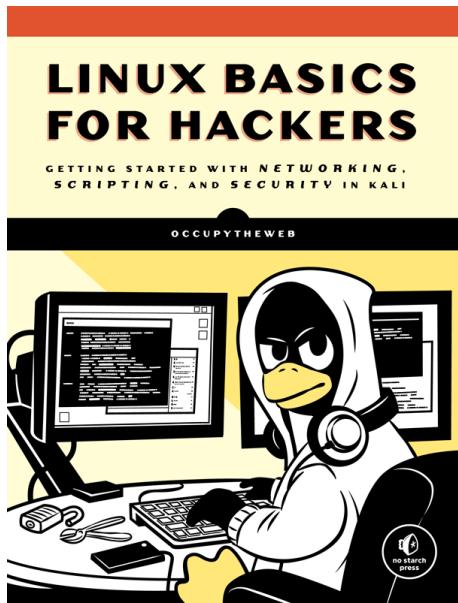
- Create hacker labs, encourage hacker labs!
- Software Host OS: Windows, Mac, Linux
- Virtualisation software: VMware, Virtual box, HyperV pick your poison
- Hackersoftware: Kali Virtual Machine <https://www.kali.org/>

# Hacking is not magic



- Hacking only requires some ninja training
- We have been doing this since 1995 when SATAN was released
- Listen, Plan, Act, Do hacking

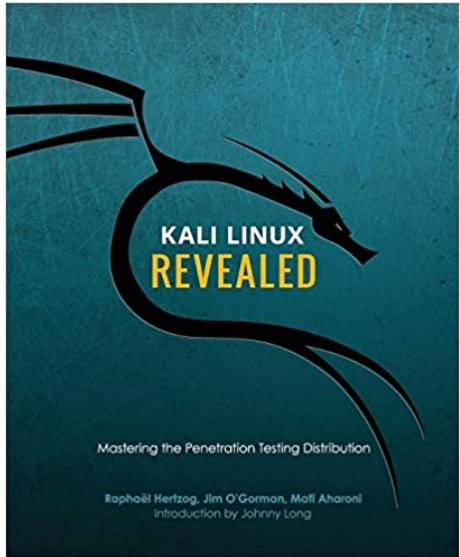
# Book: Linux Basics for Hackers (LBhf)



*Linux Basics for Hackers Getting Started with Networking, Scripting, and Security in Kali* by  
OccupyTheWeb December 2018, 248 pp. ISBN-13: 9781593278557

<https://nostarch.com/linuxbasicsforhackers>

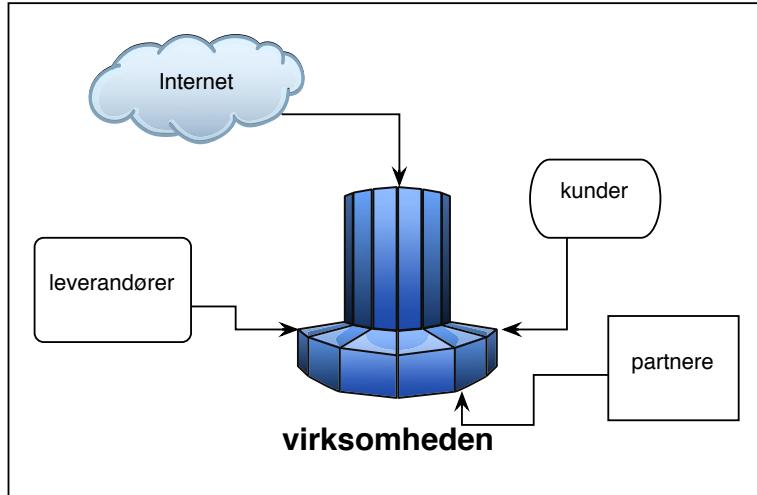
## Book: Kali Linux Revealed (KLR)



*Kali Linux Revealed Mastering the Penetration Testing Distribution*

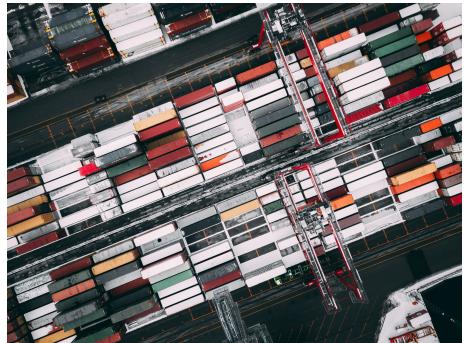
<https://www.kali.org/download-kali-linux-revealed-book/>  
explains how to install Kali Linux

