How to break into Application Security world?

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Some of the points are real world examples for educational purpose and not to endorse any entity.

Agenda

- ❏ What’s wrong with this code?
- ❏ What can go wrong in this code?
- ❏ Application Security
- ❏ Application Security Engineer
- ❏ How to break into Application Security world?

Before we start

October is CyberSecurity Awareness Month

Twitter: @GetCyberSafe managed by Public Safety Canada.

1. What’s wrong with this code? 1/3

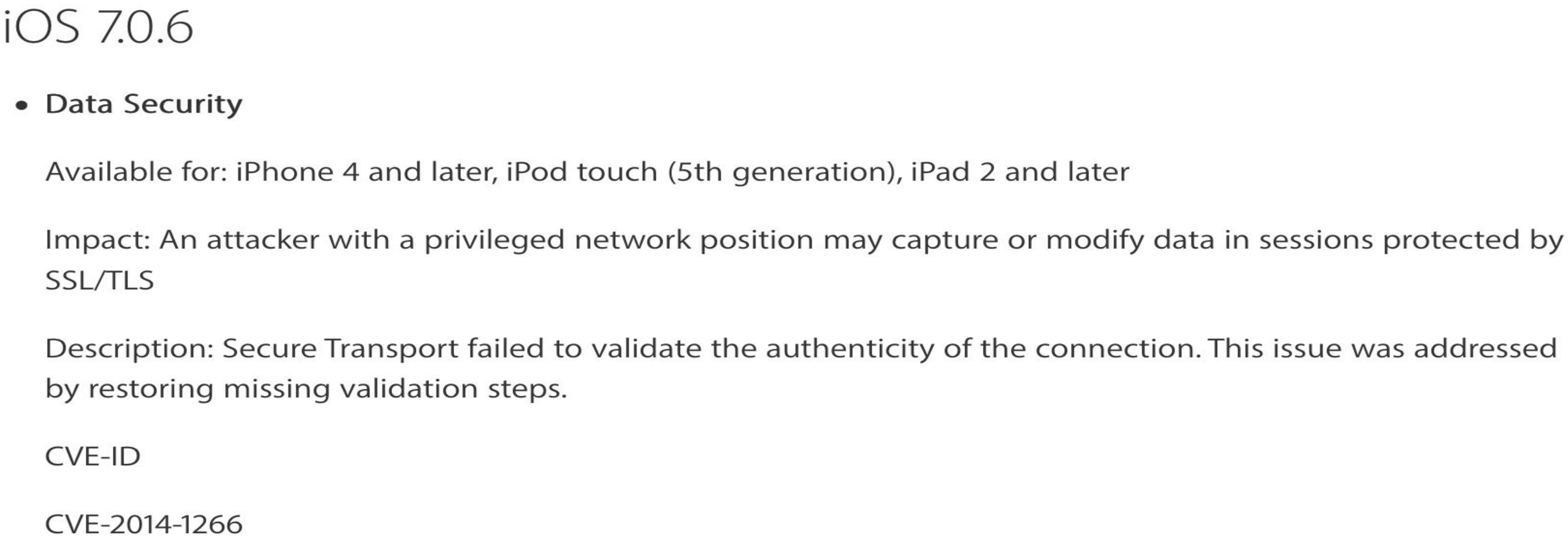
```
if ((err = SSLHashSHA1.update(&hashCtx, &serverRandom)) != 0)
    goto fail;
if ((err = SSLHashSHA1.update(&hashCtx, &signedParams)) != 0)
    goto fail;
    goto fail;
if ((err = SSLHashSHA1.final(&hashCtx, &hashOut)) != 0)
    goto fail;
```

1. What’s wrong with this code? 2/3

```
if ((err = SSLHashSHA1.update(&hashCtx, &serverRandom)) != 0)
    goto fail;
if ((err = SSLHashSHA1.update(&hashCtx, &signedParams)) != 0)
    goto fail;
    goto fail;  /* This line should not be here */
if ((err = SSLHashSHA1.final(&hashCtx, &hashOut)) != 0)
    goto fail;
```

https://nakedsecurity.sophos.com/2014/02/24/anatomy-of-a-goto-fail-apples-ssl-bug-explained-plus-an-unofficial-patch/

