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NS2022

ACCELERATING INNOVATION

Security Best Practices

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Overview

- Tools of the Trade
  - Threat Modeling
  - Code Coverage/Unit Tests
  - Code Reviews
  - Static Code Analysis
  - Third Party Components
  - Penetration Testing
- Assessing Risk
  - CVSS
  - Beyond CVSS
- Lessons Learned

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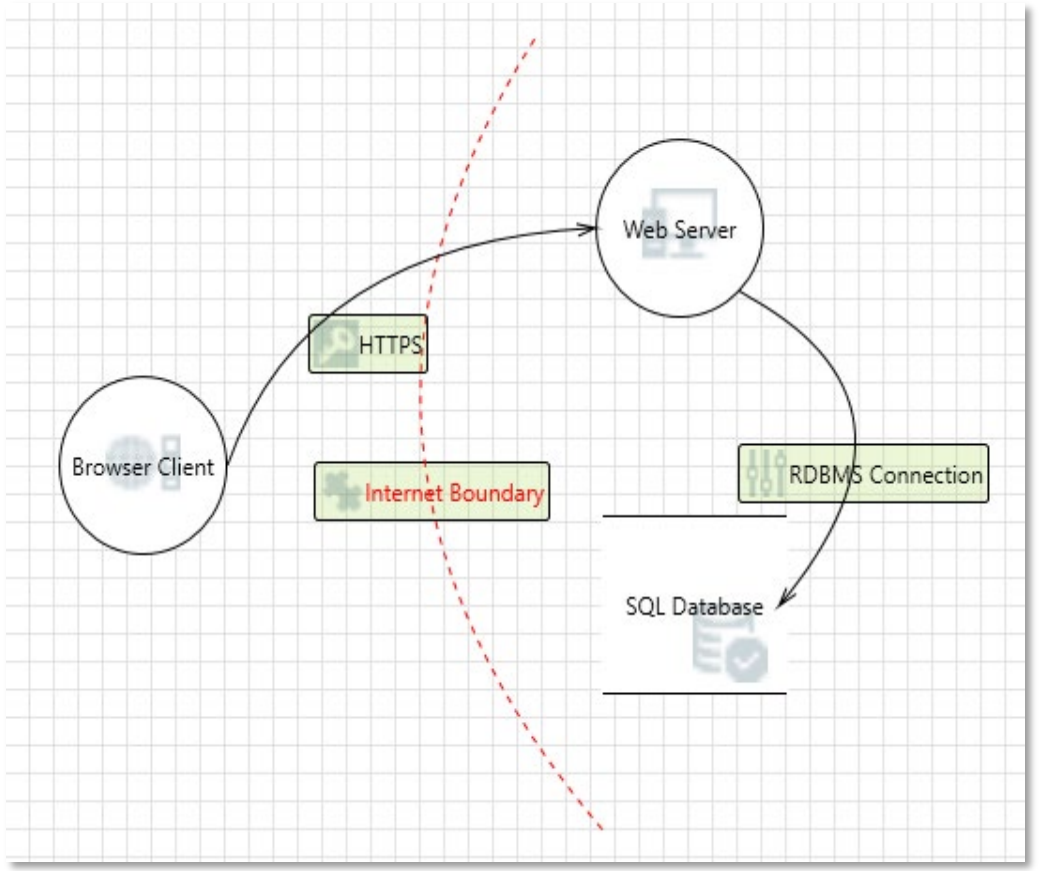
Tools of the Trade

- Threat Modeling
- Code Coverage/Unit Tests
- Code Reviews
- Static Code Analysis
- Third Party Components
- Pen Testing