# Fokus 2019: Firewalls og segmentering



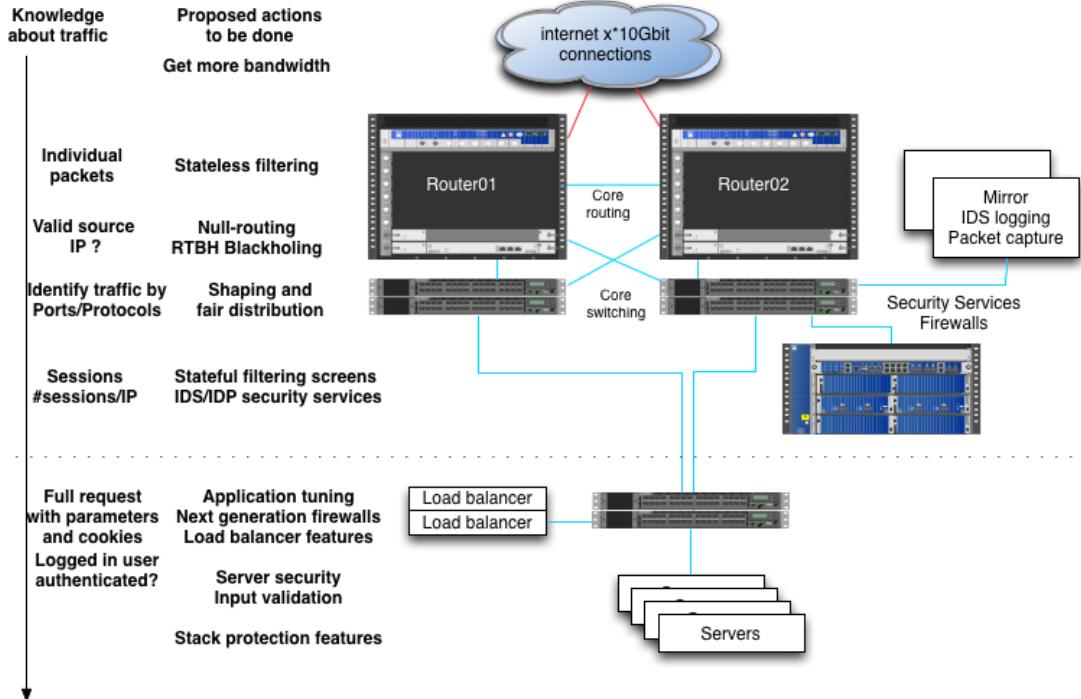
- Hvis du har et netværk, så bør du have en firewall
- En firewall tillader autoriseret trafik og blokerer resten
- Hvornår har du sidst set din løsning efter?
- Hvor lang tid tager det at se en 5.000 linier Cisco ASA config igennem?

# Imagine Attacks from the Inside



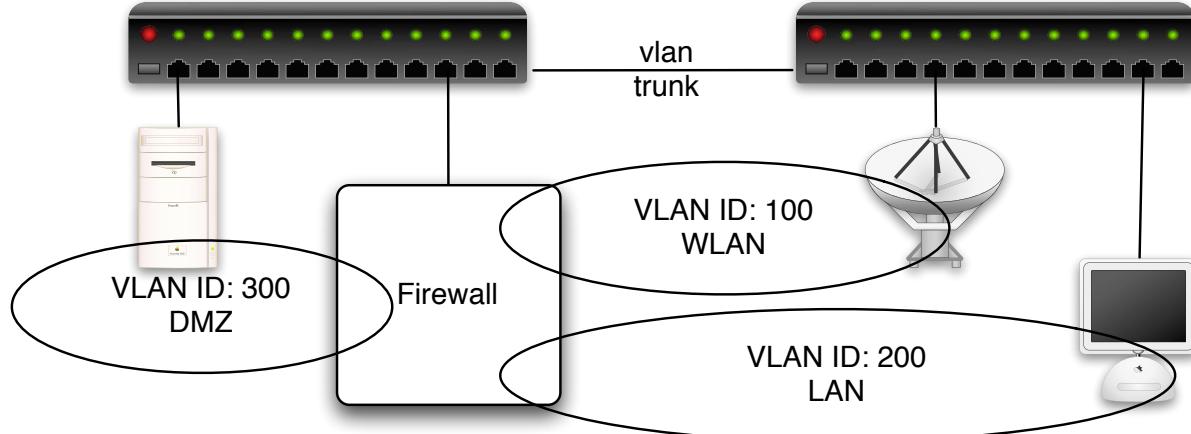
- Now imagine you were in control of a company laptop
- Do you have a large internal world wide network?  
NotPetya cost Maersk about 1.9 billion DKK
- entry thought to be via software update of M.E.Doc [uk] an Ukrainian tax preparation program
- Attackers are very creative and have a large attack surface to most companies

# Big firewalls



Big firewalls are not a single device

# IEEE 802.1q VLANs



Med 802.1q tillades VLAN tagging på Ethernet niveau

Data skal omkring en firewall eller en router for at krydse fra VLAN1 til VLAN2

VLAN trunking giver mulighed for at dele VLANs ud på flere switches

# Netværk generelt



LibreNMS

Overview Devices Ports Health Wireless Alerts

Lists: Basic | **Detail** Graphs: Bits | CPU | Load | Memory | Uptime | Storage | Disk I/O | Poller | Ping | Temperature

