

Welcome to

# It-sikkerhed Awareness kort

2024

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Slides are available as PDF, kramse@Codeberg [https://codeberg.org/kramse/  
security-awareness-2024.tex](https://codeberg.org/kramse/security-awareness-2024.tex) in the repo security-courses

slides are available on Github



- Same problems last year? Same problems EVERY year
- Last year was a nightmare of break-ins and data leaks
- Data leaks, GDPR, ransomware, ...

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

Are we loosing the battle?

# Har du haft snakken med din CISO?

## **IT-sikkerhed:**

Vi vil gerne bede om 10 millioner til IT-sikkerhed i budget næste år

## **CTO/CIO/CISO:**

Umuligt

## **IT-sikkerhed:**

OK, fair nok. Så skal vi bare bede om **100 millioner til Ransomware**, tak.

Husk også at uddanne CFO i bitcoin transaktioner.

- Er ovenstående urealistisk?

- For året 2019 rapporterede vi et tab i omsætning på **575 millioner kroner**. Det i sig selv er alvorligt. Hvad angår vores opmærksomhed på it-sikkerhedsområdet, har it-hændelsen været med til at understrege nødvendigheden af, at tage dette felt seriøst. Angreb mod it-infrastruktur er uden tvivl en af de største trusler mod en virksomhed, og det kan gå galt, hvis man ikke er i stand til at lukke ned for skaden og bruge sin back-up.

...

- På det konkrete plan har vi fået et mantra der lyder '**Active Directory is king, and backup is Queen**'. Men mere overordnet har vi også lært at Fokus skal helt op på øverste niveau i virksomheden, at man skal skaffe høj faglig indsigt i sikkerhed og trusler, og at det er et arbejde, der skal være under konstant observation og udvikling.

Kilde: <https://dit.dk/Nyheder/2021/Demandt>

- Vi taler altså om tab i størrelsesordenen tre-cifrede millionbeløb!

# Paranoia defined

## par·a·noi·a

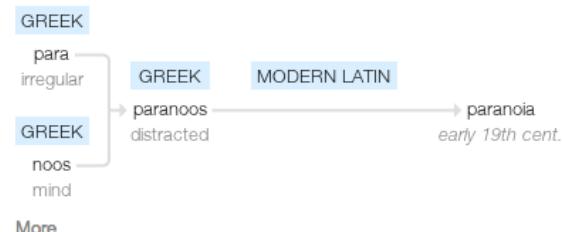
/pərə'noiə/ ⓘ

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



Source: google paranoia definition

Use appropriate paranoia, and yes, hot pink red blinking is an appropriate threat level

# 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:

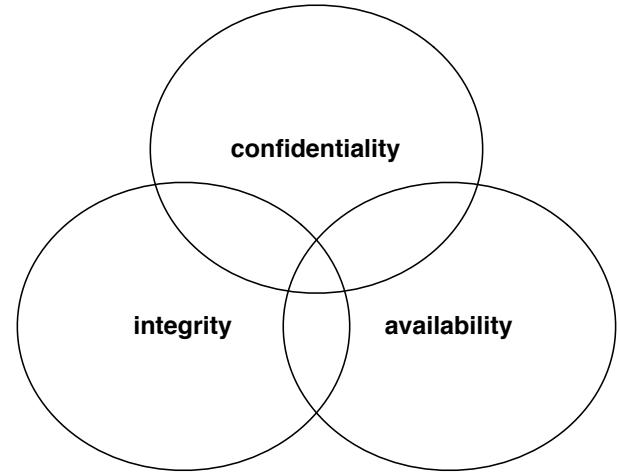


KIWICON III  
28<sup>TH</sup> & 29<sup>TH</sup> NOVEMBER 2009

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 kept secret

Integrity - no unauthorized changes to data

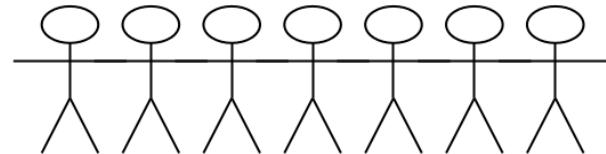
Availability - data and systems are available to authorized uses when they need them