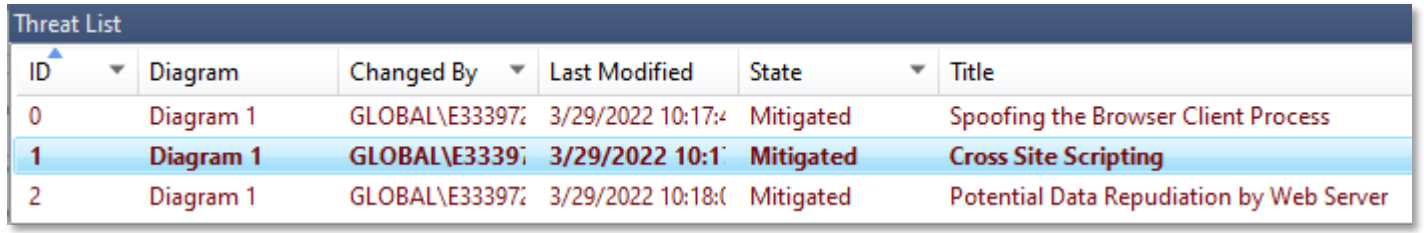
Threat Modeling

- MS Threat Modeling Tool is the tool of choice for us
- Threat model diagram derived from network diagram
- Auto generates risks based on interactions
- Risks outside the automatic ones can be added

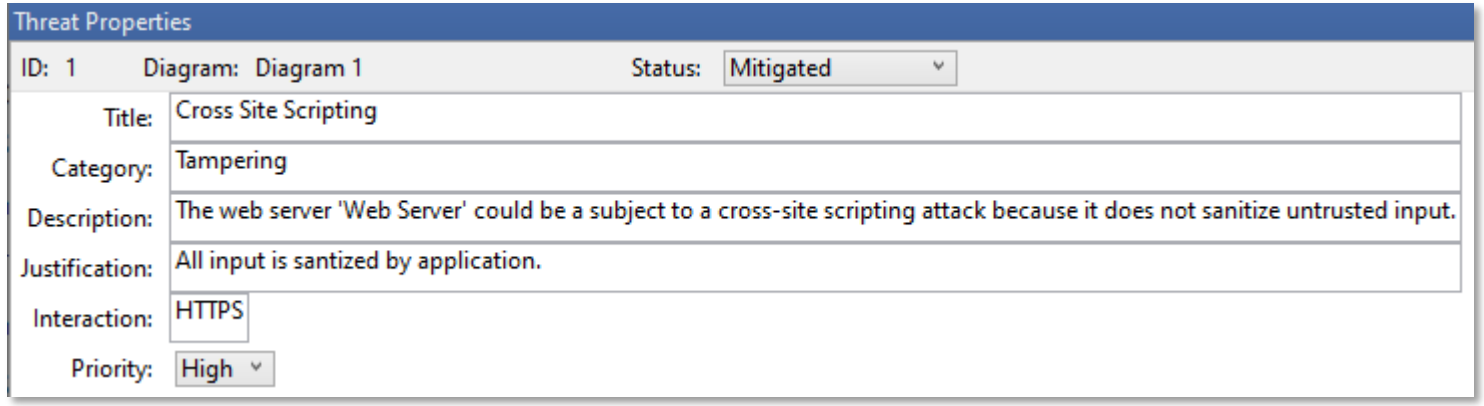


Threat Modeling

- Threat List shows list of identified threats.



- Threat properties provide status and justification of identified threat.