Search	All OSes	All Versions	All Platforms	All Featuresets
Vendor	Device	Metrics	Platform	Operating System
	<b>192.168.0.254</b> zw-zd3k-001	7 2	zd3025	Ruckus Wireless 10.1.1.0 build 42 (DK)
	<b>born-core-01</b>	102 13	Juniper EX3300	Juniper JunOS 15.1R2.9
	<b>noctent1</b> noc-tent	29 3	Brocade ICX 6430 24-port Switch	Brocade IronWare
	<b>north1</b> north1	25		Foundry Networking
	<b>south1</b> south1	25 4	snFWS624GSwitch	Brocade IronWare
	<b>south2</b> south2	29 3	Brocade ICX 6430 24-port Switch	Brocade IronWare
	<b>south3</b> south3	49		Foundry Networking
	<b>southwest1</b> southwest1	49		Foundry Networking
	<b>west1</b> west1	25 4	snFWS624GSwitch	Brocade IronWare
	<b>west2</b> west2	25		Foundry Networking

- Måske også på tide lige at se om der er opdateringer til switchene
- Jeg anbefaler LibreNMS <https://www.librenms.org/>

# Fokus 2019: TLS og VPN indstillinger



```
ssl_prefer_server_ciphers on;
ssl_protocols TLSv1 TLSv1.1 TLSv1.2; # not possible to do exclusive
ssl_ciphers 'EDH+CAMELLIA:EDH+aRSA:EECDH+aRSA+AESGCM:EECDH+aRSA+SHA384:EECDH+\\
  \aRSA+SHA256:EECDH:+CAMELLIA256:+AES256:+CAMELLIA128:+AES128:+SSLv3:!aNULL:!\
  \eNULL:!LOW:!3DES:!MD5:!EXP:!PSK:!DSS:!RC4:!SEED:!ECDSA:CAMELLIA256-SHA:AES256\\
  -SHA:CAMELLIA128-SHA:AES128-SHA';
add_header Strict-Transport-Security max-age=15768000; # six months
# use this only if all subdomains support HTTPS!
# add_header Strict-Transport-Security "max-age=15768000; includeSubDomains";
```

Listing 2.6: SSL settings for nginx  
[configuration/Webservers/nginx/default]

- De fleste har https nu, men er det konfigureret optimalt
- Vi bruger også VPN til at forbinde sites, kontorer
- Anbefaler at alle indstillingerne gennemgås!

# SSL og TLS



Oprindeligt udviklet af Netscape Communications Inc.

Secure Sockets Layer SSL er idag blevet adopteret af IETF og kaldes derfor også for Transport Layer Security TLS TLS er baseret på SSL Version 3.0

RFC-2246 The TLS Protocol Version 1.0 fra Januar 1999

RFC-3207 SMTP STARTTLS

Det er svært!

Stanford Dan Boneh udgiver en masse omkring crypto

<https://crypto.stanford.edu/~dabo/cryptobook/>

# Nmap efter SSL og TLS



## Example Usage

```
nmap -sV -sC <target>
```

## Script Output

```
443/tcp open  https  syn-ack
| sslv2:
|   SSLv2 supported
|   ciphers:
|     SSL2_DES_192_EDE3_CBC_WITH_MD5
|     SSL2_IDEA_128_CBC_WITH_MD5
|     SSL2_RC2_CBC_128_CBC_WITH_MD5
|     SSL2_RC4_128_WITH_MD5
|     SSL2_DES_64_CBC_WITH_MD5
|     SSL2_RC2_CBC_128_CBC_WITH_MD5
|     SSL2_RC4_128_EXPORT40_WITH_MD5
```

## Nu vi har lært Kali og Nmap at kende

- Find nemt alle ssl version 2 og 3

```
nmap --script ssl-enum-ciphers
```

- Brug ssllabs <https://www.ssllabs.com/>

# ssllscan



```
root@kali:~# ssllscan --ssl2 web.kramse.dk
Version: 1.10.5-static
OpenSSL 1.0.2e-dev xx XXX xxxx
```

Testing SSL server web.kramse.dk on port 443

...

SSL Certificate:  
Signature Algorithm: sha256WithRSAEncryption  
RSA Key Strength: 2048

Subject: \*.kramse.dk  
Altnames: DNS:\*.kramse.dk, DNS:kramse.dk  
Issuer: AlphaSSL CA - SHA256 - G2

Source: Originally ssllscan from <http://www.titania.co.uk> but use the version on Kali

SSLLscan can check your own sites, while Qualys SSL Labs only can test from hostname

# Weak DH paper



## Weak Diffie-Hellman and the Logjam Attack

Good News! Your browser is safe against the Logjam attack.

Diffie-Hellman key exchange is a popular cryptographic algorithm that allows Internet protocols to agree on a shared key and negotiate a secure connection. It is fundamental to many protocols including HTTPS, SSH, IPsec, SMTPLS, and protocols that rely on TLS.

