# SECURING BYOD: MITIGATING RISK, NOT FORCING CONTROL!

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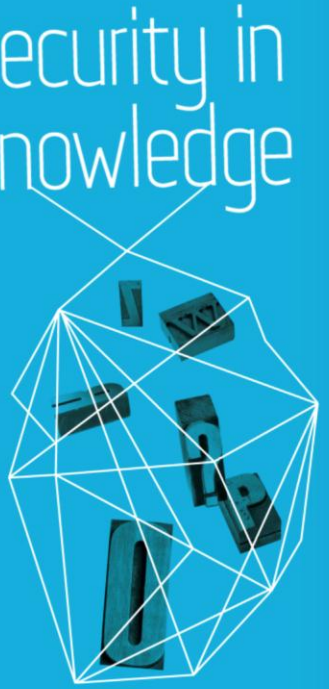


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Session Classification: Intermediate

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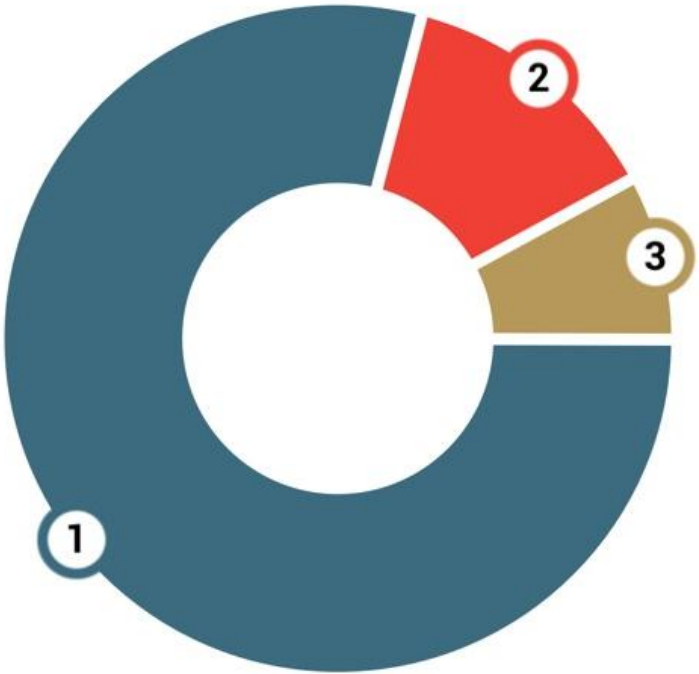
# Overview

- Cred
- Data
- Top Threats and Examples
- Designing for Security
- A Risk Management Approach

# Cred

- 1st mobile app stores, mobile JVMs, OHA + Android
- Security projects for US government orgs
- Software engineer to startup founder/CEO
- Now VP/GM Mobile @ Rapid7

# Data - Q2 Global Mobile OS Share




| | | |
|---|---|---|
| 1 | Android | 79% |
| 2 | iOS | 13% |
| 3 | Other | 8% |

# Data - Blind About BYOD

# Data - Policy Insecurity

# WHY NOW?

# Instinctive When Overwhelmed

- BYOD has happened fast and most orgs are reeling
- Instinctive response is to replicate IT asset management and security practices for BYOD
- Blackberry-like approach to personal mobile devices and containers creates UX challenges and user rejection
- May not make your organization any more secure as users will attempt to work around your controls

# TOP 7 MOBILE THREATS

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# Lost/Stolen Phones / Terminations

# Lost/Stolen Phones / Terminations

- 35% of phones are lost or stolen
- Phones are replaced ~18 months
- More than 50% of employees kept confidential data upon termination, 40% will use it at their new job
- Improper termination is an overlooked vulnerability

- Mitigate with PIN/remote wipe policies and patching

# Jailbroken and Rooted Devices

# Jailbroken and Rooted Devices

- 5% of iOS devices are jailbroken
- Similar percentage of Android devices are rooted
- Typically intentionally compromised by end users
  - Tethering / SIM Unlocking
  - Customization / Removing Bloatware / Upgrade OS
  - Evading security policies like PINs

- Mitigate with jailbreak detection and patching

# Trojans and Malware

# Trojans and Malware

- Well controlled in iOS App Store
- Room for improvement in Google Play
- FDA vs. CDC models
- 3rd party app stores remain high risk
  - Chinese 1+M phone botnets
- AV solutions limited to awareness, unable to protect

- Mitigate with app risk management and patching

# User Behavior

# User Behavior

- BYOA – Bring Your Own Apps
- BYOD devices average ~50 ad hoc applications
- Evernote, Dropbox, Mailbox, etc.
- Unintentional leakage of data