# Fokus on the basics

- User management - including administrative users
- Asset management
- Laptop security
- Penetration testing
- Firewalls and segmentation
- VPN everywhere
- TLS and VPN settings, encryption
- DNS and email security
- Syslog and monitoring
- Incident Response and response

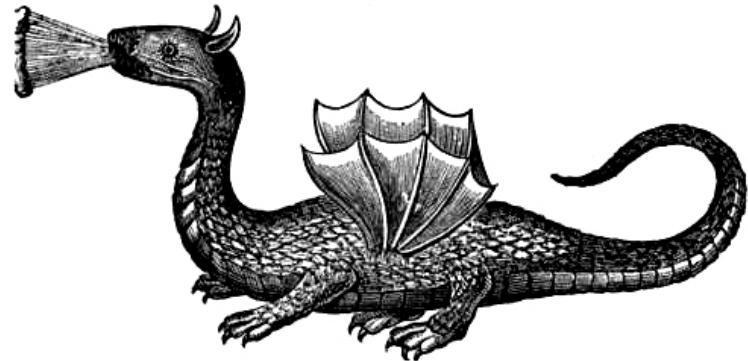
Vi skal allesammen hjælpe hinanden! Ovenstående er listen jeg giver studerende og ansatte

# Fokus: User management



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

# Local administrator?



- Findes der systemer som er helt åbne, med lokal administrator
- Er det stadig nødvendigt
- Vi bør bruge Principle of Least privilege

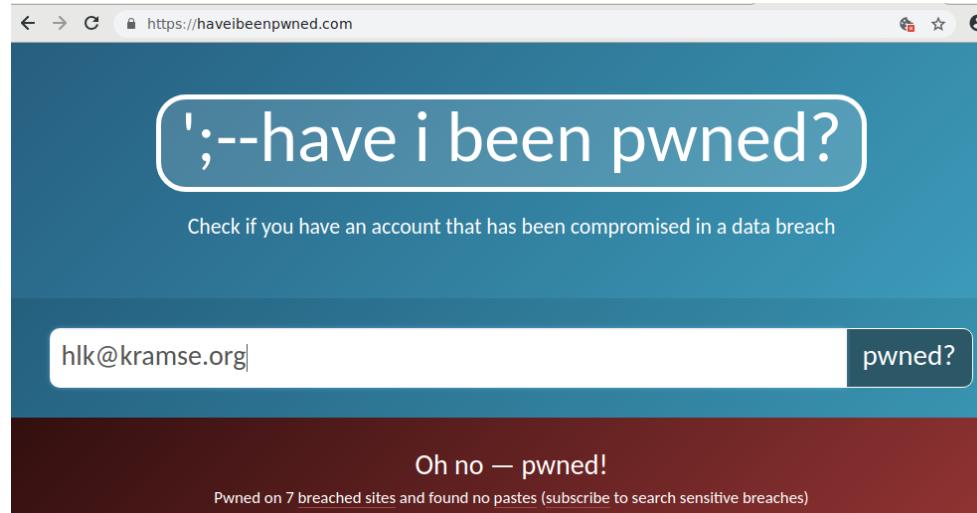
# Passwords vælges ikke tilfældigt

## 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



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/>

They have an API you can integrate to

## Brug mere sikre passwords

### Pwned Passwords overview

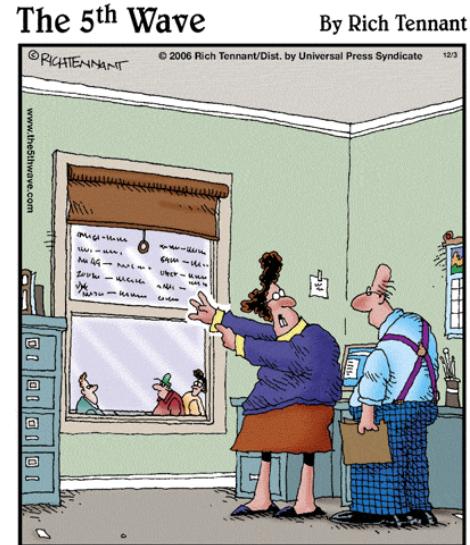
Pwned Passwords are more than half a billion passwords which have previously been exposed in data breaches. The service is detailed in the launch blog post then further expanded on with the release of version 2. The entire data set is both downloadable and searchable online via the Pwned Passwords page.