1. What’s wrong with this code? 3/3



iOS 7.0.6

- **Data Security**

  Available for: iPhone 4 and later, iPod touch (5th generation), iPad 2 and later

  Impact: An attacker with a privileged network position may capture or modify data in sessions protected by SSL/TLS

  Description: Secure Transport failed to validate the authenticity of the connection. This issue was addressed by restoring missing validation steps.

  CVE-ID

  CVE-2014-1266

https://support.apple.com/en-ca/HT202934

2. What can go wrong in this code? 1/2

```
String user = request.getParameter (“user”);
String pwd = request.getParameter (“pwd”);
String sql = “SELECT * FROM User WHERE user = ‘“ + user + “‘ AND
pwd = ‘“ + pwd + “‘”;
Statement stmt = connection.createStatement ();
ResultSet result = stmt.executeQuery (s);
```

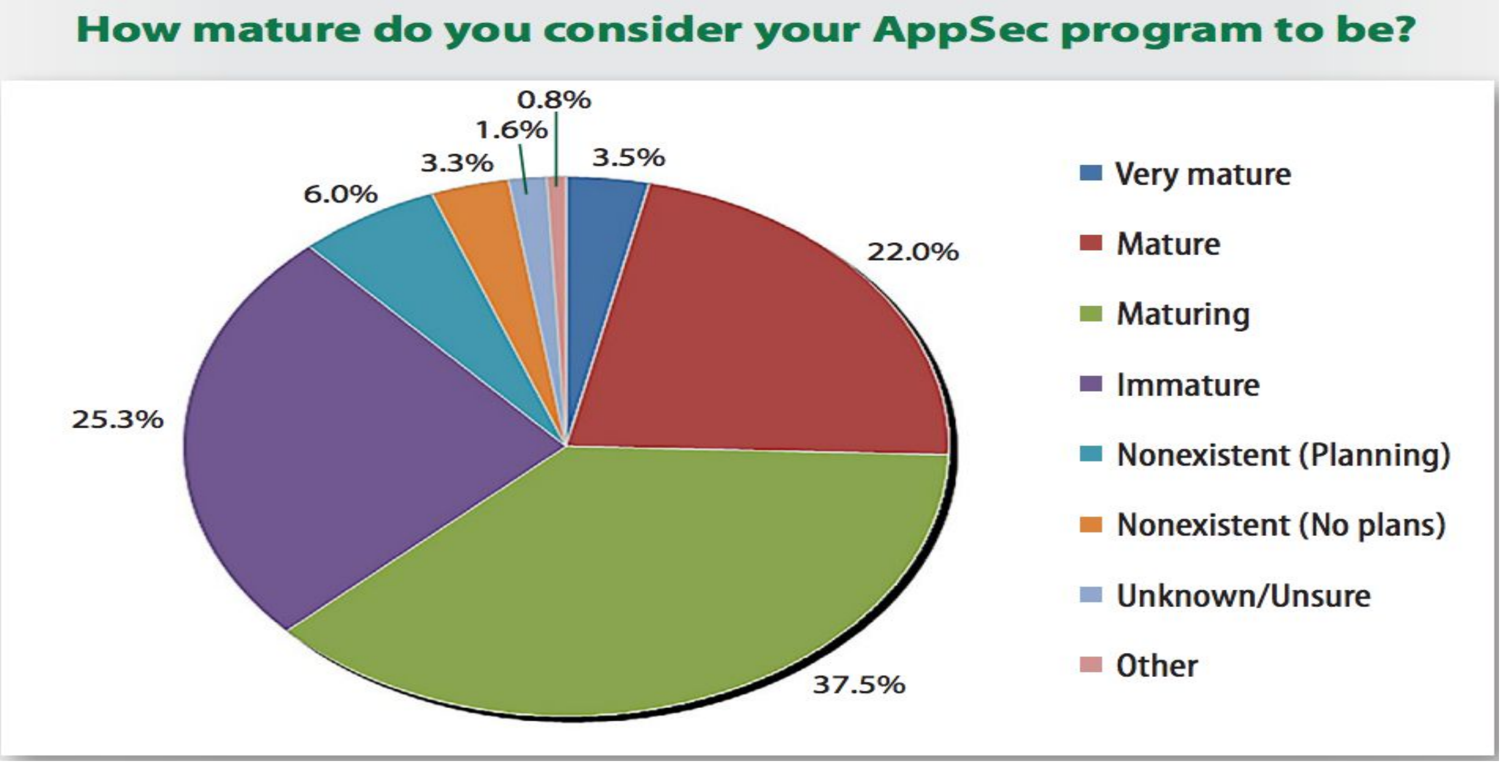
2. What can go wrong in this code? 2/2

```
String user = request.getParameter (“user”);
String pwd = request.getParameter (“pwd”);
String sql = “SELECT * FROM User WHERE user = ‘“ + user + “‘ AND
pwd = ‘“ + pwd + “‘”;
/*Query is constructed from request without any validation and …?*/
Statement stmt = connection.createStatement ();
ResultSet result = stmt.executeQuery (s);
```

