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Efectuarea Testelor de Penetrare asupra Aplicațiilor de tip Web

Ce este Web Penetration Testing?

- Testarea unei aplicatii de tip web (website) pentru a identifica vulnerabilitati
- Testele sunt efectuate atat automat cat si manual
- Vulnerabilitatile identificate sunt verificate prin incercarea de exploatare a acestora

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Metodologie - Web Pentest

1. Planificare
2. Recunoastere si Enumerare
3. Scanare
4. Exploatare
5. Raportare
6. Retestare

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Planificare

- Se stabileste scopul testelor - SoW (Statement of Work)
- Se stabilesc regulile testelor - RoE (Rules of Engagement)
- Se stabileste mediul de test

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Planificare: SoW

- “Statement of Work”
- Ce aplicatii web?
- Care sunt asteptarile?
- Deadline, program de executie, preturi
- Rol de contract

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Planificare: NDA

- “Non-Disclosure Agreement”
- Acord legal de protejare a informatiilor confidentiale

Planificare: RoE

- “Rules of Engagement”
- Instructiuni si reguli de desfasurare a testului de penetrare
- Restrictii de anumite teste, ore/zile de testare, reguli de comunicare, detalii despre testeri, etc.

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Planificare: Pregatirea mediului

- Recomandari:
  - Mediul de test trebuie sa fie **diferit** si **izolat** fata de mediul de productie!
  - Mediul de test sa contina date “dummy”
  - Abilitatea de a fi resetat cu usurinta

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Planificare: Tipuri de Testare

1. Blackbox Testing:
    a. Pentester-ul cunoaste doar adresa website-ului
2. Graybox Testing:
    a. Pentester-ul cunoaste adresa si are access la conturi in website (optional si documentatie)
3. Whitebox Testing:
    a. Pentester-ul cunoaste adresa, are access la conturi in website (optional si documentatie), dar si la cod sursa

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Recunoastere si Enumerare

In principal se auditeaza urmatoarele aspecte:

- Foldere, Fisiere si Pagini
- Endpoint-uri
- Cod Sursa (Client-Side)
- Librarii si Tehnologii folosite de website (incl. versiunile acestora)
- Mesaje de eroare
- Functionalitati ale website-ului
- Configurari de securitate (headers, cookie-uri, SSL/TLS, etc.)
- Redirectionari catre alte pagini
- Formatul numelui de utilizator si validarea celor existenti
- Mecanisme de securitate in functiune - WAF, Rate-Limiting, Password Policy, etc.

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Scanare

- “Vulnerability Scanning”
- Se folosesc atat instrumente automate de identificare a vulnerabilitatilor cat si teste manuale

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Exploatare

- Reprezinta procesul de validare a vulnerabilitatiilor identificate in pasul anterior
- Se realizeaza in mod manual in majoritatea timpului
- Multiple vulnerabilitati se pot “lega” pentru a realiza un impact mai mare (corelare)

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Raportare

- Se finalizeaza raport-ul de Web Penetration Testing
- Acesta reprezinta “ceea ce vede clientul” (produsul final - livrabilul)
- Contine toate detaliile despre vulnerabilitatiile identificate si recomandari de remediere

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Retestare

- Procesul de testare a remedierilor propuse
- Totodata, se testeaza eficacitatea solutiilor implementate, prin incercarea de evaziune a acestora
- Deobicei, se emite un raport de retestare la final

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OWASP TOP 10 - Web

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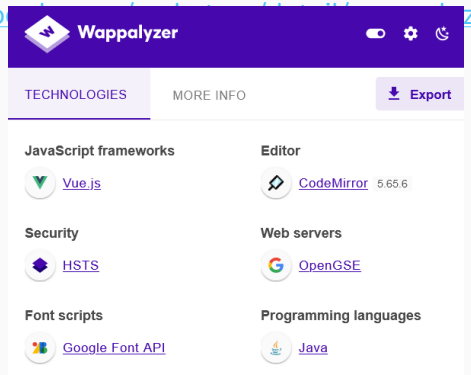
Enumerarea Tehnologiilor Folosite

