
Know Thyself
Identifying Your Own Weaknesses
(Through Effective Infrastructure Vulnerability Scanning)

~# whoami

Joe Tegg

- Husband
- Father
- Security guy
- Recovering BOFH

Infra Vulnerability Discovery - Identifying your own ‘errors’

“Therefore, whoever wishes to be good and noble must consider that he cannot but fail to recognize many of his own errors. I can tell him how he might discover them all *(or most)*, just as I have discovered them.” - Aelius Galenus (Galen) AD 129 - 216

Ironic fact:
Galen had his own errors… he used animals instead of humans for his research and made impactful mistakes because of it.

Deploying Effective Infra Vulnerability Scanning Processes

1. What is an infrastructure vulnerability scan?
2. Why is it important?
3. What should we scan?
4. What tool(s) should we use?
5. Important configuration settings / knowledge
6. How often should we run the vulnerability scans?
7. We ran the scan, now what?
8. Upleveling the vulnerability scanning processes
9. Questions / Comments

Infrastructure Vulnerability Scan

NIST: “A technique used to identify hosts/host attributes and associated vulnerabilities.”

1. Datacenter Networks (Internal / External / Agents)
2. Office Networks (Internal / External* / Agents)
3. Cloud Networks* (Internal* / External / Agents)
4. Endpoints* (Agents)

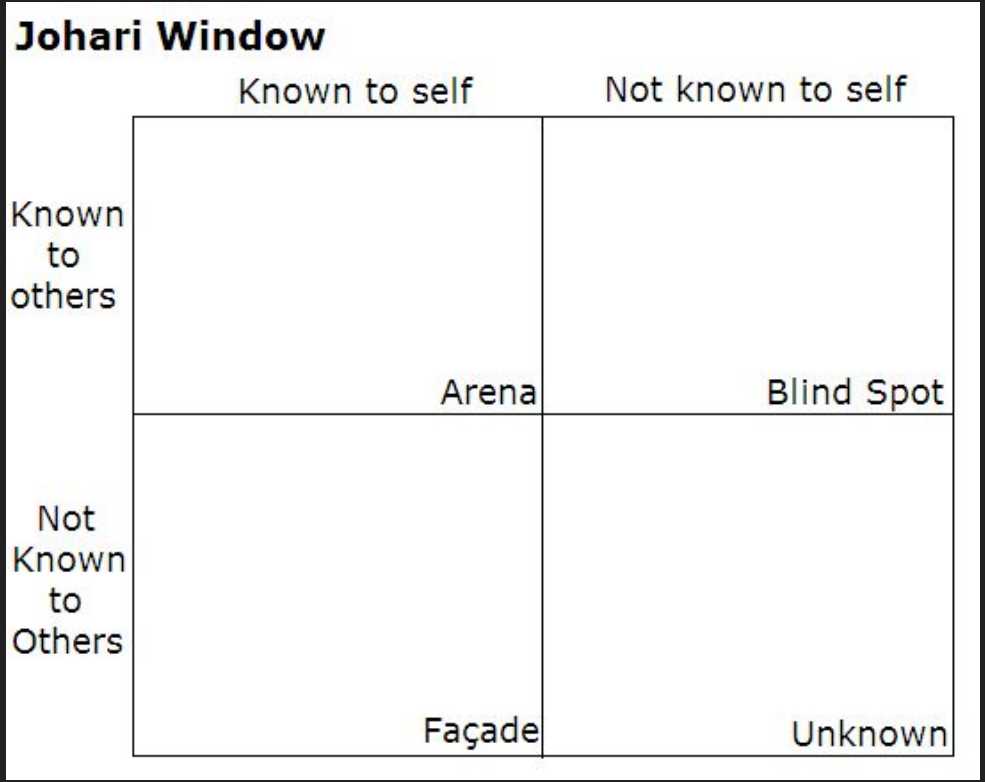
Why Is Vulnerability Scanning Important?

Hackers do it.

Leadership wants it.

Auditors require it.

You need it.



