

# **MAILSERVER SELBST BETREIBEN. IST URCOOL, FUNKTIONIERT ABER NICHT.**

Ein (teilweise pessimistischer) Blick auf den Betrieb von Mailserver und warum es sich trotzdem lohnt.

# ÜBER DEN VORTRAGENDEN

- Betreibe seit ~2007 Linux Server
- Seit 2011 für **makandra** (wir suchen noch KollegInnen!)
- Mein aktueller Mailserver
  - Gestartet 2018
  - Kümmert sich um 14 Domains von ~8 Personen(gruppen)

# RFC

*Einige RFCs, jedoch nicht alle, stellen  
Internetstandards dar.*

([https://de.wikipedia.org/wiki/Request\\_for\\_Comments](https://de.wikipedia.org/wiki/Request_for_Comments))

# RFC BEISPIELE

- RFC 5737 (IPv4 Adressen: 192.0.2.0/24, 198.51.100.0/24, 203.0.113.0/24)
- RFC 3849 (IPv6 Adressen: 2001:DB8::/32)
- RFC 2606 (Domains/TLDs: example.com, .example, .test, ...)

# SCHLECHTES BEISPIEL:

```
# dig mx test.de +short  
10 sw-proxy01.stiftung-warentest.de.  
20 mx.coltnet.
```

# MAILSERVER SETUP

## Communication - Email - Complete Solutions

[^](#) [back to top](#) [^](#)

Simple deployment of [E-mail](#) servers, e.g. for inexperienced or impatient admins.

- [AnonAddy](#) - Open source email forwarding service for creating aliases. ([Source Code](#)) [MIT](#) [PHP](#)
- [DebOps](#) - Your Debian-based data center in a box. A set of general-purpose Ansible roles that can be used to manage Debian or Ubuntu hosts. ([Source Code](#)) [GPL-3.0-only](#) [YAML/Ansible](#) [/Python](#)
- [docker-mailserver](#) - Production-ready fullstack but simple mail server (SMTP, IMAP, LDAP, Antispam, Antivirus, etc.) running inside a container. Only configuration files, no SQL database. ([Source Code](#)) [MIT](#) [Docker](#)
- [emailwiz](#) - Luke Smith's bash script to completely automate the setup of a Postfix/Dovecot /SpamAssassin/OpenDKIM server on debian. [GPL-3.0](#) [Bash](#)
- [Excision Mail](#) - Fullstack, security focused mailserver based on OpenSMTPD for OpenBSD using ansible. [ISC](#) [Shell/Ansible](#)
- [homebox](#) - Suite of Ansible scripts to deploy a fully functional mail server on Debian. Unobtrusive and automatic as much as possible, focusing on stability and security. [GPL-3.0](#) [Shell](#)

# MAILSERVER SETUP

```
curl http://easymail.test | sudo bash | docker | kubernetes
```

**UND JETZT?**



# PTR / REVERSE-DNS (RFC 2317)

```
# dig mail.example.com +short  
192.0.2.42  
# dig -x 192.0.2.42 +short  
mail.example.com.
```

# SPAMVERMEIDUNG UND AUSLIEFERBARKEIT VERBESSERN

- SPF
- DKIM
- DMARC

**SPF (RFC 7208)**

# SPF (RFC 7208)

- SPF Record
- TXT Record

# SPF (RFC 7208)

- ~~SPF DNS Record~~
- TXT DNS-Record

RFC 7208 Section 14.1

# SPF (RFC 7208)

Ein klassischer SPF Record:

```
v=spf1 include:%{ir}.*{v}.*{d}.spf.has.example.com ~all
```

RFC 7208 Section 7.1

# SPF (RFC 7208)

Ein einfacher SPF Record:

```
v=spf1 ip4:192.0.2.42 ip6:2001:db8::42 -all
```

RFC 7208 Section 10.1

**DKIM (RFC 6376, 8301, 8463)**



# DKIM (RFC 6376, 8301, 8463)

- Email Header

```
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/simple;  
d=example.com; s=acme; t=1682377337; bh=gKfuGs=  
h=Date:To:From:Subject:From;  
b=fzb3yoc5yEFYmIzf/3Mi+X504sneN8Hc9[... ]pIt+PVis=
```

- Selector (RFC 6376 Section 3.1)
  - Beispiel: acme
- TXT DNS-Record (RFC 6376 Section 3.6)
  - Beispiel: acme.\_domainkey.example.com

# DMARC (RFC 7489)

Die Prüfungsmechanismen (SPF/DKIM) prüfen und darauf reagieren.