We have uncovered several weaknesses in how Diffie-Hellman key exchange has been deployed:

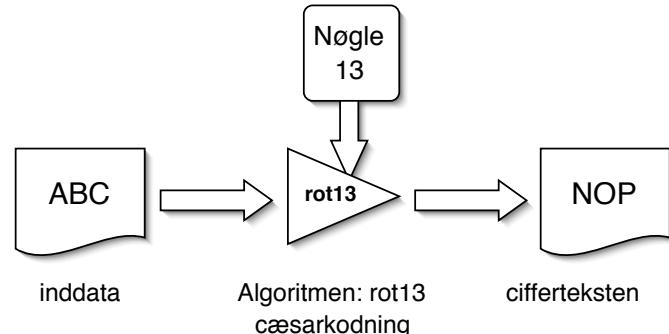
1. **Logjam attack against the TLS protocol.** The Logjam attack allows a man-in-the-middle attacker to downgrade vulnerable TLS connections to 512-bit export-grade cryptography. This allows the attacker to read and modify any data passed over the connection. The attack is reminiscent of the [FREAK attack](#), but is due to a flaw in the TLS protocol rather than an implementation vulnerability, and attacks a Diffie-Hellman key exchange rather than an RSA key exchange. The attack affects any server that supports DHE\_EXPORT ciphers, and affects all modern web browsers. 8.4% of the Top 1 Million domains were initially vulnerable.
2. **Threats from state-level adversaries.** Millions of HTTPS, SSH, and VPN servers all use the same prime numbers for Diffie-Hellman key exchange. Practitioners believed this was safe as long as new key exchange messages were generated for every connection. However, the first step in the number field sieve—the most efficient algorithm for breaking a Diffie-Hellman connection—is dependent only on this prime. After this first step, an attacker can quickly break individual connections.

We carried out this computation against the most common 512-bit prime used for TLS and demonstrate that the Logjam attack can be used to downgrade connections to 80% of TLS servers supporting DHE\_EXPORT. We further estimate that an academic team can break a 768-bit prime and that a nation-state can break a 1024-bit prime. Breaking the single, most common 1024-bit prime used by web servers would allow passive eavesdropping on connections to 18% of the Top 1 Million HTTPS domains. A second prime would allow passive decryption of connections to 66% of VPN servers and 26% of SSH servers. A close reading of published NSA leaks shows that the agency's attacks on VPNs are consistent with having achieved such a break.

Source: <https://weakdh.org/> and

<https://weakdh.org/imperfect-forward-secrecy-ccs15.pdf>

# VPN indstillinger



PPTP, hvis du bruger det så er det godt du er kommet :-D

Check hvert år:

- Certifikater/nøgler - ligesom TLS lange og rulles indimellem
- Algoritmer DES/3DES bye bye, husk både encryption og auth algoritmer
- DH-Group - +15 tak
- Check både client VPN og site-2-site

# Anbefalinger til VPN



Use the following guidelines when configuring Internet Key Exchange (IKE) in VPN technologies:

Avoid IKE Groups 1, 2, and 5.

Use IKE Group 15 or 16 and employ 3072-bit and 4096-bit DH, respectively.

When possible, use IKE Group 19 or 20. They are the 256-bit and 384-bit ECDH groups, respectively.

Use AES for encryption.

Paper:

<https://www.cisco.com/c/en/us/about/security-center/next-generation-cryptography.html>

- Certifikater/nøgler - ligesom TLS lange og rulles indimellem
- Algoritmer DES/3DES bye bye, husk både encryption og auth algoritmer
- DH-Group - +15 tak
- Check både client VPN og site-2-site

# Fokus 2019: DNS og email



- Vi er afhængige af email, modtagelse og afsendelse
- Når vi modtager skal det helst gå hurtigt
- Når vi sender skal vi ikke ende i spam mappen
- Phishing, hvem kan sende *fra vores domæne*



# Various key attack types, clients and employees



- Phishing - sending fake emails, to collect credentials
- Spear phishing - targetted attacks
- Person in the middle - sniffing and changing data in transit
- Drive-by attacks - web pages infected with malware, often ad servers
- Malware transferred via USB or email
- Credential Stuffing, Password related, like re-use of password, see slide about being pwned

**If we all wait a bit, and not click links immediately**

Hackers try to create "urgency", click this or loose money



# DNS er mere end navneopslag

består af resource records med en type:

- adresser A-records
- IPv6 adresser AAAA-records
- autoritative navneservere NS-records
- post, mail-exchanger MX-records
- flere andre: md , mf , cname , soa , mb , mg , mr , null , wks , ptr , hinfo , minfo , mx ....

IN	MX	10	mail.zencurity.dk.
IN	MX	20	mail2.zencurity.dk.

# SMTP Simple Mail Transfer Protocol



```
hlk@bigfoot:hlk$ telnet mail.kramse.dk 25
Connected to sunny.
220 sunny.kramse.dk ESMTP Postfix
HELO bigfoot
250 sunny.kramse.dk
MAIL FROM: Henrik
250 Ok
RCPT TO: hlk@kramse.dk
250 Ok
DATA
354 End data with <CR><LF>.<CR><LF>
hejsa
.
250 Ok: queued as 749193BD2
QUIT
221 Bye
```

- RFC-821 SMTP Simple Mail Transfer Protocol fra 1982
- [http://en.wikipedia.org/wiki/Simple\\_Mail\\_Transfer\\_Protocol](http://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol)

# DNS attacks, Your registrar



## 26 Webnic Registrar Blamed for Hijack of Lenovo, Google Domains

FEB 15



Two days ago, attackers allegedly associated with the fame-seeking group **Lizard Squad** briefly hijacked Google's Vietnam domain (google.com.vn). On Wednesday, **Lenovo.com** was similarly attacked. Sources now tell KrebsOnSecurity that both hijacks were possible because the attackers seized control over **Webnic.cc**, the Malaysian registrar that serves both domains and 600,000 others.

