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Skeletons in the Closet: Securing Inherited Applications

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Key Questions for Today's Session

- What applications represent the biggest risk?
- What attributes make them more or less risky?
- What are the most cost-effective courses of action given budget constraints in today's business environment?

Key Goals for Today's Session

- Understand risk-based options for managing the security of inherited applications
- Develop a framework for ranking risks with specific applications
- Understand some of the decision-making factors that come into play when risk-ranking applications

Personal Background

- 15-year information security consultant background
- Ex-Air Force security analyst at AFCERT
- Trident Data Systems, KPMG, SecureLogix, and Denim Group information security consultant
- Works with CIO’ s and CSO’s to build successful software security initiatives
- Educates non-developer security professionals how to manager application risk

Denim Group Background

- *Professional services firm that builds & secures enterprise applications*
- *Secure development services:*
  - Secure .NET and Java application development
  - Post-assessment remediation
  - Secure web services
- *Application security services include:*
  - External application assessments
  - Code reviews
  - Software development lifecycle development (SDLC) consulting
  - Classroom and e-Learning instruction for developers

Background – the Current State of Affairs

- Creating meaningful enterprise-wide software security initiatives is hard
- The vast majority of info software security focuses on means to write more secure code or strategies for putting controls around the software development process
- Most organizations have hundreds or thousands of legacy applications that work!
  - *They are viewed "part of the plumbing" by management*
  - *The code base can be millions of lines of code*

Key Facts

- 66% have adopted a risk-based approach to remediation of application vulnerabilities
- 71% have an executive or team with primary ownership and accountability for application security
- 66% have defined communications channels between security, operations, and development teams

  – *Source: "Securing Your Applications: Three Ways to Play," Aberdeen Group, August 2010*

Step 1 – Information Gathering

- Build a Portfolio of Applications
- Collect Background Information
  - *Development Details*
  - *Vendor (if any)*
  - *Audience*
  - *Hosting Details*
- Assess the Data
  - *Type (CCs, PII, ePHI, etc)*
  - *Compliance Requirements*

Step 1 – Information Gathering (Continued)

- Determine the Scale
  - *Lines of Code*
  - *Dynamic Pages*
  - *Concurrent Users*
  - *User Roles*
- Assess the Underlying Technology
  - *Infrastructure (OS, hardware, etc)*
  - *Platform (.NET, Java, PHP, etc)*
  - *Versions*
- Assess the Security State
  - *Assessment Activity (type, date, etc)*
  - *Vulnerabilities (high, medium, low)*
  - *Protection (IDS/IPS, WAF)*

Step 2 – Application Scoring

- Business Importance Risk
  - *Business Function (customer interface, internal but public-facing, departmental use only)*
  - *Access Scope (external, internal)*
  - *Data Sensitivity (customer data, company confidential, public)*
  - *Availability Impact (serious, minor, minimal, or no reputation damage)*

Step 2 – Application Scoring (Continued)

- Technology Risk
  - *Authentication (methods, enforcement)*
  - *Data Classification (formal approach or not)*
  - *Input / Output Validation (structured or not)*
  - *Authorization Controls (resource checks in place or not)*
  - *Security Requirements (explicitly documented or not)*
  - *Sensitive Data Handling (controls in place like encryption or not)*
  - *User Identity Management (procedures in place for account creation, access provisioning, and change control or not)*
  - *Infrastructure Architecture (network segmentation, patching)*

Step 2 – Application Scoring (Continued)

- Assessment Risk
  - *Technical Assessment (assessment activity, vulnerabilities still present)*
  - *Regulatory Exposure (unknown, subject to regulation)*
  - *Third-Party Risks (outsourced development, SaaS hosting, etc)*

Example Application Analysis

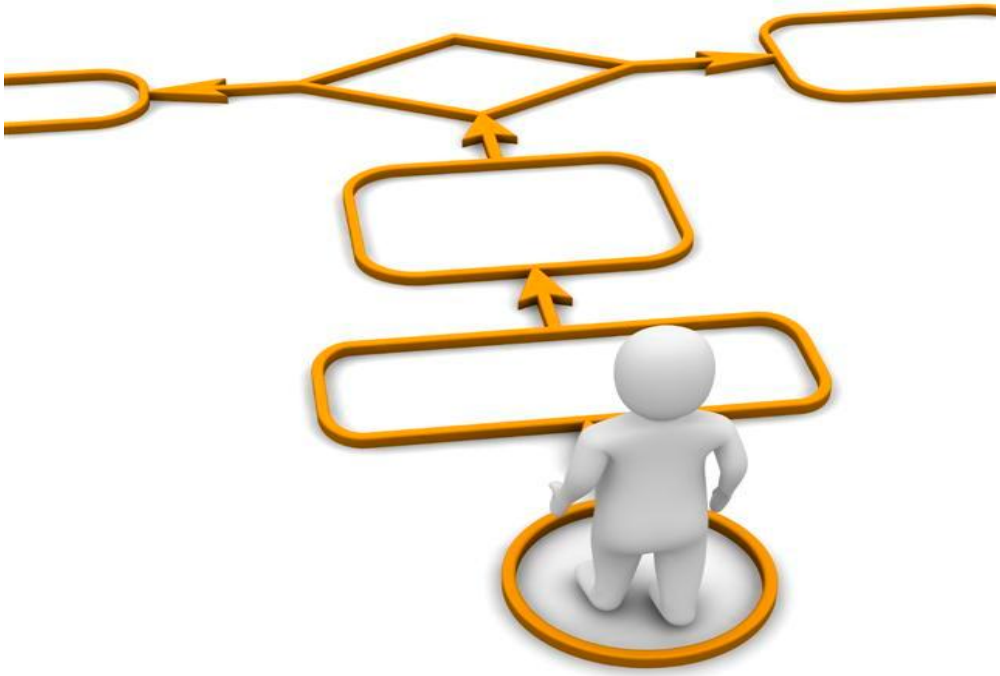
- Patient portal for hospital system
- Connects to back-end Electronic Medical Record system
- Microsoft.NET 3.5 framework
- Currently functionality being enhanced by internal development team
- Contains Electronic Patient (EPI) Data
- Audited once for PCI compliance in 2007
- Scanned by outside 3rd party for application security vulnerabilities in 2009

Application Comparisons

Conclusion

- Managing the security of inherited applications can present the most severe headaches for someone building a software security program
- A risk-based approach is really the only economically feasible approach given the size/complexity of the problem
- Understanding certain attributes of inherited applications is critical to applying a risk-based management approach

So where do you go from here?



What you can do now!

- Collect or scrub your initial application inventory
- Develop relationships w/ 3rd parties who can help you through the identification
- Find a peer that is conducting the same risk ranking
- Exhaust Open Web Application Security Project (OWASP) resources!
- Familiarize yourself with OWASP OpenSAMM

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