# DMARC (RFC 7489 SECTION 6)

- TXT DNS-Record

Ein einfacher DMARC Record:

```
v=DMARC1; p=reject; rua=mailto:dmarc@example.com;  
ruf=mailto:dmarc@example.com; fo=1; adkim=s; aspf=s;
```

# DMARC (RFC 7489 SECTION 6.3)

- v => Version
- p => Policy (reject/quarantine/none)
- rua => Adresse für feedback
- ruf => Adresse für Fehler-Reports
- fo => Fehler-Report Optionen
- adkim => strict/relaxed DKIM
- aspf => strict/relaxed SPF

**FERTIG**

**DIE ERSTE MAIL AN DIE ELTERN**

# DIE ERSTE MAIL AN DIE ELTERN

...@t-online.de

# DIE ERSTE MAIL AN DIE ELTERN

```
554 IP:192.0.2.42 - A problem occurred.  
(Ask your postmaster for help or to contact  
tosa@rx.t-online.de to clarify.)
```



**DIE ERSTE MAIL AN ~~DIE ELTERN~~**  
**DIE TELEKOM**

tosa@*rx*.t-online.de

# TIPPS DER TELEKOM TEIL 1

- PTR / Reverse DNS
- Minimierung der Anzahl der gleichzeitig geöffneten TCP/IP-Verbindungen
- Listenmanagement
  - DNSBL (merken für später)
  - DNSWL (merken für später)
- Kein Open Proxy / Open Relay
- Updates
- Ausgehende Filter

(<https://postmaster.t-online.de/#t4>)

# TIPPS DER TELEKOM TEIL 2

- Keine "Sender Address Verification"
- Keine Email Bounces bei falschen Adressen/Junk ("Backscatter")
- SMTP Logs prüfen
- Dynamische IPs
- Reputation Management (merken für später)

(<https://postmaster.t-online.de/#t4>)

# TIPPS DER TELEKOM TEIL 3

*Insbesondere empfehlen wir, den Hostnamen so zu wählen, dass seine Nutzung als Mailserver für Außenstehende erkennbar ist (z. B. mail.example.com), und >>> sicherzustellen, dass die Domain zu einer Website führt, die eine Anbieterkennzeichnung mit sämtlichen Kontaktdaten beinhaltet. <<<*

(Persönliche Email)

# DNSWL.ORG

- Rspamd
- SpamAssassin
- Posteo
- fsfe.org
- ...

# DNSWL.ORG

Telekom:

- mailout00.t-online.de 194.25.134.16

IP address 194.25.134.16 is not whitelisted at dnswl.org.

# DNSWL.ORG

Telekom:

- mailout08.t-online.de 194.25.134.20

IP address **194.25.134.20** is whitelisted at [dnswl.org](https://dnswl.org) with the following details:

DNSWL Id: 1972; Domain: t-online.de; Sec. Domains: t-online.com; Category: Access/Network/Hosting Provider (127.0.0.x); Country: DE

Please use the [dnswl.org Self Service portal](https://dnswl.org) for any change requests.

**Please remember: [dnswl.org](https://dnswl.org) is a **whitelist**, not a blacklist.**

**Please do not contact us requesting "removal from blacklist".**

---

DNSWL Id	1972 - t-online.de
IP range	194.25.134.20/32
Hostname	mailout08.t-online.de
Score	low
Monthly/daily magnitude	5.7/7.5

# DNSWL.ORG

Kim:

**IP address** is whitelisted at dnswl.org with the following details:

DNSWL Id:

Category: Personal,  
Private (127.0.0.x); Country: DE

Please use the [dnswl.org Self Service portal](#) for any change requests.