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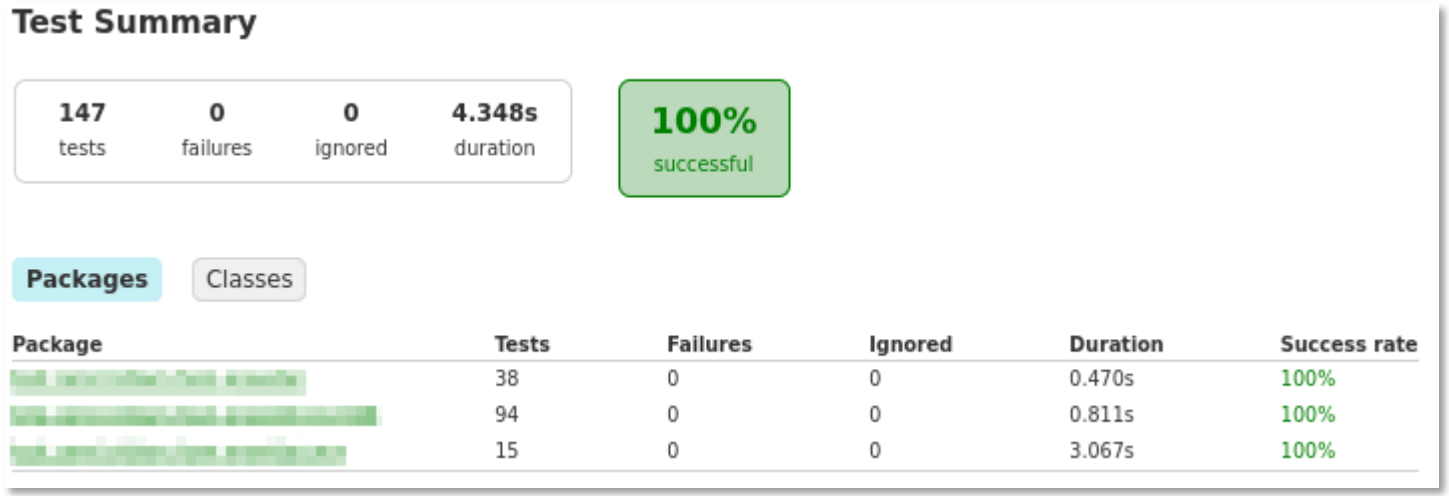
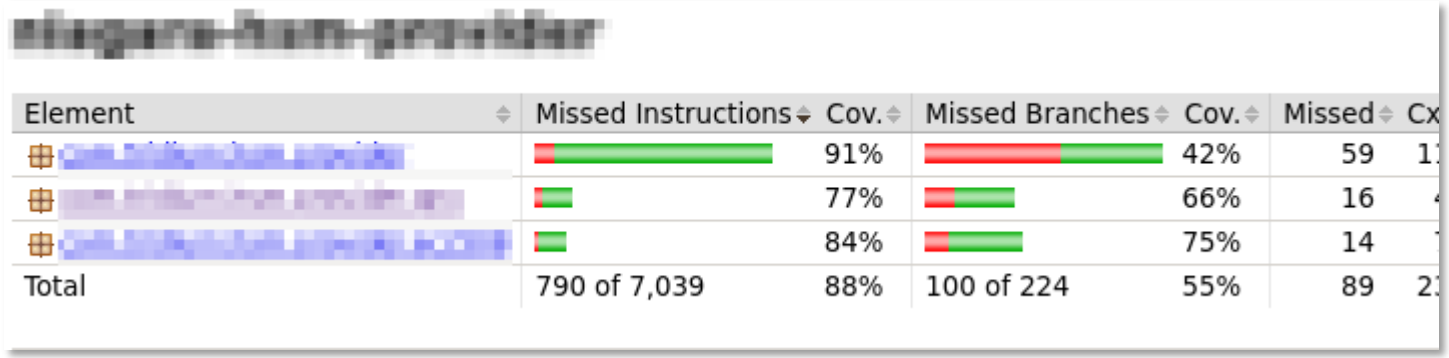
Code Coverage/Unit Tests

- Unit Test Tools
  - JUnit
  - TestNG
  - Jasmine/Karma
- Code Coverage Tools
  - JaCoCo
  - SonarQube
  - Istanbul