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/>

# Opbevaring af passwords



"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."

- Use password managers! Available as cloud connected, local only, teams based
- You will have to investigate which one to choose, but find one!

# Fokus: 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? og en telefon?
- Hardware naturligvis, en Macbook koster officielt mere end en brugt mellemklassebil
- - og husk brugen af laptops – de er dyre, men indholdet er ofte mere værd!
- Er laptops sikre, og hvad betyder det?

## Are your data secure - data at rest

Lore ipsum dolor sit amet, consectetur adipiscing elit, set eiusmod tempor incident et labore et dolore magna aliquam. Ut enim ad minim veniam, qui nostrud exerc. Irure dolor in reprehend incididunt ut labore et dolore magna aliqua. Ut enim ad minim vrostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure doloenderit in voluptate velit esse cillum. Tia non ob ea soluad inci, quae egen ium impend. Officia deserunt mollit animus. Et harumd dereud fac er expedit distinct. Gothica quam nunc putamus parum eposuerit litterarum formas humanitatis per seacula quarta; modo typi is videntur pueri, clari fiant sollemnes in futurum; litterarum f humanitatis per seac cima et quinta decima, modo typi qui nu ntur parur sollemnes in futurum rit! Nam liber te conscient to factor tum p ioque civi que pecun moc honor et imper r et, conse ng elit, sec et dolore magna aliquam is nostrud exercitation lo conse e in voluptate velit esse cillum dolore eu fugiat nulla pariatur. At vver e am dignissum qui blandit est praesent.

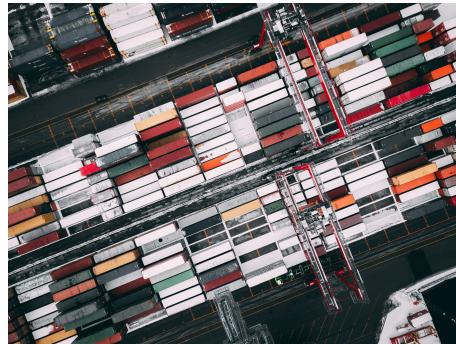
Stolen laptop, tablet, phone - can anybody read your data?

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!

# 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 case**
- 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**

## Nmap the world

```
80/tcp      open     http  
81/tcp      open     hoste2.ons  
10/ssh  
11  
12 nmap -v -sS -O 10.2.2.2  
13 Starting nmap 0.2.54BETA25  
13 Insufficient responses for TCP sequencing (3), OS detection is  
13 inaccurate  
14 Interesting ports on 10.2.2.2:  
15 (The 1539 ports scanned but not shown below are in state: cl  
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:"Z10HD101"  
Connecting to 10.2.2.2:ssh ... successful.  
Re Attempting to exploit SSHv1 CRC32 ... successful.  
IP Resetting root password to "Z10HD101".  
System open: Access Level <9>  
# ssh 10.2.2.2 -l root  
root@10.2.2.2's password: #
```



Hackertools are for everyone!

## Hackers work all the time trying to break stuff

Blue teams can use hackertools, and become more effecient:

- 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 <https://tools.kali.org/> and <http://sectools.org/>

