National Cyber Security Awareness Month

Week Four: Your Evolving Digital Life
Webinar Recording and Evaluation Survey

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Today’s Speakers

Mr. Michael Echols
Chief Information Security Officer Maricopa County, Ariz.

Dr. Roger Wards
Chief Accountability Officer, Vice President of Operations and Planning, Vice Dean of the Graduate School, University of Maryland

Steve Hurst,
Director, Security Services and Technology, AT&T Inc.
Office of Enterprise Technology

*Mobile Trends, Risk and Mitigation*

*October 21, 2015*

Prepared By
Michael Echols, Chief Information Security Officer

OET Vision: To be recognized as a first-class technology organization by the customers we serve.
Internet Use Trends

Global population and Internet users, 2000-2020

Number of people (billions)

Source: Smart Insights, Mobile Marketing Statistics 2015
Mobile Use Trends

Source: Smart Insights, Mobile Marketing Statistics 2015

Our Vision is to Identify, Manage and Mitigate the Risk of Cyber Threats
## IOS and Android Vulnerabilities

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<th>VULNERABILITIES</th>
<th>ENPUBLIC APPS</th>
<th>MALWARE</th>
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<td><strong>UXSS</strong></td>
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<td>In particular, SSL/TLS misuse and other crypto-related vulnerabilities are common to apps. Attackers are also more often exploiting Universal Cross-Site Scripting (UXSS) vulnerabilities.</td>
<td>These apps bypass Apple's strict review process by hijacking a process normally used to install custom enterprise apps. Many EnPublic apps invoke risky private APIs. In the wrong hands, these APIs threaten user privacy and introduce many vulnerabilities. We found only 1,400 EnPublic apps, a relatively low number. But this poses an intriguing avenue for attackers in the future.</td>
<td>Although uncommon, attackers are looking closely at this attack vector. They’re eager to compromise devices that have not been “jailbroken.” Attackers have started to use enterprise/ad-hoc provisioning to deliver iOS malware to non-jailbroken devices through trusted USB connections and over-the-air delivery.</td>
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<th>MALWARE</th>
<th>VULNERABILITIES</th>
<th>AGGRESSIVE ADWARE</th>
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<td>We found millions of mobile malware samples—and that number is growing by the week. Ninety-six percent of malware targets Android. KorBanker, which stole users’ bank login credentials, is one example.</td>
<td>More than five billion downloaded Android apps are vulnerable to remote attacks. One especially risky vulnerability is known as JavaScript-Binding-Over-HTTP (JBOH).</td>
<td>Aggressive ad libraries can leak personal data over the network—sometimes in plain text. Burstly is one of the most popular. It’s used in more than 300,000 apps, including 5.61 percent of the 500 most-downloaded ones.</td>
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Source: Fire Eye, A Comprehensive Mobile Threat Assessment of 7 Million iOS and Android Apps
Mobile Threat Definitions

**MALWARE**
Apps that steal user data, commit financial fraud, and/or negatively impact device performance. Malware includes threats such as viruses, trojans, worms, spyware, and ransomware.

**CHARGEWARE**
Apps that charge users for content or services without clear notification or the opportunity to provide informed consent.

**ADWARE**
Apps that serve obtrusive ads that interfere with standard mobile operating experiences and/or collect excessive personal data that exceeds standard advertising practices.

Source: Lookout Mobile, 2014 Mobile Threat Report
Mobile Malware Examples

ScarePackage | RANSOMWARE

Scare Pakage masquerades as an Adobe Flash update or a variety of anti-virus apps, and is distributed as a drive-by-download. When downloaded, it pretends to scan victims’ phones and then locks the device after falsely reporting that its scan found illicit content. Scare Pakage then displays a fake message from the FBI and attempts to coerce victims into paying them to avoid criminal charges and regain control of their device.⁹

DeathRing | TROJAN

Death Ring poses as a ringtone app and then surreptitiously downloads fake SMS content to infected devices, in a possible attempt to capture victim login credentials by impersonating trusted entities like banks via SMS. Notably, Death Ring appears to come pre-installed on certain devices, suggesting its authors were able to infiltrate the device supply chain and inject their malware into factory-shipped devices.¹⁰