DNS insecurity has huge impact on your security!

Most are denial of service, by may create Mitm or confidentiality concerns

Select DNS providers with care

Sources:

<https://krebsonsecurity.com/2015/02/webnic-registrar-blamed-for-hijack-of-lenovo-google-domains/>

<http://www.version2.dk/artikel/google-og-lenovo-defaced-som-foelge-af-overset-sikkerhedsproblemstilling-91295>

# DNSSEC get started now



The screenshot shows a web browser window with the URL <https://www.dnssec-validator.cz>. The page is titled "DNSSEC/TLSA Validator". It features a logo with a green key icon and an orange lock icon, followed by the text "DNSSEC TSLA VALIDATOR". Below the logo is the subtext "DNSSEC/TLSA Validator add-on for Web Browsers". A large blue "Download" button is prominently displayed. To the right of the download button, there is a "News" section with the heading "Version: 2.2.0" and a list of "New Features" including "New js-types-based implementation for Firefox" and "New validator implementation for Chromium/Chrome/Opera based on Native Messaging". The top navigation bar includes links for "HOME", "DOWNLOAD", "DOCUMENTATION", "DEVELOPMENT", "SCREENSHOTS", and "FAQ". The top right corner of the browser window shows the "cz.nic" logo.

"TLSA records store hashes of remote server TLS/SSL certificates. The authenticity of a TLS/SSL certificate for a domain name is verified by DANE protocol (RFC 6698). DNSSEC and TLSA validation results are displayed by using several icons."

## DNSSEC and DANE



"Objective:

Specify mechanisms and techniques that allow Internet applications to establish cryptographically secured communications by using information distributed through DNSSEC for discovering and authenticating public keys which are associated with a service located at a domain name."

DNS-based Authentication of Named Entities (dane)

# Email security 2019 - Goals



- SPF Sender Policy Framework  
[https://en.wikipedia.org/wiki/Sender\\_Policy\\_Framework](https://en.wikipedia.org/wiki/Sender_Policy_Framework)
- DKIM DomainKeys Identified Mail  
[https://en.wikipedia.org/wiki/DomainKeys\\_Identified\\_Mail](https://en.wikipedia.org/wiki/DomainKeys_Identified_Mail)
- DMARC Domain-based Message Authentication, Reporting and Conformance  
<https://en.wikipedia.org/wiki/DMARC>
- DANE DNS-based Authentication of Named Entities  
[https://en.wikipedia.org/wiki/DNS-based\\_Authentication\\_of\\_Named\\_Entities](https://en.wikipedia.org/wiki/DNS-based_Authentication_of_Named_Entities)
- Brug allesammen, check efter ændringer!

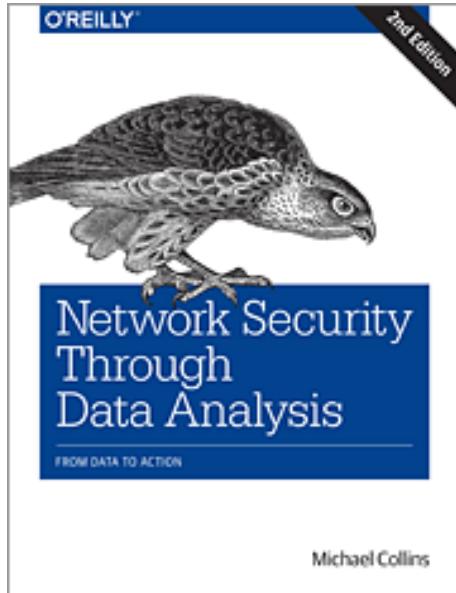
Jeg er glad for at teste med <https://dmarcian.com/>