# Kali Linux the pentest toolbox

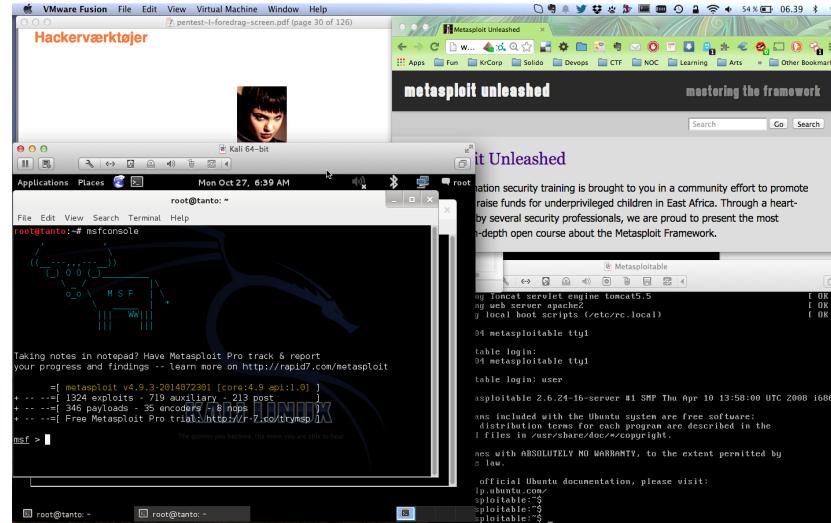


Kali <http://www.kali.org/>

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

Also versions for Raspberry Pi, mobile and other small computers

# Hackerlab setup



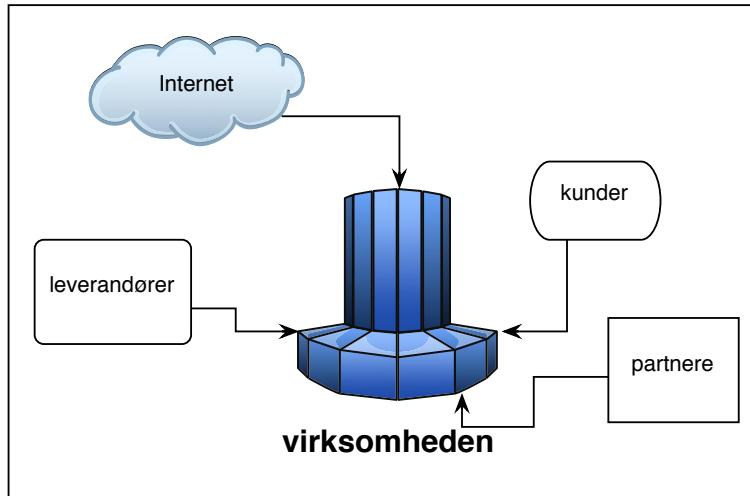
- Create hacker labs, encourage hacker labs!
- Software Host OS: Windows, Mac, Linux
- Virtualisation software: VMware, Virtual box, HyperV pick your poison
- Hackersoftware: Kali Virtual Machine <https://www.kali.org/>,

# 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
- Be curious, and honest – let our students play with fire in special networks

# Fokus: 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

kea



- 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



## 90,000+ LG TVs Vulnerable to Authorization Attacks Due to WebOS Vulnerabilities

Bitdefender Labs has revealed a critical security flaw in over 90,000 LG smart TVs running the company's proprietary WebOS platform.

If exploited, the vulnerability could allow attackers to gain unauthorized access to the TV's functions and potentially the user's home network.

Source: <https://cybersecuritynews.com/lg-tvs-vulnerabilities/>

## **92,000+ internet-facing D-Link NAS devices accessible via “backdoor”**

A vulnerability (CVE-2024-3273) in four old D-Link NAS models could be exploited to compromise internet-facing devices, a threat researcher has found.