**Please remember: dnswl.org is a **whitelist**, not a blacklist.  
Please do not contact us requesting "removal from blacklist".**

---

DNSWL Id

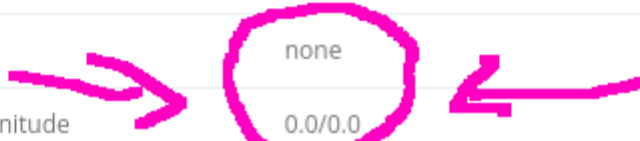
IP range

Hostname

Score

Monthly/daily magnitude

Score	none
Monthly/daily magnitude	0.0/0.0





# DNSBL

	Blacklist	Reason	TTL	ResponseTime	
✔ OK	OSPAM			49	
✔ OK	Abusix Mail Intelligence Blacklist			4	
✔ OK	Abusix Mail Intelligence Domain Blacklist			3	
✔ OK	Abusix Mail Intelligence Exploit list			3	
✔ OK	Anonmails DNSBL			132	
✔ OK	BACKSCATTERER			4	
✔ OK	BARRACUDA			29	

# REPUTATION MANAGEMENT

## SENDERSCORE.ORG

Let's check your score.

Checking Sender Score for address:

**[REDACTED]**

[CHANGE](#)

Additional information

# SENDERSCORE.ORG

Checking Sender Score for address:

[REDACTED]

[CHANGE](#)

## Additional information

Work Email

Monthly Email Volume ▼

This field is required.

Select Country... ▼

By submitting the form, you are agreeing that you read and consent to our privacy policy. We may also contact you via email, phone, and other electronic means to communicate information about our products and services. You may opt-out or update your contact information previously

# REPUTATION MANAGEMENT


# CISCO TALOS

## REPUTATION DETAILS




 SENDER IP REPUTATION ● Neutral

 Submit Sender IP Reputation Ticket

 WEB REPUTATION ? Unknown

 Submit Web Reputation Ticket

## EMAIL VOLUME DATA

	LAST DAY	LAST MONTH
 EMAIL VOLUME	0.0	0.0
 VOLUME CHANGE	0%	
 SPAM LEVEL	Medium	

# REPUTATION MANAGEMENT MAILSPIKE.ORG

## IP LISTINGS

IP LISTINGS:


~~192.168.1.1~~

Check IP

Matches found for ~~192.168.1.1~~



ASN: 24940 CIDR: ~~192.168.1.1~~/15 TLD: DE

Country: GERMANY  Region: - City: -

# REPUTATION MANAGEMENT

## BARRACUDA

Reputation Lookup

The IP address **192.168.1.1** is not currently listed as "poor" on the Barracuda Reputation System.

IP or Domain:

# DIE ERSTE MAIL AN DIE ELTERN

```
SMTP error from remote mail server after initial connection:  
554 IP=192.0.2.42 - None/bad reputation. Ask your postmaster  
for help or to contact tobr@rx.t-online.de for reset. (NOWL)
```

**DIE ERSTE MAIL AN ~~DIE ELTERN~~**  
**DIE TELEKOM**

~~tosa@rx.t-online.de~~

tobr@rx.t-online.de



# DIE ERSTE MAIL AN ~~DIE ELTERN~~ DIE TELEKOM

**From:** tosa@rx.t-online.de

# DIE ERSTE MAIL AN DIE ELTERN



**DIE ERSTE MAIL AN FREUNDE**

# DIE ERSTE MAIL AN FREUNDE

...@gmail.com

# DIE ERSTE MAIL AN FREUNDE

```
postfix/smtp[8465]: 945X0173: to=<...@gmail.com>,
relay=gmail-smtp-in.l.google.com[2a00:1450:400c:c07::1b]:25,
delay=0.67, delays=0.15/0/0.15/0.36, dsn=5.7.1,
status=bounced (host gmail-smtp-in.l.google.com[2a00:1450:400c:c0
said: 550-5.7.1 \[2001:DB8::1 19] Our system has
detected that this 550-5.7.1 message is likely
suspicious due to the very low reputation of the
550-5.7.1 sending domain. To best protect our users from
spam, the message has 550-5.7.1 been blocked. Please visit
550 5.7.1 https://support.google.com/mail/answer/188131
for more information. 9-2002235bsi5323093wry.585 -
gsmtip (in reply to end of DATA command))
```