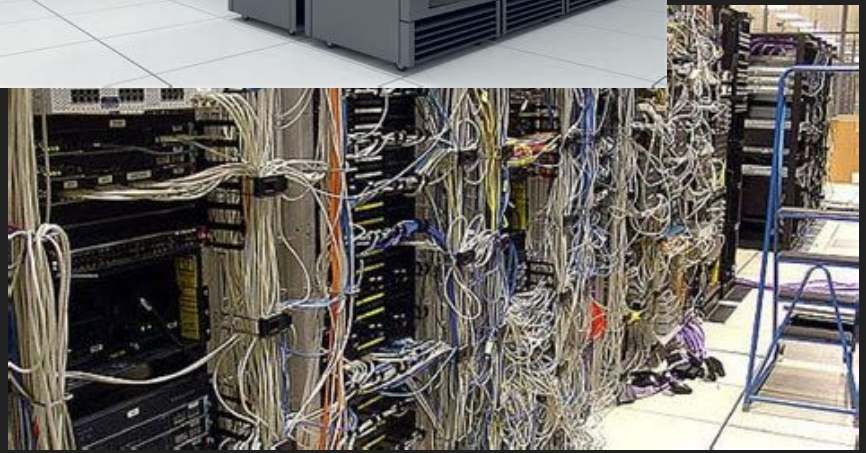
What should we scan?

Use the standard process of an attacker to start.

1. External Assets
    a. AMDB*
    b. OSINT - (lots of things here)
    c. Infrastructure SORs - Eng Management, Cloud, Network tools
    d. Third party mafia (BitSight, Security Scorecard, UpGuard, etc)

What should we scan? (con’t)

2. Internal Assets
    a. AMDB / Internal Network Ranges (Agents
    b. Network Segmentation areas
    c. Infrastructure SORs
    d. OT networks*

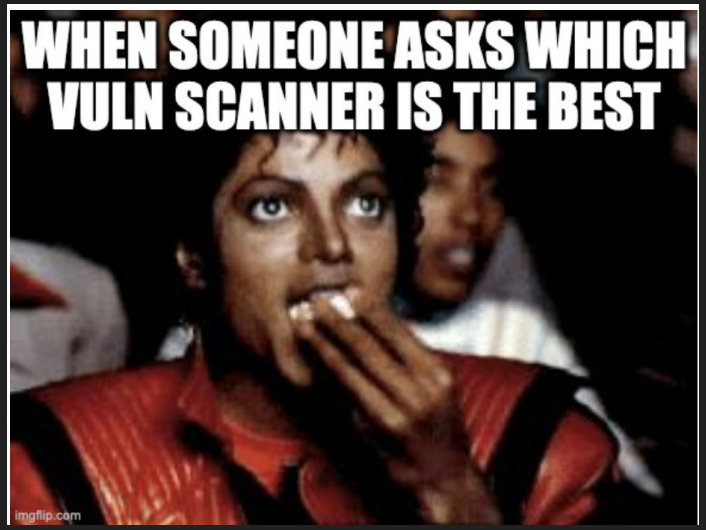


What should we scan? (con’t)

3. All the things!
    a. Databases?
    b. Unknown Applications
    c. Unknown IT (Shadow IT)
    d. Unknown Unknowns*

What tool(s) can we use?

1. NMAP - Seriously. NMAP.
2. OTB Vulnerability Scanners
    a. Rapid7, Tenable, Qualys - Seen most often
    b. OpenVAS - Free
    c. Others (Agent based tools, rebrands, free specific tools)



Important configuration settings / knowledge

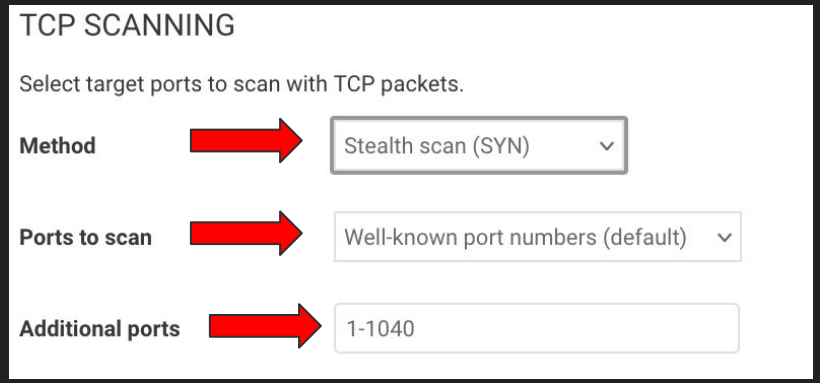
Some types of infrastructure scans (templates)

