TLS-Attacker

Evaluating the TLS ecosystem

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Transport Layer Security (TLS)

- The most important cryptographic standard

TLS is complex

- Many versions, many algorithms, many attacks …

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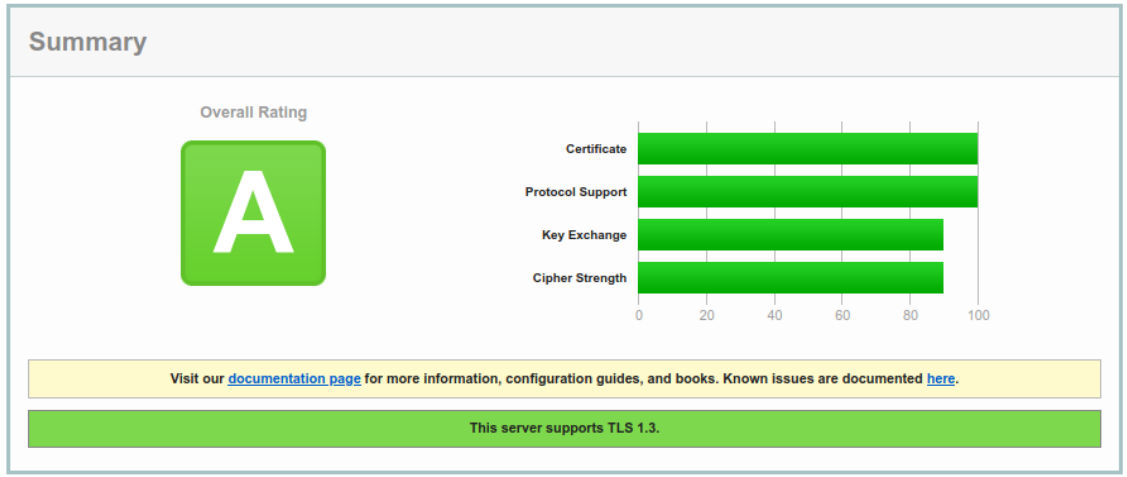
- Many versions, many algorithms, many attacks …

Configuring a TLS server not that easy

SSL labs

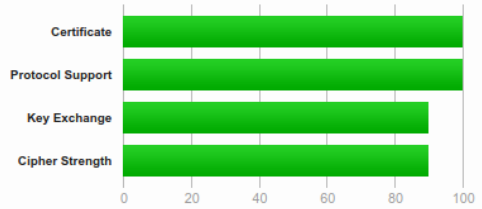

Summary
Overall Rating
A
Certificate
Protocol Support
Key Exchange
Cipher Strength
0
20
40
60
80
100
Visit our documentation page for more information, configuration guides, and books. Known issues are documented here.
This server supports TLS 1.3.

SSL labs

Summary

Overall Rating

A



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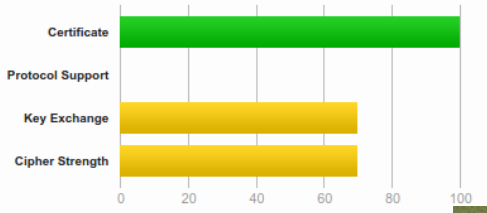
Summary

Overall Rating

F



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This server supports SSL 2, which is obsolete and insecure, and can be used against TLS (DROWN attack). Grade set to F. MORE I

This server is vulnerable to the POODLE attack. If possible, disable SSL 3 to mitigate. Grade capped to C. MORE INFO »

This server supports weak Diffie-Hellman (DH) key exchange parameters. Grade capped to B. MORE INFO »

The server supports only older protocols, but not the current best TLS 1.2 or TLS 1.3. Grade capped to C. MORE INFO »

This server accepts RC4 cipher, but only with older protocols. Grade capped to B. MORE INFO »

This server does not support Authenticated encryption (AEAD) cipher suites. Grade capped to B. MORE INFO »

This server supports TLS 1.0. Grade capped to B. MORE INFO »

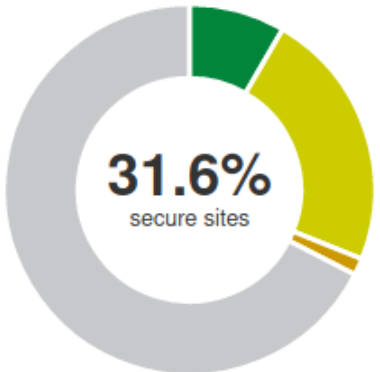
SSL Pulse

SSL Pulse is a continuous and global dashboard for monitoring the quality of SSL / TLS support over time across 150,000 SSL- and TLS-enabled websites, based on Alexa's list of the most popular sites in the world.