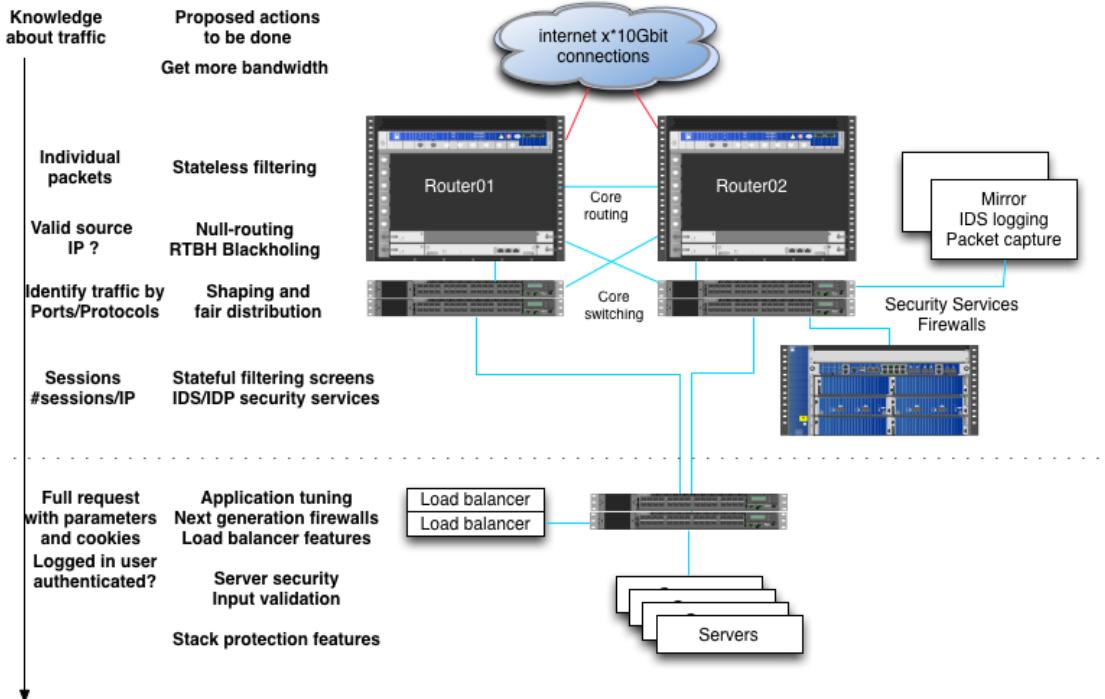
The existence of the flaw was confirmed by D-Link last week, and an exploit for opening an interactive shell has popped up on GitHub.

“The vulnerability lies within the `nas_sharing.cgi` uri, which is vulnerable due to two main issues: a backdoor facilitated by hardcoded credentials, and a command injection vulnerability via the system parameter,” says the discoverer, who goes by the online handle “netsecfish”.

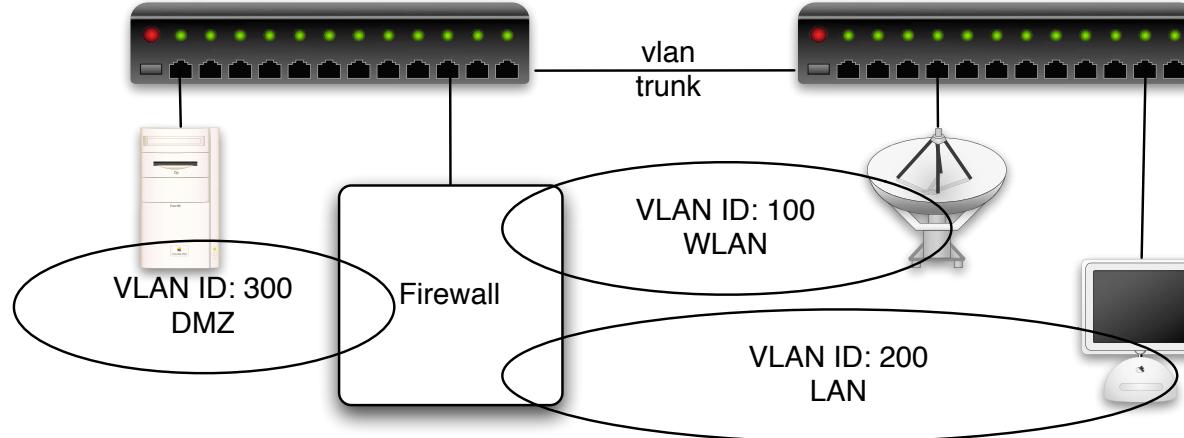
**The “backdoor” account has `messagebus` as the username and doesn’t require a password.**

Source: <https://www.helpnetsecurity.com/2024/04/08/cve-2024-3273/>

# Big firewalls



Big firewalls are not a single device



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

## Fokus: 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

## Fokus: 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

## Indicators of Compromise and Signatures

An IOC is any piece of information that can be used to objectively describe a network intrusion, expressed in a platform-independent manner. This could include a simple indicator such as the IP address of a command and control (C2) server or a complex set of behaviors that indicate that a mail server is being used as a malicious SMTP relay.