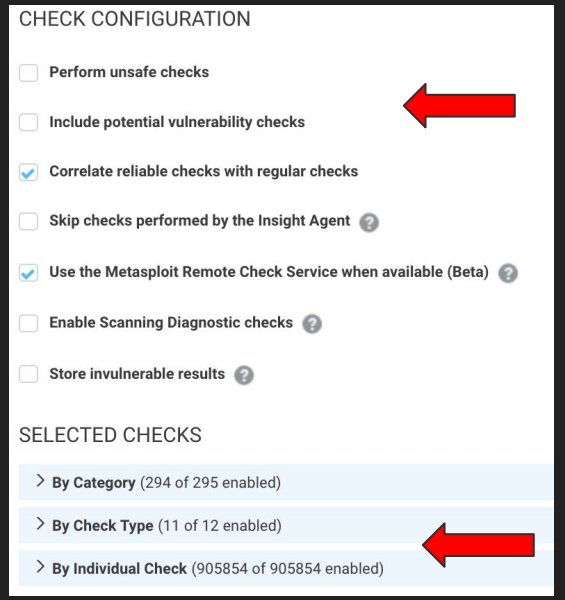
a. Discovery
   i. IP Scans
   ii. Port Scans
   iii. Service Scans
b. Full*
   i. Discovery+
   ii. Vulnerability Checks (auth / no auth)
   iii. Configuration Checks (auth)
c. Compliance
   i. Discovery
   ii. Configuration Checks (auth)
   iii. Limited Vulnerability Checks

Important configuration settings / knowledge

Customize the templates!!!

Canned templates have limitations.

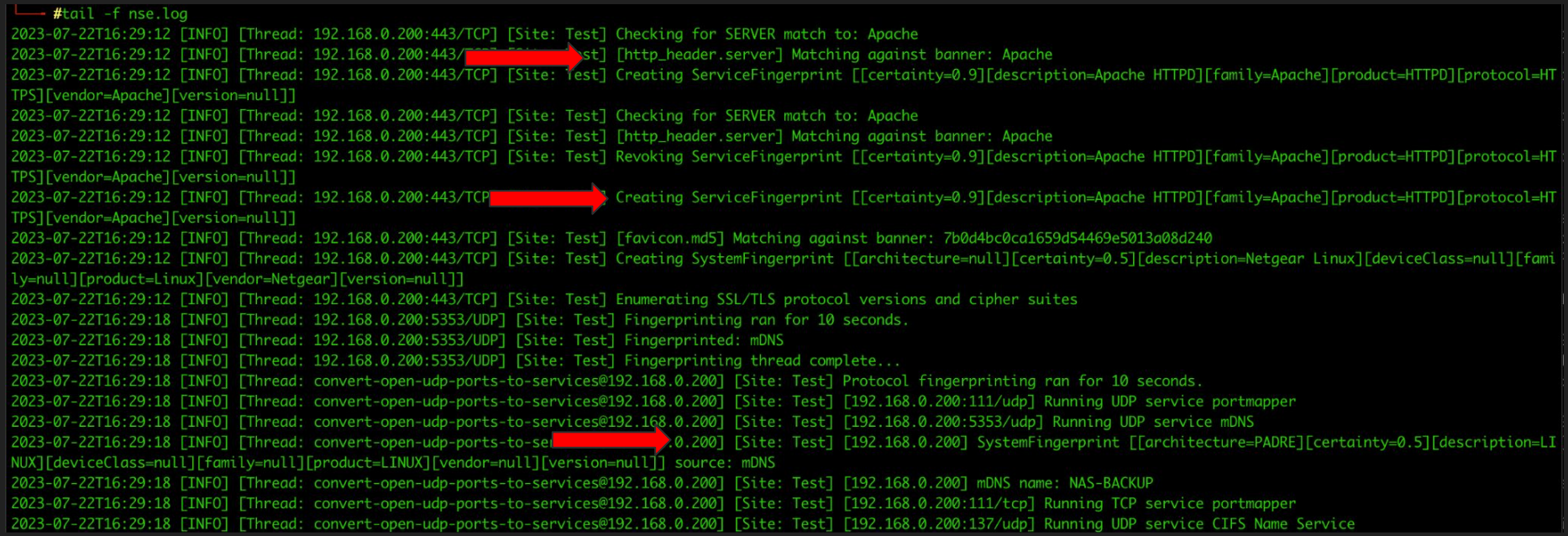




Important configuration settings / knowledge

Detailed scan logs can provide a wealth of information!