Shrewd CKSpy | SPYWARE

Shrewd CKSpy pretends to be an app marketplace, but the market icon disappears on first launch and the malware starts to run in the background, intercepting and recording victims’ SMS and phone calls and uploading them to a remote server. Shrewd CKSpy also has the ability to auto-accept and record calls, which means attackers could possibly turn a victim’s phone into a de facto bugging device by auto-accepting their own call.¹²

Source: Lookout Mobile, 2014 Mobile Threat Report
Mobile App Risks

Source: McAfee Mobile Security Report February 2014
Actions that will increase safety

1. Auto-lock your phone
2. Keep your apps and device software up to date
3. Use discretion when downloading apps
4. Stick to window-shopping on public WiFi
5. Protect your phone like you protect your PC
Your New Connected Life

Steven Hurst  CISSP, ISO 27001 Auditor
Director, Security Services & Technology
AT&T, Global Customer Security Services

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Ubiquitous computing
Connected Car

Streaming music & news
Navigation & real-time traffic
Home security
Remote start
Wi-Fi hotspot
Roadside assistance
Service appointment scheduling

Advancing the Connected Car Reality
Connected Travel
Live
New York, NY (10:55 am)
Battery Level: 99%

Turn Light On
Connected Everything
“Back to the Future”
Growth in cyber risks

- 117,000 daily security incidents globally.¹
- 62% more DDoS attacks in the last two years.³
- 51% of companies didn’t make any changes to security despite big breaches.⁶
- 75% of boards are not fully involved.⁴
- An estimated 50 billion connected devices to secure in 2020.⁵
- One breach = net earnings drop.¹

³. AT&T Security Operations Center
⁵. Cisco, Inc.
⁶. IDG “State of the CISO” Survey 2015.
AT&T approach for cyber security
Observe, protect, and prevent

Observe
Observe, track, and report enterprise security anomalies in real-time.

Situational awareness
- Collect
- Analyze
- Report
- Act

Protect
Perimeter protection of the network with self protecting network.

Network protection
- Authentication
- Firewall
- Intrusion detection and prevention
- Antivirus
- AntiSPAM

Prevent
Proactive engineering and operations.

Security engineering and operations
- Planning
- Research
- Assessment
- Certification and accreditation (C&A)
- Testing
- Training
Virtual security managed and deployed where needed

Robust Security Functions

- Web Filtering
- Intrusion Detection
- Firewall
- Data Loss Prevention
- Vulnerability Scanning

Deployable to Where You Are

- AT&T Network Cloud
- Private Cloud
- Public Cloud
- CPE/Data Center
“Your Evolving Digital Life”
Implications for higher education

Presenter

Dr. Roger J. Ward
Vice President, Planning and Operations
Vice Dean, Graduate School
Chief Accountability Officer

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National Association of Counties Cybersecurity Webinar Series
October 21, 2015
Presentation Overview

• About University of Maryland, Baltimore (UMB)

• Post-traditional Learners and Digital Natives

• Smart World Challenges for Higher Education

• Cyber Risks for Higher Education: Data Breaches

• Managing the Risks
About the University of Maryland, Baltimore (UMB)

- **UMB** is the founding campus (1807) of the University System of Maryland.
- **Mission**: To improve the human condition and serve the public good of Maryland and society at-large through education, research, clinical care and service.
- **Schools**: Dentistry, Graduate, Law, Medicine, Nursing, Pharmacy & Social Work
- **Students**: 6,205
  - Graduate and Professional: 87%
  - Undergraduate: 13%
  - Full-time: 77%; Part-time: 23%
- **Employees** (includes faculty): 7,858;
  - Full-time: 71%; Part-time: 29%
  - Faculty: 1,908(full-time); 943(part-time)
- **Annual Budget**: ~$1B
- **Grants and Contracts**: ~$500k
Drivers of Change: Rise of the Post-Traditional Learner

• Traditional learners are students that go to college immediately after high school, attend full-time, and are financially dependent on their parents. They attend four-year colleges and live on campus.

• Over the last 30 years, however, the data indicate that the number of students actually fitting this traditional model has been dropping.

• The startling reality is that, according to the National Center for Education Statistics, today traditional students represent only about 15 percent of current undergraduates.

• The remaining 85 percent of undergraduates are a diverse group that includes adult learners, employees who study, low-income students, commuters, and student parents.