Monthly Scan: July 08, 2020

Previous Next

SSL Security Summary

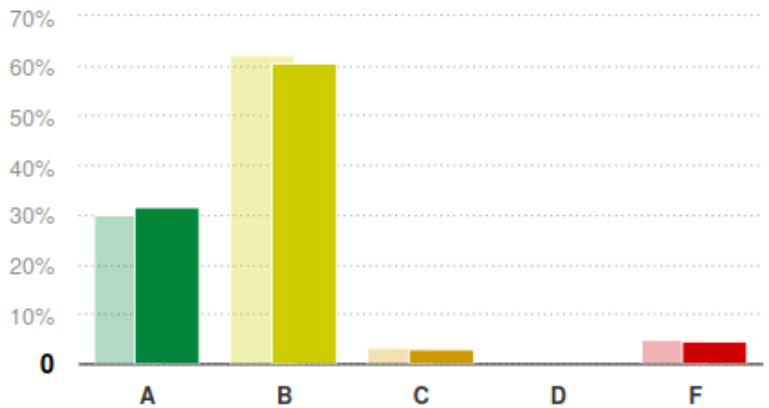


Total sites surveyed
138,709
- 0.3 %

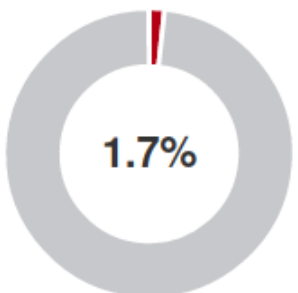
Inadequate security
94,894
- 1.7 %

Secure sites
■ A+ ■ A ■ A-
43,815
+ 1.7 %

SSL Labs Grade Distribution

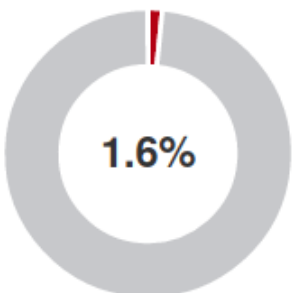


Certificate Chain



Sites with incomplete certificate chain
2,378
- 0.1 %

Cipher Strength



Sites that support weak or insecure cipher suites
2,220
- 0.1 %

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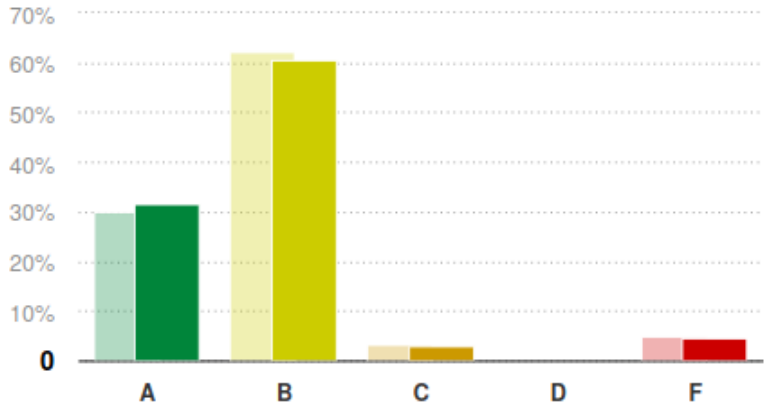
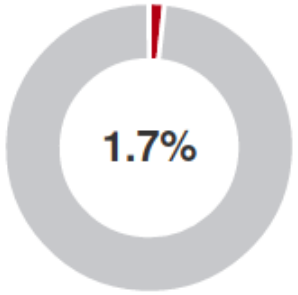


Certificate Chain



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Provides a nice basic overview

Question: How to improve analyses of the TLS ecosystem?

TLS-Attacker – basis for our project group

- Tool for analyses of TLS implementations
- Scanning, testing, writing attacks
- Offers many nice features
- https://github.com/RUB-NDS/TLS-Attacker

Goal: Analysis of the TLS ecosystem

- Many directions …

- Perform the scans
- Write a website
- Write new security/attack evaluations
- Analyze TLS implementation fingerprinting
- Provide configuration improvement feedback
- Provide server configuration statistics
- Predictions regarding the security statistics

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Do some cool stuff

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- Many directions …

- Team:
  - Security experts (RWC engineering students)
  - Website building experts
  - Statistics and machine learning