When an IOC is taken and used in a platform-specific language or format, such as a Snort Rule or a Bro-formatted file, it becomes part of a signature. A signature can contain one or more IOCs.

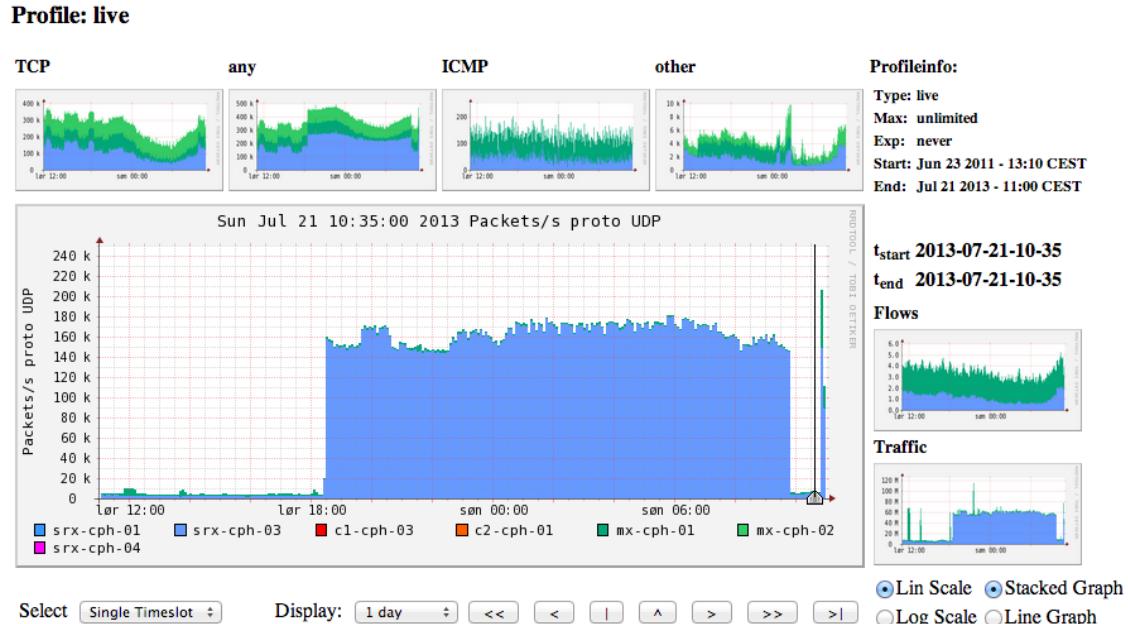
Source: Applied Network Security Monitoring Collection, Detection, and Analysis, 2014 Chris Sanders

# 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 Zeek/Suricata
  - <https://www.zeek.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
- Vi må nok som medarbejdere acceptere mere logning, men selvfølgelig ikke som privatpersoner og borgere

# Network visibility: Netflow with NFSen



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

Logging can show what happens/happened.

# 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` 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` for known attacker) or HTTP User-Agent header value (e.g. `sqlmap` 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).



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

# Fokus: 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

<a href="#">Flere detaljer i gigantisk hotel-hack: 5,25 mio. ukrypterede pasnumre taget</a>	Jakob Møllerhøj   Sikkerhed   07. jan 2019	(3)
<a href="#">7,6 millioner spillerkonti løkket fra populært onlinespil</a>	Niels Møller Kjemstrup   Sikkerhed   07. jan 2019	(2)
<a href="#">Største løk i tysk historie: Politikeres og kunstneres data smidt på nettet</a>	Morten Egedal   Sikkerhed   04. jan 2019	(2)
<a href="#">Gentleman-aftale mellem politiske partier skal danne mur mod datalæk, hacking og fake news</a>	Louise Holst Andersen   Sikkerhed   04. jan 2019	(12)
<a href="#">Boligfond beklager løk af følsomme persondata: En menneskelig fejl</a>	Sikkerhed   28. dec 2018	(6)

# Øv krisesituationer



- Lav rollespil
- Lav tabletop exercises

## Spørgsmål og mere debat



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

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