# DIE ERSTE MAIL AN FREUNDE

*Gmail Postmaster Tools provides senders with metrics on parameters such as reputation, spam rate, feedback loop, etc. It can help you prevent your emails from being blocked or sent to spam by Gmail.*

<https://support.google.com/mail/answer/188131>

# DIE ERSTE MAIL AN FREUNDE

*Here at Gmail, we work very hard to fight spam. While in some cases we may classify a message as spam and deliver it to the spam folder, we also try to find ways to reduce the amount of spam being sent to Gmail in general. If we detect that a message has a strong likelihood of being spam, we'll block the message from being sent to Gmail.*

<https://support.google.com/mail/answer/188131>

# DIE ERSTE MAIL AN FREUNDE

*A message might be blocked if it contains suspicious-looking or spammy text or if the sending IP has had a history of sending unsolicited messages.*

<https://support.google.com/mail/answer/188131>



# DIE ERSTE MAIL AN FREUNDE

*It's likely that only a subset of the messages which have a strong likelihood of being spam are being blocked and not all of your messages.*

*However, to help improve your deliverability, we recommend reviewing our Bulk Sender Guidelines.*

<https://support.google.com/mail/answer/188131>

# DIE ERSTE MAIL AN FREUNDE

*Important: Starting November 2022, new senders who send email to Google Gmail accounts must set up either SPF or DKIM. Learn more.*

(<https://support.google.com/mail/answer/81126>)

# DIE ERSTE MAIL AN FREUNDE

*Make sure the provider follows the guidelines in this article. Large email providers such as Google, AOL, and Yahoo, typically follow these guidelines.*

(<https://support.google.com/mail/answer/81126>)

# DIE ERSTE MAIL AN FREUNDE

- Reverse-DNS & SPF & DKIM & DMARC ✓
- Webseite ✓
- "send all messages from the same IP address" ✓
- Domain Status bei Google Safe Browsing ✓
- Keine Test-Phishing mails ✓
- Kein Domain Spoofing ✓
- Absender aus dem Adressbuch ✓
- ARC (nur interessant für Weiterleitungen)
- BIMI (merken für später)
- Postmaster Tools (merken für später)

(<https://support.google.com/mail/answer/81126>)

**BIMI**

**BRAND INDICATORS FOR  
MESSAGE IDENTIFICATION**

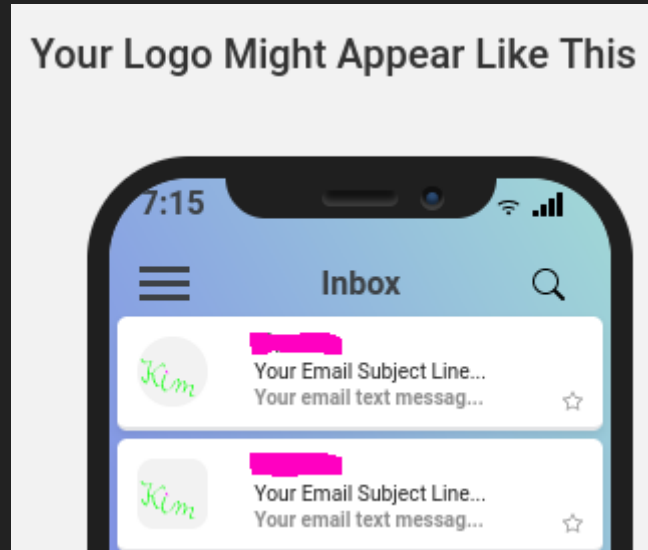
# BIMI

## Voraussetzungen:

- DMARC (mit `quarantine` oder `reject`)
- BIMI Record (TXT Record)
  - `default._bimi.example.com`
  - `v=BIMI1; l=https://example.com/bimi.svg; a=;`
- "a Verified Mark Certificate (VMC) for those receivers that require it."