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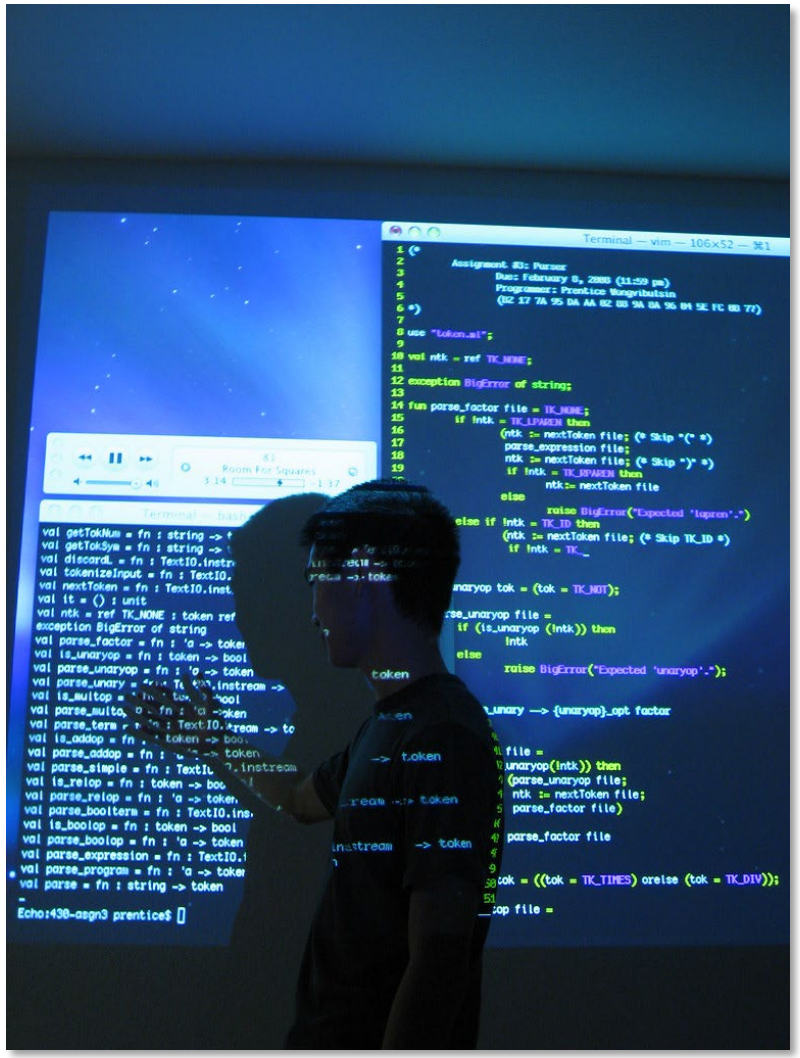
Code Reviews

Some things to consider:

- Coding Standards
- Logging of Sensitive Data
- Input Validation
- Returning Privileged Information
- Hardcoded Credentials

Some Niagara specific things:

- Permissions Model
- Security Audit Log
- Security Facet
- Security Dashboard Card



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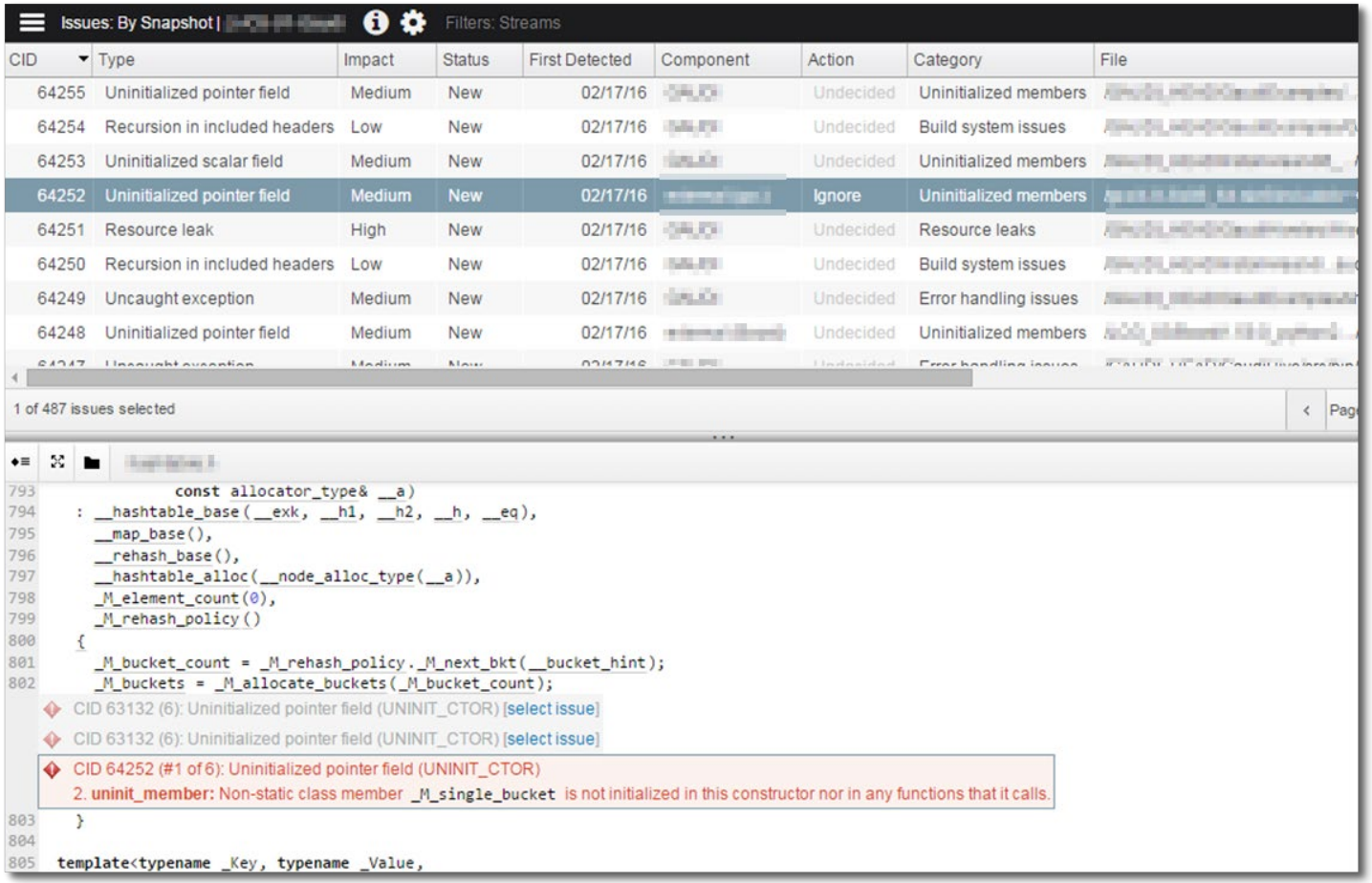
Static Code Analysis