# Fokus 2019: Syslog og monitorering



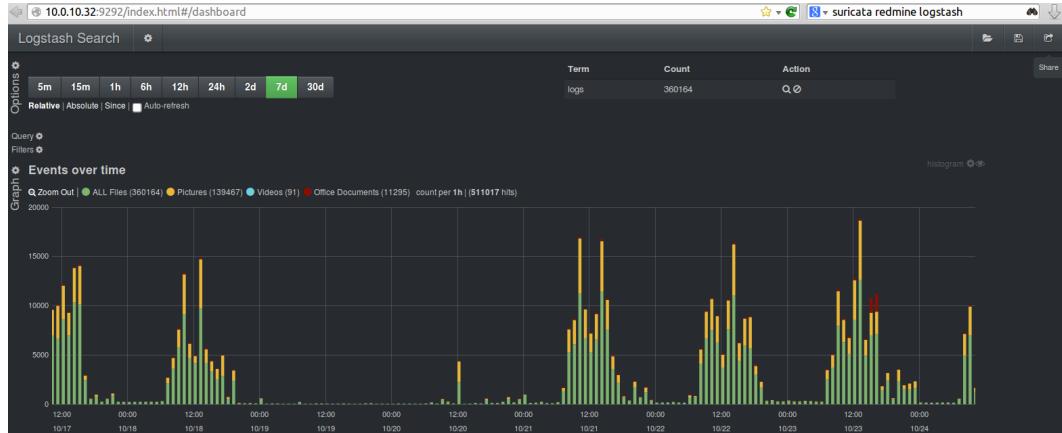
- Vi har allesammen security incidents
- Vi skal kunne efterforske, derfor er et niveau af syslog vigtigt
- Også i dagligdagen til at sikre at systemerne kører optimalt

# Network Security Through Data Analysis



- Low page count, but high value! Recommended.
- *Network Security through Data Analysis*, 2nd edition By Michael S Collins  
Publisher: O'Reilly Media 06-10-2017, 428 Pages

# Graphs and Dashboards!



- Screenshot from Peter Manev, OISF
- Shown are Suricata IDS alerts processed by Logstash and Kibana

# Network tools - examples



- Net: Bro <http://www.bro-ids.org> Suricata <http://suricata-ids.org>
- DNS: DSC and PacketQ <https://github.com/dotse/packetq/wiki>
- Syslog: Elasticsearch, Logstash, and Kibana, called ELK stack or Elastic stack

# Storing query logs, old school or needed?



- [policy/protocols/ssl/expiring-certs.bro](#)
- [policy/protocols/ssl/extract-certs-pem.bro](#)
- [policy/protocols/ssl/heartbleed.bro](#)
- [policy/protocols/ssl/known-certs.bro](#)
- [policy/protocols/ssl/log-hostcerts-only.bro](#)
- [policy/protocols/ssl/validate-certs.bro](#)
- [policy/protocols/ssl/validate-ocsp.bro](#)
- [policy/protocols/ssl/weak-keys.bro](#)

- DNS query logs, keep it for at least a week?  
- with DSC and PacketQ <https://github.com/DNS-OARC/PacketQ>

- SSL/TLS log with Bro/Suricata

<https://www.bro.org/sphinx-git/script-reference/scripts.html>

- Log with Elasticsearch?

<https://www.elastic.co/guide/en/elasticsearch/guide/current/index.html>

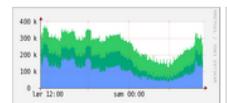
Uetisk? eller smart hvis man vil spore hvor malware kom ind

# Network visibility: Netflow with NFSen

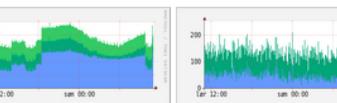


Profile: live

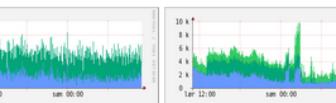
TCP



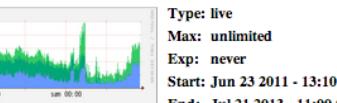
any



ICMP



other

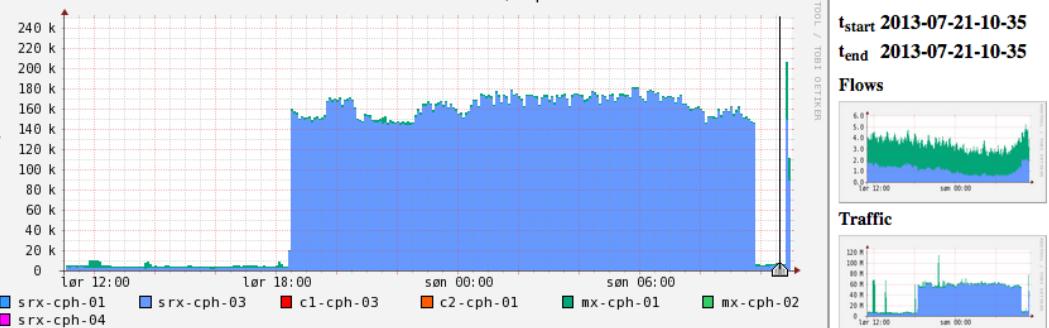


Profileinfo:

Type: live  
Max: unlimited  
Exp: never  
Start: Jun 23 2011 - 13:10 CEST  
End: Jul 21 2013 - 11:00 CEST

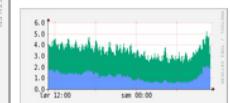
Sun Jul 21 10:35:00 2013 Packets/s proto UDP

Packets/s proto UDP



t<sub>start</sub> 2013-07-21-10-35  
t<sub>end</sub> 2013-07-21-10-35

Flows



Traffic



Lin Scale  Stacked Graph

Log Scale  Line Graph

Select

Display:

An extra 100k packets per second from this netflow source (source is a router)

# How to get started



How to get started searching for security events?