- Mitigate with app risk management and user training

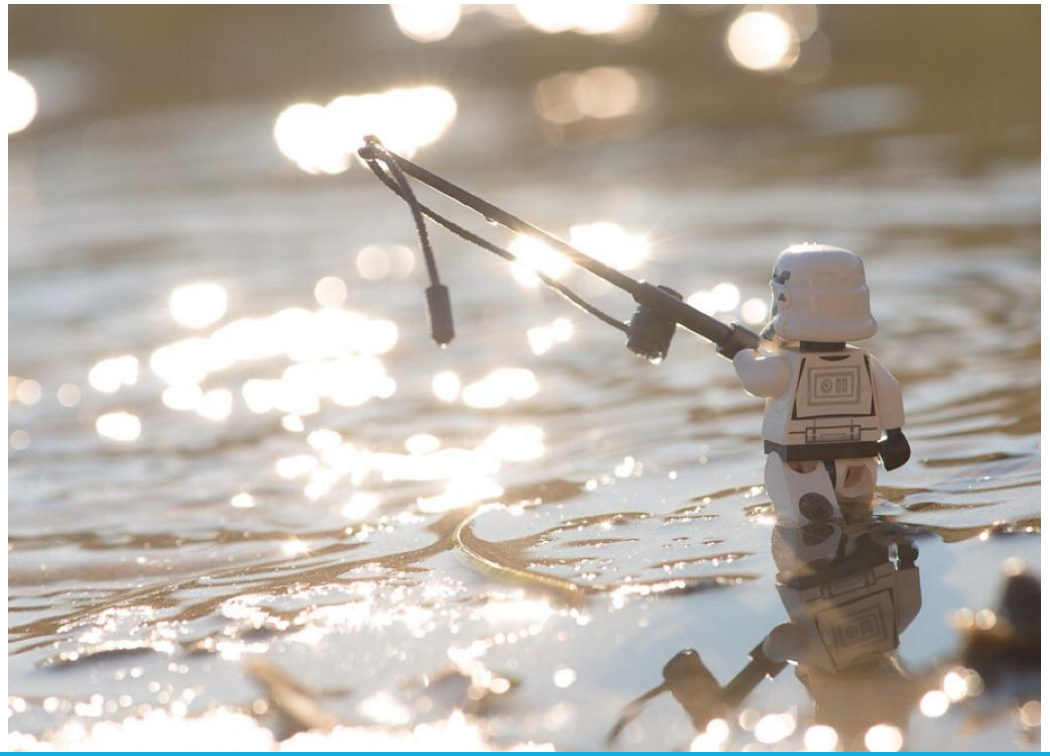
# Promiscuous Apps

# Promiscuous Apps

- Apps accessing corporate data, frequently unbeknownst to the user
- Recent versions of LinkedIn, Path, Evernote
- Pending legislation may drive better awareness through disclosure requirements

- Mitigate with app risk management

# Phishing



# Phishing

- Personal email address and mobile number are new vectors
- Limited screen sizes inhibit browser security
- More than 4000 sites are dedicated to mobile phishing

- Mitigate with user education

# Man In The Middle Attacks

# Man In The Middle Attacks

- Mobile data costs and wifi-only tablets drive insecure access
- Difficult to determine compromised communications

- Mitigate with per app VPN connections

# THREAT AND VULNERABILITY EXAMPLES

# It All Started With A Dream

- Malware exploiting vulnerabilities
  - DroidDream (2009)
    - Embedded in 60+ apps/games in Google Play
    - Arbitrary privilege escalation, ad hoc C&C payload download
  - Obad (2013)
    - SMS Phishing, embedded in Google Play fake apps
    - Leveraged 0-day to keep DeviceAdministrator privileges

# Browser and File-based Attacks

- Webkit attack (2007-10) – http://jailbreakme.com and AppSnapp
  - Jailbreak an iOS device simply by visiting a website
- PDF attack (2011) – Click-to-pwn scenario
  - Jailbreak an iOS device by opening a malformed PDF

# Android OEM Customizations

- HTC
  - Unauthorized permissions
- LG
  - Sprite Backup
- Samsung
  - TouchWiz / Dialer
- Motorola
  - TrustZone vulnerability unlock

# Platform Weaknesses

- Android Master Key Vulnerability (2013)
  - Modify legitimate APKs with trojans and bypass crypto signature check
- iOS Lockscreen Bypasses (2007 – present)
  - Varying levels of access to the entire device, contacts, photos, dialer without entering policy-mandated PIN

# INTERMEDIATE RECAP

# Intermediate Recap

- BYOD is pervasive
- Many orgs just getting started on securing BYOD
- Most IT/security teams fly blind
- Top 7 threats are real and growing
- Challenges with control-based approaches to secure against threats