# BIMI

Your Logo Might Appear Like This



# BIMI

- Apple: <https://support.apple.com/en-us/HT213155>
- Fastmail: <https://www.fastmail.help/hc/en-us>
- Gmail:  
<https://support.google.com/a/answer/10911432?hl=en>
- Laposte: <https://aide.laposte.net/categories/mon-courrier-electronique/recevoir-et-lire-mon-courrier>
- Onet Poczta: <https://pomoc.poczta.onet.pl/baza-wiedzy/bimi-co-oznacza-ten-skrot/>
- Yahoo: <https://senders.yahooinc.com/bimi/>
- Zone: <https://help.zone.eu/en/kb/bimi-en/>



# BIMI

## Calculate Your Price

Subscription Term \*

Payment Option \*

Term will apply to all subscription-based items in your cart

Quantity

**Verified Mark**

\$1,299.00 each

**Extra Domain for Verified Mark**

\$499.00 each

Subtotal \*

**\$1,299.00**

# BIMI

## Order summary

Verified Mark Certificate


1-year plan

## Price details

Base price \$1,499.00 USD





Primary email domain x 1 year


Subtotal \$1,499.00 USD

Total \$1,499.00 USD 

Applicable tax not included

# POSTMASTER TOOLS



← → ↻   https://postmaster.google.com/manageddomains?pli=1 130%  



## Postmaster Tools

Programmatically gather data about your emails with the Postmaster Tools API Beta. [Learn more](#)

We've changed the way we calculate Spam Rate to better represent user feedback as well as to ensure it's more actionable for you. [Learn more](#)

Domain ▲	Status ▲	Added ▲
	 Verified	Sep 22, 2021

# POSTMASTER TOOLS

The screenshot shows a web browser window with the Google logo in the top left. The address bar contains the URL `https://postmaster.google.com/dashboards#do=bob.systems&st=userReportedSpamR` and a zoom level of 130%. The breadcrumb navigation shows 'Postmaster Tools > [redacted] > Spam Rate' with a dropdown arrow next to the redacted name. The time range is set to 'Last 7 da'. The main content area displays a message: 'No data to display at this time. Please come back later. Postmaster Tools requires that your domain satisfies certain conditions before data is visible for this chart. Refer to the [help page](#) for more details.'

Google

Postmaster Tools > [redacted] > Spam Rate Last 7 da

**No data to display at this time. Please come back later.**  
Postmaster Tools requires that your domain satisfies certain conditions before data is visible for this chart.  
Refer to the [help page](#) for more details.

# POSTMASTER TOOLS

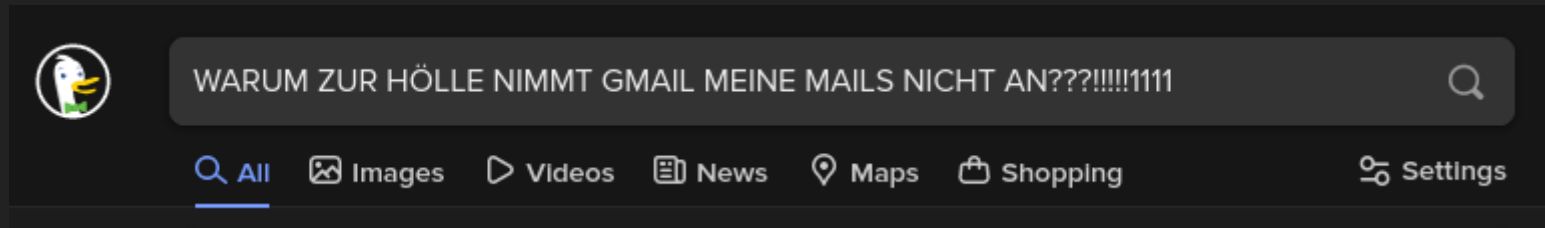
*Most of the Postmaster Tools dashboards will only display data when there's a sizable daily volume of email traffic (up to the order of hundreds) coming from your Authentication Domains and/or certain other conditions, in place to prevent abuse.*

