Welcome to SSSS!

Secondary Security Screening Selection – for software

4 August 2020

ACCELERATING TO THE NAVY & MARINE CORPS AFTER NEXT

The contents of this briefing are: UNCLASSIFIED
Many Thanks

• Purdue / CERIAS Organizing Team

• SSSS Program Committee

• 8 tutorial teams and 5 demo teams

• The 69 registered attendees!

As hinted by the flyer, we originally had other plans...

Thanks to everyone for their effort to make this virtual event a success!
Why we’re here

• Cyber exploits keep **coming** and **coming**
• Constant supply of new 0-days:

**Competitions:**

**Pwn2Own:**
- Competition where organizers buy 0-days for popular software
- 2017 event paid $833k for 51 new 0-days
- Microsoft Edge broken, VMWare escape w/o guest tools installed

**Marketplaces:**

**Stuff we’ve been using forever:**

**URGENT/11:**
- 11 serious bugs in VxWorks (July 2019)
- VxWorks powers many weapon systems
- Went back over **15 years** of releases
A more proactive approach...

• ONR has been building an ecosystem of tools to proactively take control of your attack surface

Principles:

• Don’t pay risk for what you don’t use

• Adapt faster than the adversary can develop

• Work with what we’ve got
  • Programmers never change
  • No access to source

Googling “software deboating” returns mostly ONR and TPCP-related items
Getting underway with software...

Who are these guys?
Late Stage Software Customization
Debloating and Delayering for Attack Surface Reduction

SOFTWARE SECURITY PIPELINE ENABLED BY TPCP:

- Remove unnecessary features
- De-bloat, trim unused code and libraries
- Diversification, hardening, and bug finding
- Verify and validate

Now more effective on simplified code

Reduced and Reshaped Attack Surface, Simple and Lean Software

Reduced and Reshaped with Correctness Assurances

- Eliminate bugs before the 0-day / CVE
  - Skip patches, save $$$
- Diverge attack surface from source
  - More flexible software dev processes
  - Easier use of open-source
- Execute lean software

SSSS '20 Tools

| Tuesday | RetroWrite
| RAZOR |
| Wednesday | Less is More
| JDebloat |
| Thursday | Embrittle
| CBAT |
| Friday | Confine
| yFuzz / CustomPro |
Your Feedback is Important

• Feel free to ask questions in Webex or Slack

• Contact ONR Cyber Team:
  – Ryan Craven, ryan.craven@navy.mil
  – Dan Koller, daniel.koller1@navy.mil
  – Sam Weber, samuel.m.weber@navy.mil
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• Complete survey at the end