# WHAT NOW?

# Inheriting Control-based Approaches

- Instinctively treat personally-owned devices like company assets
- Control is at odds with UX for most end users
  - Users abandoned Blackberry for UX
  - Leverage UX focus and make it easy for users to be secure

# Clean Slate Approach

- Design it (Don’t inherit it)
  - BYOD is not for every organization
  - Involve your employees
  - Make it too hard for the end user and they will work around you, exposing your organization to even more risks
  - There may not be an alternative given Blackberry’s troubles

# MANAGE THE RISK

# A Risk Management Approach

- Define tolerable risk and acceptable use
- Get real visibility and balance with employee privacy
- Assess the risks and prioritize remediation / mitigation
- Act
- Rinse and repeat

# Tolerable Risk and Acceptable Use

- Differentiate between corporate issue and personally owned if appropriate
- Define what data can be wiped in specific situations
- Engage and communicate with employees
  - Their acceptance is equally important
- At a minimum, implement basic native security policies
  - Passwords, encryption, VPN configuration

# Getting Visibility

- 50% of organizations know about BYOD, but not the extent of it
- Classic example: financial services organization
  - Estimated: 15% BYOD penetration, minimal Android usage
  - Actual: 85% BYOD penetration, 20x more Android devices
- Realtime visibility into all mobile usage is essential

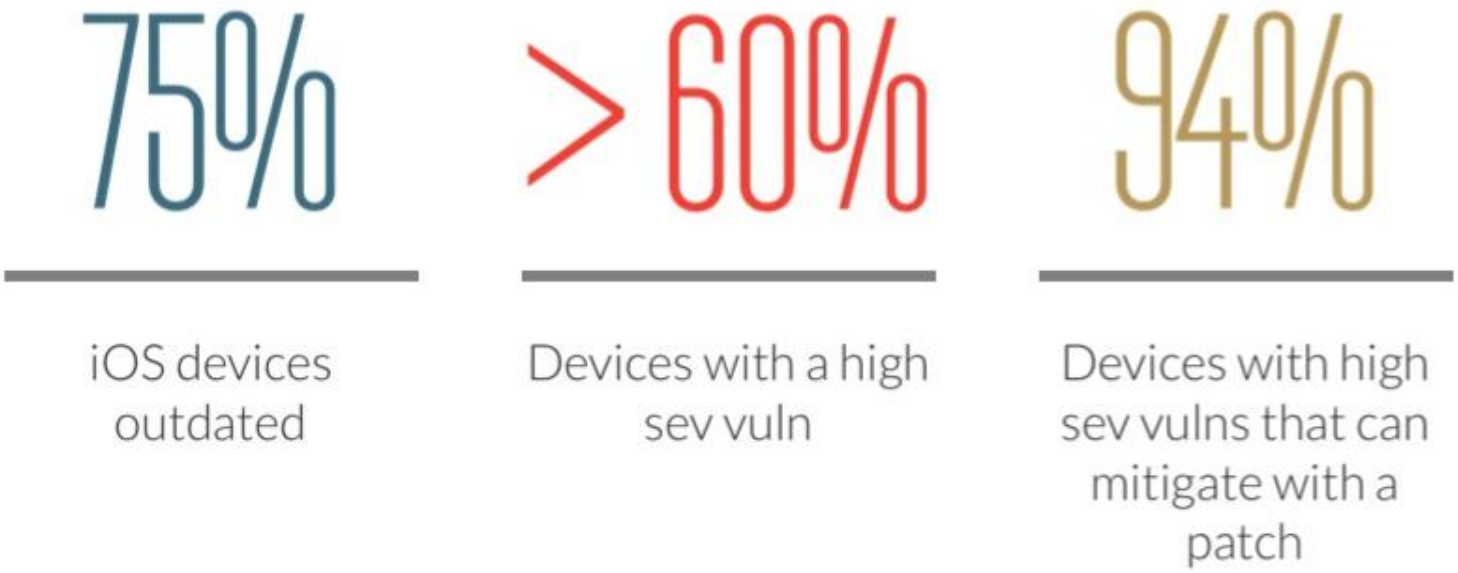
# Assess Risks / Prioritize Action

- Analyze devices for vulnerability exposure, risky behaviors
- Review high severity vulns for business risk
- Identify unpatched devices whose vulnerability exposure can be reduced or eliminated with an update

# Act

- Inform users, reiterate policies
  - Provide a window for patching, along with specific details
  - Suggest recommended applications over riskier alternatives
  - Aggressive: block user access
  - Balanced: hand hold users through upgrade process

# Importance of Mobile Patching



# Recap

- BYOD is pervasive, but not for every org
- Most organizations are in the dark about BYOD and risks
- Top 7 threats are real and growing
- Design for risk management, don’t inherit approaches to control
- Patching is central to managing risk

# Thank you!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