National Vulnerability Database - https://nvd.nist.gov/

Application Security

SANS 2016 State of Application Security: Skills, Configurations and Components



How mature do you consider your AppSec program to be?

Application Security Engineer 1/2

Implement Secure Software Development Lifecycle (SSDLC) program

- ❑ Threat Modeling
- ❑ Risk Assessment
- ❑ Code Review
- ❑ Static and dynamic analysis
- ❑ Security testing

Application Security Engineer 2/2

Java Deserialization - AppSec Nightmare - WebLogic, WebSphere, JBoss, Jenkins, OpenNMS

- ❏ Remote Code Execution
- ❏ Denial of Service

https://foxglovesecurity.com/2015/11/06/what-do-weblogic-websphere-jboss-jenkins-opennms-and-your-application-have-in-common-this-vulnerability/

How to break into Application Security world? 1/5

1) Learn and participate in open source projects such as OWASP (www.owasp.org) and http://www.webappsec.org/.
2) Useful tools -
   - HTTP Proxy - OWASP ZAP, Burp Suite etc
   - OWASP Dependency check
   - OWASP Top 10 and CWE Top 25
   - OWASP Application Security Verification Standard Project
   - https://www.ssllabs.com/
   - https://www.kali.org/
   - https://www.owasp.org/index.php/Web_Application_Firewall
   - Wireshark

How to break into Application Security world? 2/5

3) Bug bounty programs and responsible disclosures:

- ❑ $15,000 award! @ http://www.anandpraka.sh/2016/03/how-i-could-have-hacked-your-facebook.html
  - ❑ Password reset code brute force protection even for lesser known test services!

- ❑ Sometimes the bug bounty policies might not be clear.

How to break into Application Security world? 3/5

❑ Professional communication

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4) Daily dose of security news:

1. https://www.reddit.com/r/netsec
2. https://isc.sans.edu/podcast.html
3. Bugtraq mailing list
4. Bloggers - https://www.troyhunt.com/, https://krebsonsecurity.com/ etc.

5) Local Security groups - Vancouver

- https://vancitysec.org/
- http://infosecbc.org/
- BSidesVancouver 2017 - Volunteer

How to break into Application Security world? 5/5

6) Publish your research and views on Security - for example maintain a blog.

7) Certifications

8) Some good learning exercises

❏ https://cryptopals.com/ - Crypto Challenges
❏ OWASP WebGoat

References

https://www.sans.org/reading-room/whitepapers/analyst/2016-state-application-security-skills-configurations-components-36917

Q & A