- Tools
  - Coverity
  - SonarQube
- Functions
  - Security
  - Quality



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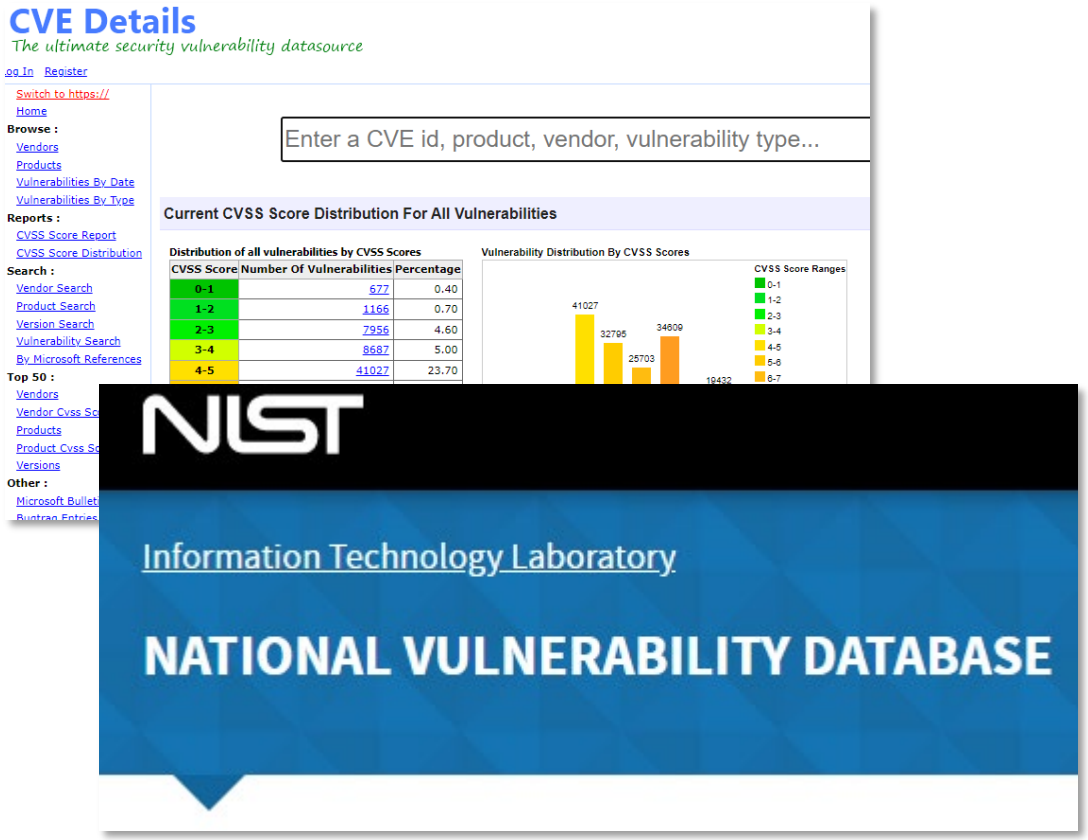
Third Party Components