<https://support.google.com/mail/answer/9983020>

# DIE ERSTE MAIL AN FREUNDE

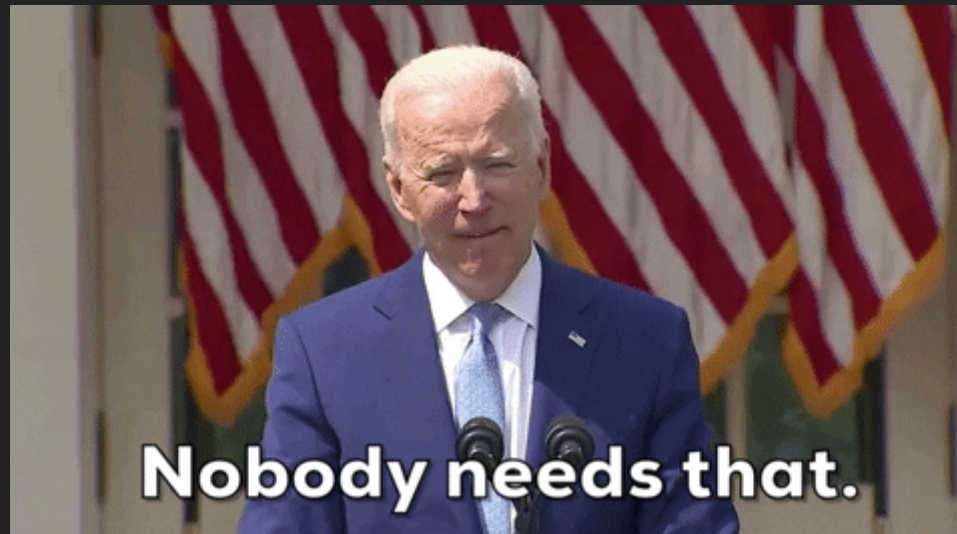


# DIE ERSTE MAIL AN FREUNDE



# DIE ERSTE MAIL AN FREUNDE

IPv6?





# DIE ERSTE MAIL AN FREUNDE

```
if ($domain == 'gmail.com') {  
    use ipv4;  
}
```

# DIE ERSTE MAIL AN FREUNDE

```
postfix/smtp[9203]: 2DF2A83E58: to=<...@gmail.com>,  
relay=gmail-smtp-in.l.google.com[142.250.0.26]:25,  
delay=3.9, delays=0.72/0.01/2/1.1, dsn=2.0.0,  
status=sent (250 2.0.0 OK 1677698041 14-20020aotp.93 - gsmtplib)
```

# DIE ERSTE MAIL AN FREUNDE



# DIE ERSTE MAIL AN FREUNDE



# DIE ERSTE MAIL AN FREUNDE

```
Authentication-Results: mx.google.com;  
dkim=pass header.i=@example.com header.s=dkim header.b=fzb3b9yo;  
spf=pass (google.com: domain of kim@example.com designates 192.0.  
permitted sender) smtp.mailfrom=kim@example.com;  
dmarc=pass (p=REJECT sp=REJECT dis=NONE) header.from=example.com
```

# DIE ERSTE MAIL AN FREUNDE

Zufrieden?



**DAS LEBEN GEHT WEITER**

# **DIE ERSTE EMAIL AN MEINE VERWALTUNG**



# DIE ERSTE EMAIL AN MEINE VERWALTUNG

```
: host mailserv0.augsburg.de[62.216.223.133] said:  
550-5.7.1 This email was rejected because it violates  
our security policy  
550 5.7.1 CYREN IP reputation determined a medium  
risk associated with  
the sender address 192.0.2.42. (in reply to DATA command)
```

# DIE ERSTE EMAIL AN MEINE VERWALTUNG



## IP Reputation Check

Results for **[REDACTED]**

Risk Level:

Suspicious

Description: The IP has only recently started sending mails, and therefore still has an Unknown reputation

CHECK ANOTHER IP

# DIE ERSTE EMAIL AN MEINE VERWALTUNG

- Start des Mailservers: 2018
- "only recently started sending mails": 2021

# CYREN

- Identify hundreds of thousands of new zombies (compromised accounts and host computers) everyday
- Continuously track traffic from tens of millions of IP addresses
- Accurately classify billions of email messages per week in real-time