Collect basic data from your devices and networks

- Netflow data from routers
- Session data from firewalls
- Logging from applications: email, web, proxy systems

**Centralize!**

Process data

- Top 10: interesting due to high frequency, occurs often, brute-force attacks
- *ignore*
- Bottom 10: least-frequent messages are interesting

# Case: Maltrail



**Maltrail** is a malicious traffic detection system, utilizing publicly available (black)lists containing malicious and/or generally suspicious trails, along with static trails compiled from various AV reports and custom user defined lists, where trail can be anything from domain name (e.g. [zvpprsensinaix.com](http://zvpprsensinaix.com) for **Banjori** malware), URL (e.g.

<http://109.162.38.120/harsh02.exe> for known malicious executable), IP address (e.g. [185.130.5.231](http://185.130.5.231) for known attacker) or HTTP User-Agent header value (e.g. [sqmmap](http://sqmmap) for automatic SQL injection and database takeover tool). Also, it uses (optional) advanced heuristic mechanisms that can help in discovery of unknown threats (e.g. new malware).

25 threads per page

Documentation | Issues | Log Out (cert)

6,945 Threats | 903,708 Events | medium Severity | 4,498 Sources | 6,402 Trails

threat	sensor	events	severity	first_seen	last_seen	sparkline	src_ip	src_port	dst_ip	dst_port	proto	type	trail	info	reference	tags
b1tvenica	33286	2016-01-20 00:00:04	2016-23:59:59	175.6.228.149	51.255.65.22	80 (http)	TCP	175.6.228.149	bad reputation	alienVault.com						
b1tvenica	4	2016-01-20 00:00:04	2016-23:59:59	71.6.158.160	51.255.65.22	80 (http)	TCP	71.6.158.160	spammer	badcicut.com						
b1tvenica	1131	2016-01-20 00:00:03	2016-23:59:59	109.162.38.120	71.6.135.111	80 (http)	TCP	109.162.38.120	bad reputation	alienVault.com						
b1tvenica	3939	2016-01-20 00:00:32	2016-23:59:59	109.162.38.120	71.6.135.111	80 (http)	TCP	71.6.135.111	mass scanner	(static)						
b1tvenica	2608	2016-01-20 00:00:32	2016-23:59:59	22.186.21.34	22 (ssh)	TCP	22.186.21.34	known attacker	badshah.org							
b1tvenica	127	2016-01-21 03:16:13	2016-23:59:59	54.231.50.44	54.231.50.44	80 (http)	TCP	54.231.50.44 (amazonaws.com)	malware distribution	malicode.com						
b1tvenica	403	2016-01-20 00:00:32	2016-23:59:59	125.64.93.78	80 (http)	TCP	125.64.93.78	known attacker	badips.com							
b1tvenica	2622360	2016-01-20 00:00:00	2016-23:59:57	185.130.5.224	594313 (netis)	UDP	185.130.5.224	known attacker	badips.com							
b1tvenica	30298	2016-01-20 00:00:00	2016-23:59:57	91.200.12.106	80 (http)	TCP	91.200.12.106 (shodan)	known attacker	blocklist.de							
b1tvenica	21	2016-01-20 00:00:09	2016-23:59:57	198.20.99.130	53 (dns)	UDP	198.20.99.130 (shodan)	consonant threshold no such domain (suspicious)	(heuristic)							
b1tvenica	137	2016-01-20 00:00:55	2016-23:59:57	198.20.99.130	53 (dns)	UDP	198.20.99.130 (shodan)	mass scanner	(static)							
b1tvenica	608	2016-01-20 00:00:32	2016-23:59:55	198.20.99.130	53 (dns)	UDP	198.20.99.130 (shodan)	bad reputation	alienVault.com							
b1tvenica	7082	2016-01-20 00:00:32	2016-23:59:55	94.102.48.195	43965	TCP	94.102.48.195 (scion)	mass scanner	(static)							
b1tvenica	2837	2016-01-20 00:00:50	2016-23:59:55	141.212.122.194	80 (http)	TCP	141.212.122.194 (www.umrich.edu)	mass scanner	(static)							
b1tvenica	627	2016-01-20 00:00:38	2016-23:59:54	141.212.122.194	80 (http)	TCP	141.212.122.194 (www.umrich.edu)	mass scanner	(static)							
b1tvenica	564	2016-01-20 00:00:29	2016-23:59:54	141.212.122.193	8.8.8.8 (dns)	UDP	141.212.122.193 (www.umrich.edu)	mass scanner	(static)							
b1tvenica	55	2016-01-20 00:00:29	2016-23:59:54	141.212.122.207	8.8.8.8 (dns)	UDP	141.212.122.207 (www.umrich.edu)	domain (suspicious)	(static)							
b1tvenica	861	2016-01-20 00:00:14	2016-23:59:53	141.212.122.207	8.8.8.8 (dns)	UDP	141.212.122.207 (www.umrich.edu)	mass scanner	(static)							
b1tvenica	413	2016-01-20 00:00:22	2016-23:59:53	141.212.122.206	8.8.8.8 (dns)	UDP	141.212.122.206 (www.umrich.edu)	mass scanner	(static)							
b1tvenica	4638	2016-01-20 00:00:22	2016-23:59:50	149.20.238.216	8080 (http-alt)	TCP	149.20.238.216 (shodan)	bad reputation	alienVault.com							
b1tvenica	101	2016-01-20 00:00:52	2016-23:59:50	141.212.121.40	443 (https)	TCP	141.212.121.40 (www.umrich.edu)	mass scanner	(static)							
b1tvenica	3999	2016-01-20 00:00:05	2016-23:59:49	71.6.165.200	53 (dns)	UDP	71.6.165.200 (shodan)	mass scanner	(static)							
b1tvenica	967	2016-01-20 00:00:45	2016-23:59:49	82.221.105.7	80 (http)	UDP	82.221.105.7 (shodan)	mass scanner	(static)							
b1tvenica	5	2016-01-20 07:04:43	2016-23:59:49	8.8.8.8 (dns)	80 (http)	UDP	8.8.8.8 (dns)	excessive no such domain (suspicious)	(heuristic)							
b1tvenica	1	2016-01-20 23:59:48	2016-23:59:48	67.21.35.231	43025	53 (dns)	UDP	67.21.35.231 (shodan)	http spammer	sblam.com						
b1tvenica	1875	2016-01-20 00:00:04	2016-23:59:47	188.138.17.205	188.138.17.205 (shodan)	UDP	188.138.17.205 (shodan)	bad reputation	alienVault.com							
b1tvenica	43	2016-01-20 00:21:23	2016-23:59:47	8.8.8.8 (dns)	53 (dns)	UDP	8.8.8.8 (dns)	excessive no such domain (suspicious)	(heuristic)							