- Tools
  - Black Duck Hub
  - OWASP Dependency Checker
- Other Resources
  - https://www.cvedetails.com/
  - https://cve.mitre.org/cve/
  - https://nvd.nist.gov/



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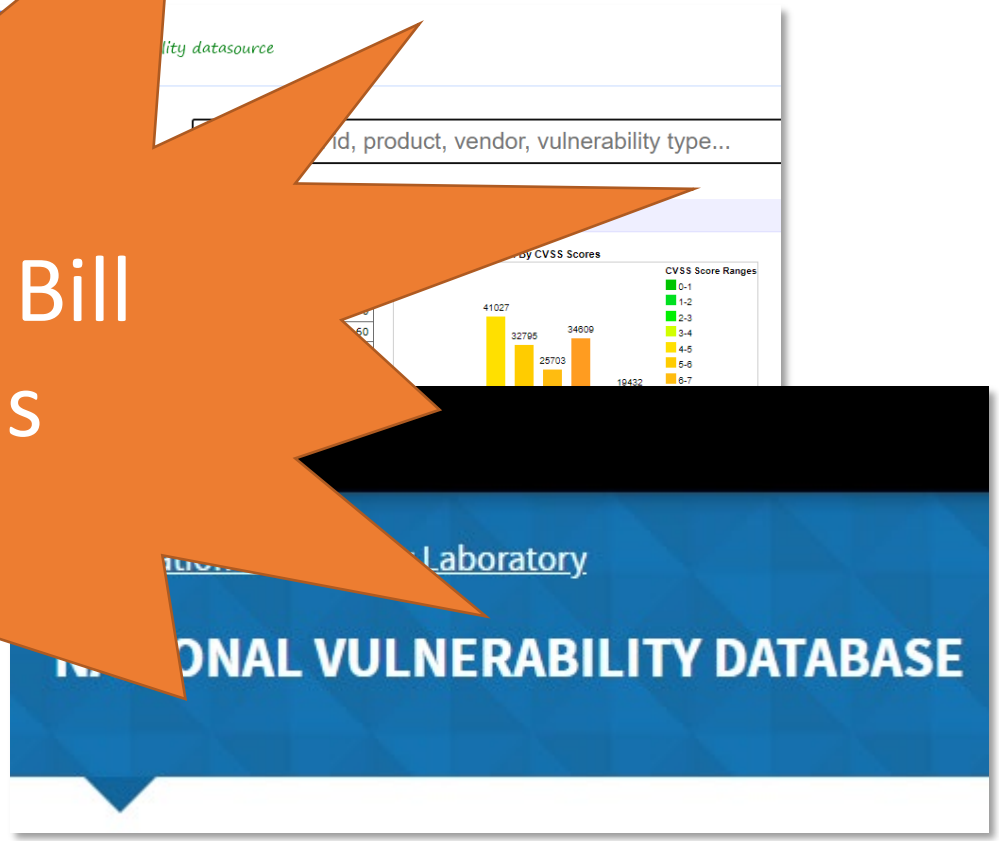
Third Party Components

- Tools
  - Black Duck Hu
  - OWASP Depend
- Other Resource
  - https
  - https://cve
  - https:/

Validate Your Bill of Materials First!!!