Source: Post-traditional Learners and the Transformation of Postsecondary Education: A Manifesto for College Leaders (ACE, 2013)
Drivers of Change: Rise of the Post-Traditional Learner

• Post-traditional learners are working-age (25 to 64 years) students who demand “customized education” integrating their professional experience with tailored learning.

• Post-traditional learners tend to already be a part of the workforce and seek the flexibility of online learning to acquire new skills necessary for advancement in their current professions.

• The demand for online learning is driven in large measure by the rise of the post-traditional learner.

• Approximately, 51% of post-traditional learners are seeking certificate or a technical/occupational license, with the bulk of the remainder interested in professional masters degrees.
Digital Natives

• The term ‘digital native’ refers to students born after 1980 when the personal computer became commonplace.

• Technology had created a discontinuity, resulting in a radical change in the characteristics of the new generation of students entering our universities.

• They are the most technologically networked generation in history.
Students Use of Technology

• Outside of school:
  – Email, Internet, social media, texting on cell phones, instant messaging, and talking on cell phones.

• In school
  – Accessing information on the Internet, using email, word processing, math and science programs, texting on cell phones, and accessing electronic databases.
Students’ Use of Technology: Trends

• Students expect to be able to work, learn, and study whenever and wherever they want to.

• Life in an increasingly busy world where learners must balance demands from home, work, school, and family poses a host of logistical challenges with which today’s ever more mobile students must cope.

(NMC Horizon Report, 2012)
Smart World Challenges for Higher Education

• The abundance of resources made easily accessible via the Internet is increasingly challenging us to revisit our roles as educators.

• Universities have always been seen as the gold standard for educational credentialing, but emerging certification programs from other sources are eroding the value of that mission daily.

• The technologies we use are increasingly cloud-based.

• It does not matter where our information is stored; what matters is that our information is accessible no matter where students are or what device they choose to use.

(NMC Horizon Report, 2012)
Smart World Challenges for Higher Education

• Education paradigms are shifting to include online learning, hybrid learning and collaborative models.

• Institutions that embrace face-to-face/online hybrid learning models have the potential to leverage the online skills learners have already developed independent of academia.

(NMC Horizon Report, 2012)
Smart World Challenges for Higher Education

• Digital media literacy continues its rise in importance as a key skill in every discipline and profession.

• Despite the widespread agreement on the importance of digital media literacy, training in the supporting skills and techniques is rare in teacher education and non-existent in the preparation of most university faculty.

(NMC Horizon Report, 2012)
Data breaches in a Digital Higher Education Environment

• As of April 25, 2014, the Privacy Rights Clearinghouse (PRC) documented 4,257 data breaches in the US involving at least 867,217,832 records from all industry sectors.

• Education has a larger number of reported breaches but fewer records exposed.

• 63% of the PRC reported breaches are attributed to doctoral institutions, though they make up only 7% of all U.S. institutions.

• 21% of the reported breaches are attributed to master’s (MA) institutions, which make up 16% of all U.S. institutions.

• While they comprise the majority of U.S. higher education institutions, associate’s (AA) and bachelor’s (BA) institutions had fewer reported data breaches.

Source: Educause Center for Analysis and Research
Data breaches in higher education: Top 5 categories

1. **Hacking or malware**: Electronic entry by an outside party; data loss via malware and spyware.

2. **Unintended disclosure**: Sensitive information posted publicly on a website, mishandled, or sent to the wrong party via e-mail, fax, or mail.

3. **Portable device**: Lost, discarded, or stolen portable devices (e.g., laptop, PDA, smartphone, portable memory device, CD, hard drive, data tape, etc.).

4. **Stationary device**: Lost, discarded, or stolen stationary electronic device such as a computer or server not designed for mobility.

5. **Physical loss**: Lost, discarded, or stolen non-electronic records, such as paper documents.

Source: *Educause Center for Analysis and Research*
ERM as a framework for managing cyber risk

- It is a process initiated and effected by an organization’s leadership;
- Developed and managed at the ‘enterprise’ as opposed to the unit or operational level;
- Designed to identify and mitigate risks that would impact strategic objectives; and
- Provides a framework for determining risk tolerance, developing mitigating strategies, and allocating resources.
The End
Q&A

You may ask a question using the questions box on the right side of the webinar window.
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