# CYREN



IP Reputation Check

202.46.144.254

Error: 0

# CYREN



IP Reputation Check

192.168.1.1 : 8080 : 192.168.1.1 : 8080 : 192.168.1.1

Please enter a valid IP

# **DAS MUSTER**

IP Datenbanken

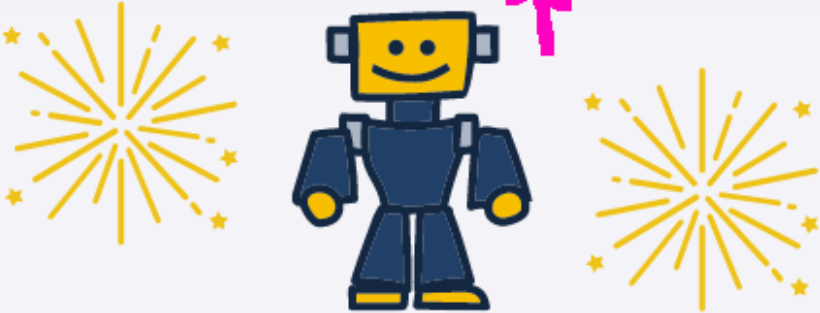
# IP DATENBANKEN (MEINUNG)

- "Funktioniert" mit IPv4
- Google schafft es nicht mit IPv6
- DNSBL seit IMMER stark diskutiert



# DNSBL (SPAMHAUS.ORG)

[redacted] has no issues



In the last month we have observed 3 listings. ←

[redacted] has been detected 3 times in the last month. It has been removed 0 times.



**SPAM VERHINDERN ANHAND  
DER DOMAIN?**

# SPAM VERHINDERN ANHAND DER DOMAIN?



Hold my beer

# SPAM VERHINDERN ANHAND DER DOMAIN?

```
# new TLDs used for spamming
# https://www.spamhaus.org/statistics/tlds/
[...]
enlist_addrlist (SUSP_NTLD) *@*.icu
enlist_addrlist (SUSP_NTLD) *@*.online
enlist_addrlist (SUSP_NTLD) *@*.work
enlist_addrlist (SUSP_NTLD) *@*.date
enlist_addrlist (SUSP_NTLD) *@*.top
enlist_addrlist (SUSP_NTLD) *@*.fun
enlist_addrlist (SUSP_NTLD) *@*.life
enlist_addrlist (SUSP_NTLD) *@*.review
enlist_addrlist (SUSP_NTLD) *@*.bid
enlist_addrlist (SUSP_NTLD) *@*.stream
[...]
```

# SPAM VERHINDERN ANHAND DER DOMAIN?

The 10 Most Abused Top Level Domains			
As of 28 April 2023 the TLDs with the worst reputations for spam operations are:			
1	<b>.rest</b>	Badness Index: 4.16	Domains seen: 1,105 Bad domains: 702 (63.5%)
2	<b>.hair</b>	Badness Index: 1.69	Domains seen: 1,068 Bad domains: 314 (29.4%)
3	<b>.top</b>	Badness Index: 1.62	Domains seen: 86,295 Bad domains: 14,561 (16.9%)
4	<b>.live</b>	Badness Index: 1.44	Domains seen: 37,960 Bad domains: 6,259 (16.5%)


(<https://www.spamhaus.org/statistics/tlds/>)

# SPAM VERHINDERN ANHAND DER DOMAIN?

Test rule QA scores indicate that xyz and site are no longer consiste...

...nt indicators of spam

git-svn-id: <https://svn.apache.org/repos/asf/spamassassin/trunk@1907241> 13f79535-47bb-0310-9956-ffa450edef68

 trunk

**Bill Cole** committed on Feb 3

# SPAM VERHINDERN ANHAND DER DOMAIN?

- Ubuntu 20.04: Spamassassin 3.4.4
- Ubuntu 22.04: Spamassassin 3.4.6
- Debian bullseye: Spamassassin 3.4.6
- Ubuntu 14.04 Extended security maintenance: bis 2024

# SPAM VERHINDERN ANHAND DER DOMAIN?

*[...] beträgt die Zahl der .de-Domains  
mehr als 17 Millionen.*

(<https://www.denic.de/wissen/statistiken/domain-fact-de-marktanteil>)

diesistdieletztefreiededomain.de



# LÖSUNG

Einfach die bisherigen Standards strikt durchsetzen!