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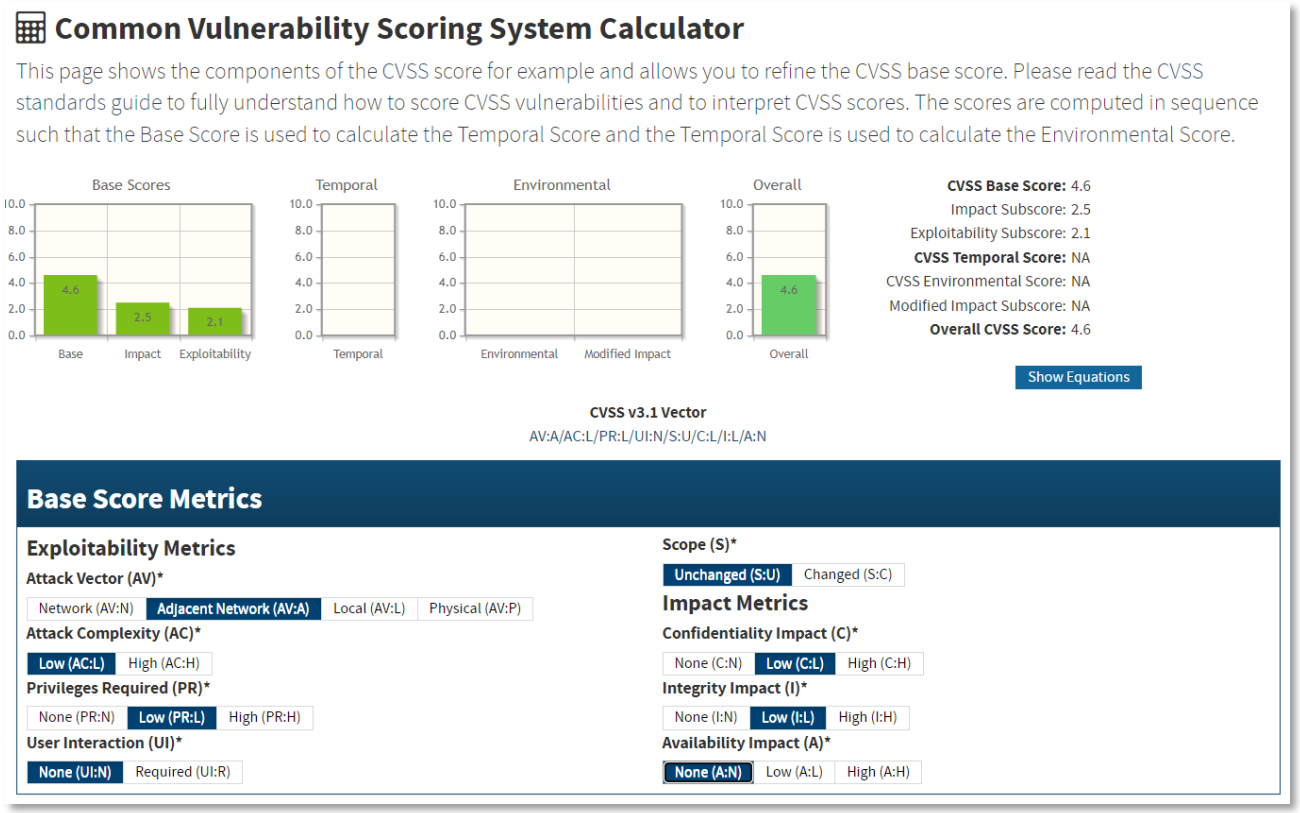
Penetration Testing

- Tools
  - BurpSuite
  - Metasploit
  - FuzzDB
  - Nmap
  - Qualys

Assessing Risk

- Primary method is CVSS (Common Vulnerability Scoring System)
- NIST Calculator (https://nvd.nist.gov/vuln-metrics/cvss/v3-calculator)
- Environmental scoring can help, but…



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Contrived Example

Contrived Example

Are these REALLY the same?

Beyond CVSS

- Consider other factors in addition to CVSS, examples:
  - Fire/Life Safety
  - Alternative mitigations
  - Number of customers impacted
  - Risk of destabilizing product
  - Cost to fix

Lessons Learned

- Relationship with engineering teams should be symbiotic, NOT adversarial
- BREAK THE BUILD can be very counter productive
- Understand WHY something is being done, don't just be a checkbox
- OWN and EMBRACE findings and tackle them with pride

Questions?

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References/Citations

- *"Tools" by zzpza is marked with CC BY 2.0. To view the terms, visit https://creativecommons.org/licenses/by/2.0/?ref=openverse*
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