Showing 1 to 25 of 6,945 threats

Previous 1 2 3 4 5 ... 278 Next

<https://github.com/stamparm/maltrail>

## Suricata with Dashboards



## Picture from Twitter

<https://twitter.com/nullthreat/status/445969209840128000>

## Next steps



In our network we are always improving things:

Suricata IDS <http://www.openinfosecfoundation.org/>

More graphs, with **automatic identification** of IPs under attack

Identification of **short sessions without data** - spoofed addresses

Alerting from **existing** devices

Dashboards with key measurements

**Conclusion: Combine tools!**



# Logstash pipeline

```
input { stdin { } }
output {
  elasticsearch { host => localhost }
  stdout { codec => rubydebug }
}
```

- Logstash receives via **input**
- Processes with **filters** - grok
- Forward events with **output**

# Logstash as SNMPtrap and syslog server



```
input {  
    snmptrap {  
        host => "0.0.0.0"  
        type => "snmptrap"  
        port => 1062  
        community => "xxxxx"  
    }  
    tcp {  
        port => 5000  
        type => syslog  
    }  
    udp {  
        port => 5000  
        type => syslog  
    }  
}
```

- We run logstash on port 5000 - but use IPtables port forwarding

Maybe you have a device sending SNMP traps right now ...

# Fokus 2019: Incident Response og reaktion



- Fortsat fra logningen ... hvad så nu!
- Hvis du har en sikkerhedshændelse skal den håndteres
- jo hurtigere og mere effektivt det håndteres jo bedre

Lifeguard training photo by Margarida CSilva on Unsplash

# Overlapping Security Incidents



New data breaches nearly every week, these from danish news site  
version2.dk

Problem, we need to receive data from others

Data from others may contain malware

Have a job posting, yes

- then HR will be expecting CVs sent as .doc files

**Flere detaljer i gigantisk hotel-hack: 5,25 mio. ukrypterede pasnumre taget**

Jakob Møllerhøj | Sikkerhed | 07. jan 2019

3

**7,6 millioner spillerkonti løkket fra populært onlinespil**

Niels Møller Kjemstrup | Sikkerhed | 07. jan 2019

2

**Største løk i tysk historie: Politikeres og kunstneres data smidt på nettet**

Morten Egedal | Sikkerhed | 04. jan 2019

2

**Gentleman-aftale mellem politiske partier skal danne mur mod dataløk, hacking og fake news**

Louise Holst Andersen | Sikkerhed | 04. jan 2019

12

**Boligfond beklager løk af følsomme persondata: En menneskelig fejl**

Sikkerhed | 28. dec 2018

6



or the other way

## Attackers used a LinkedIn job ad and Skype call to breach bank's defences

### The attack

One of these is the Chilean news site's claim that the attack started with a LinkedIn advert offering a developer role to which a Redbanc employee replied.

The attackers set up a Skype call to conduct an interview during which the individual was tricked into downloading a file called ApplicationPDF.exe, sent via a weblink, which subsequently infected the employee's computer.

<https://nakedsecurity.sophos.com/2019/01/21/attackers-used-a-linkedin-job-ad-and-skype-call-to-breach-banks-defences/>

# Øv krisesituationer



- Lav rollespil
- Lav tabletop exercises

# Spørgsmål og mere debat



*"On the Internet, nobody knows you're a dog."*

Henrik Lund Kramshøj [hlk@zencurity.com](mailto:hlk@zencurity.com) @kramse  