# TICKETS BEI MUENCHENTICKET.DE KAUFEN

*München Ticket GmbH in  
Zusammenarbeit mit [...] SAP  
Deutschland SE & Co. KG [...]*

# AKTUELLER SPF MUENCHENTICKET.DE

```
v=spf1 ip4:20.47.149.138 ip4:40.92.0.0/15 ip4:40.107.0.0/16  
ip4:51.4.72.0/24 ip4:51.4.80.0/27 ip4:51.5.72.0/24  
ip4:51.5.80.0/27 ip4:52.100.0.0/14 ip4:87.253.232.0/21  
ip4:94.16.7.90 ip4:185.158.13.180/31 ip4:94.186.157.82  
ip4:104.47.0.0/17 ip4:155.56.129.4 1 ip4:155.56.222.0/24  
ip4:185.189.236.0/22 ip4:185.211.120.0/22  
ip4:185.250.236.0/22 ip4:194.55.191.12 ip4:198.2.128.0/24  
ip4:198.2.132.0/22 ip4:198.2.136.0/23 ip4:198.2.145.0/24  
ip4:198.2.177.0/24 include:spf1.muenchenticket.de -all
```

# AKTUELLER SPF MUENCHENTICKET.DE

```
v=spf1 ip4:198.2.178.0/23 ip4:198.2.180.0/24  
ip4:198.2.186.0/23 ip4:205.201.131.128/25  
ip4:205.201.134.128/25 ip4:205.201.136.0/23  
ip4:205.201.139.0/24 ip4:94.136.22.52/24  
ip4:94.16.7.139/32 ip6:2a01:111:f400::/48  
ip6:2a01:111:f403::/48 ip6:2a01:4180:4050:400::/64  
ip6:2a01:4180:4050:800::/64 ip6:2a01:4180:4051:400::/64  
ip6:2a01:4180:4051:800::/64 include:amazonses.com -all
```

# AKTUELLER SPF MUENCHENTICKET.DE

```
v=spf1 ip4:199.255.192.0/22 ip4:199.127.232.0/22  
ip4:54.240.0.0/18 ip4:69.169.224.0/20 ip4:23.249.208.0/20  
ip4:23.251.224.0/19 ip4:76.223.176.0/20 ip4:54.240.64.0/19  
ip4:54.240.96.0/19 ip4:52.82.172.0/22  
ip4:76.223.128.0/19 -all
```

# DIE LÖSUNG

- Erwartungshaltungsmanagement
- Monitoring
- Monitoring
- Monitoring

# LOHNT ES SICH

- Kontrolle
  - eigene Domain
- Flexibilität
  - persönliche Spamvermeidung
- Backup
- Spaß am Gerät

# PERSÖNLICHE SPAMVERMEIDUNG

[kim+komischewebseite@example.com](mailto:kim+komischewebseite@example.com)



# PERSÖNLICHE SPAMVERMEIDUNG

Florian:

*wenn man seinen eigenen Mailserver betreibt, ist es schlau, wenn man den von + auf - wechselt, weil man dann weniger oft von kaputten Regexen in Formularen gefangen wird*

[kim-komischewebseite@example.com](mailto:kim-komischewebseite@example.com)

*Die Prüfungen durch Spezialisten dauern derzeit noch an. Bislang wurden jedoch keine Unregelmäßigkeiten in der Datenverarbeitung oder Zugriffe Dritter festgestellt. Sollte sich an dieser Einschätzung etwas ändern, werden wir umgehend und unaufgefordert wieder auf Sie zukommen.*

*Ich kann Ihnen bestätigen, dass diese Spammails nicht von uns kommen und wir auch kein Leck im System haben. Sie können davon ausgehen, dass es sich hierbei um einen Spammer handelt der hunderte oder tausende zufällige Adressen zuspamt.*



*Fin*