Auth failures, False Positives/Negatives, Asset misidentification



Important configuration settings / knowledge

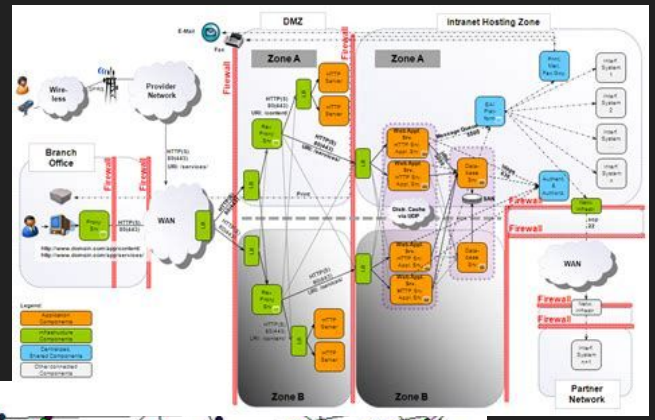
Scanning groups / Asset Groups

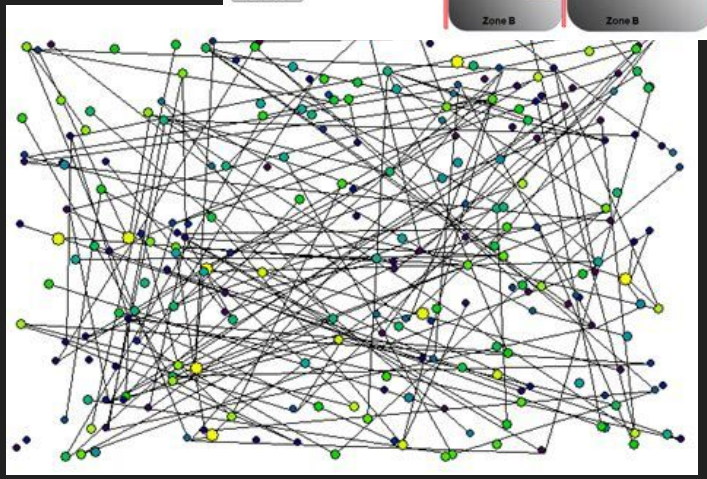
a. Configure scans for known assets (auth)

b. Configure scans for network areas

c. Configure scans for reporting types

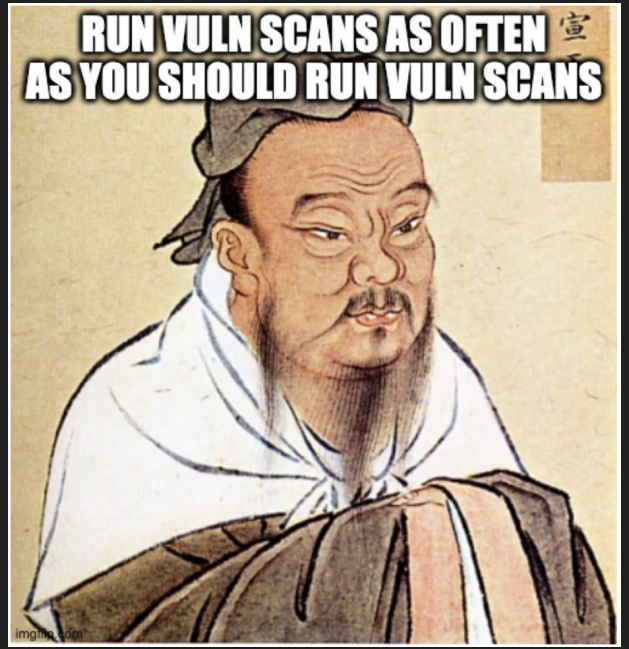
d. Agents (deployed)





How often should we run the scans?

1. What is the Policy requirement?
    a. Asset Discovery cycles
    b. Vulnerability Scan cycles
    c. Compliance Scan cycles
2. What is the true remediation cycle?
    a. How often does Engineering patch/remediate?
    b. SLAs / OLAs?
3. Discovery / Improvement / Reporting cycles and processes
    a. What are YOUR VM improvement cycles?
    b. Leadership / Management reporting cycles (Board / Leadership presentations)
    c. Remediation reporting cycles



We ran the scan, now what?

1. Report output types
    a. PDF - High level, Metrics
    b. CSV, XML - Detailed, Automation*
2. Review the data
    a. Do the findings look right?
    b. Scan failures?
3. Report the findings
    a. Executives - High level metrics
    b. Engineering - Engagement model, details
    c. Compliance - Evidence of scans

Upleveling the vulnerability scanning processes

1. Run ALL IP / ALL Port scans*
    a. You'd be surprised what lurks beneath
    b. Find Shadow IT / OT
2. Review Asset / Network source information
    a. Trust but verify!
    b. Ask for access to management sources (System Management, Cloud infra, Network Architecture)
3. **Don't play whack-a-mole**
    a. Top 10 Vulnerability Root Causes
    b. Engineering Maturity Milestones (Engage with EA)
    c. Asset Baselines / Secure configurations

Questions?