- Wappalyzer - extensie in browser pentru identificarea librariilor, tehnologiilor, si versiunilor acestora
  - Firefox: https://addons.mozilla.org/en-US/firefox/addon/wappalyzer/
  - Chrome: https://chrome.go[illegible]zer-technology-pro/gppongmhjkpfnbhagpmjfkannfbllamg



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Enumerare Foldere si Fisiere

- Instrumente de enumerare foldere si fisiere:
  - dirb
  - dirbuster
  - gobuster
  - gospider

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Parameter Fuzzing

- Procesul de introducere a datelor aleatorii pentru a identifica parametrii acceptati de catre website
- Acestia pot contine vulnerabilitati “ascunse” de catre dezvoltatori
- ffuf: https://github.com/ffuf/ffuf

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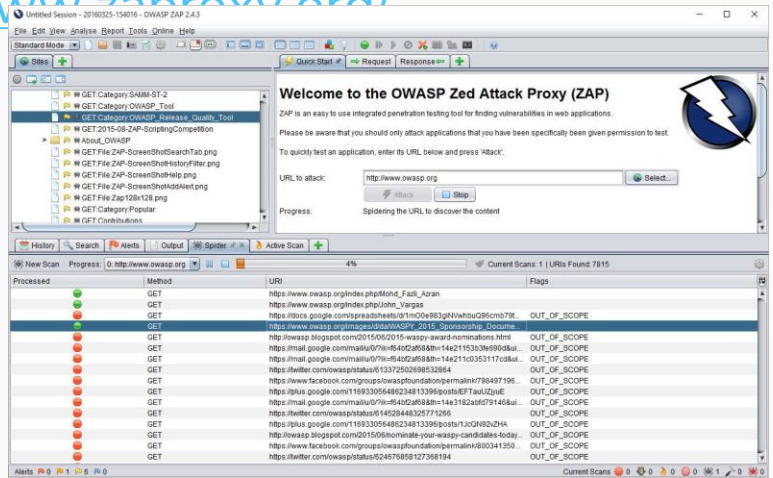
OWASP ZAP

- Instrument de scanare automata de vulnerabilitati in aplicatii web (web vulnerability scanning)
- https://www.zaproxy.org/



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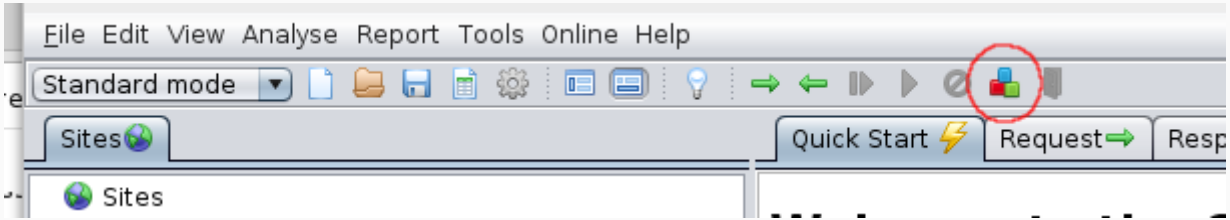
OWASP ZAP - Extensii

- Pachete de module suplimentare care se pot importa in OWASP ZAP pentru a rula mai multe teste aditionale
- https://github.com/zaproxy/zap-extensions



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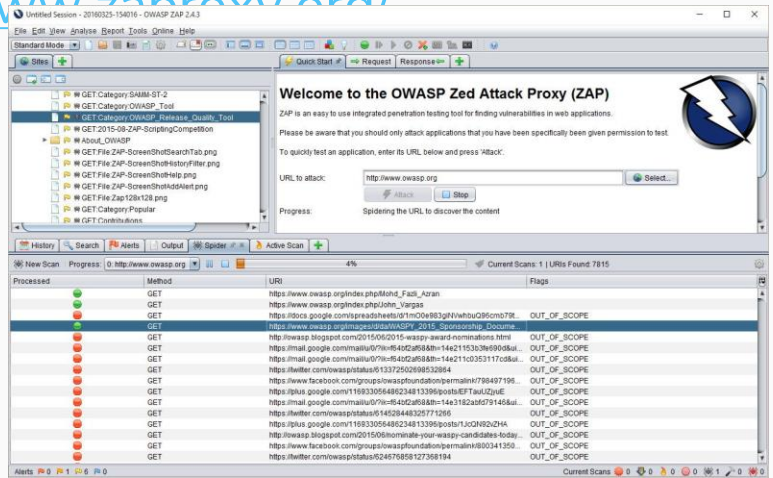

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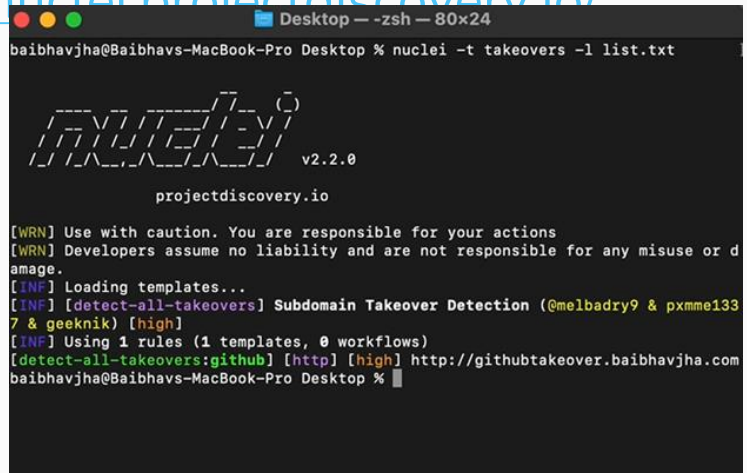
Nuclei

- Instrument de scanare automata de vulnerabilitati in aplicatii web (web vulnerability scanning)
- https://nuclei.projectdiscovery.io/



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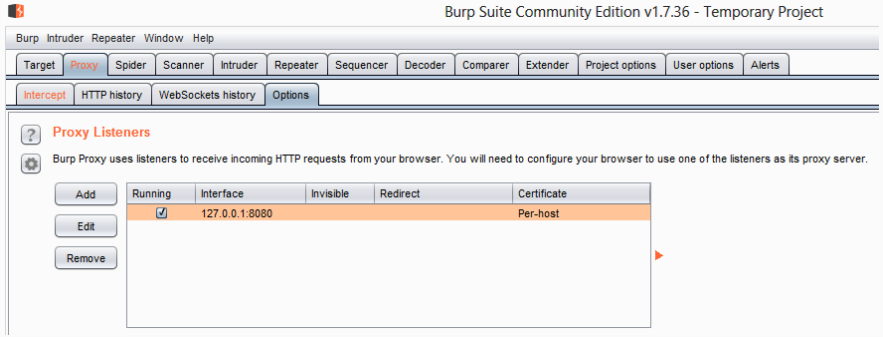
Burp Suite Community

- Instrument ce contine o colectie de module si utilitati pentru testarea manuala a securitatii aplicatiilor web
  - https://portswigger.net/burp



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Burp Suite Community

Utilizari:

- Identificarea manuala a vulnerabilitatiilor
- Interceptarea, manipularea si modificarea request-urilor catre aplicatiile web
- Simularea controlata actiuni

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Disclaimer

- “Nu ne asumam daca se va intampla ceva pe viitor”
- “The vulnerabilities in this report reflect the conditions found during our testing and do not necessarily reflect current conditions.”
- Foarte important din punct de vedere legal !!!

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Invata din Exemple!

- Rapoarte publice de Penetration Testing:

https://github.com/juliocesarfort/public-pentesting-reports

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Q&A