Patrick Watson

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Summary

Patrick Watson is an application security architect with over a decade of experience championing secure application development in the payment industry. He has spoken at multiple public and private conferences and has several pending patents. His breadth of experience, including secure application management and full life-cycle product development, allows insight into supporting applications in addition to their initial creation.

Speaking Engagements

Black Hat USA 2016, *Breaking Payment Points of Interaction:* **https://youtu.be/B3CUWh_Q-h4**
DEFCON 24 Skytalks
BSidesLV, *Breaking Payment Points of Interaction*
NCR Innovation Conference 2017, *Blockchain Technologies*

Patents

Cross-Messaging Identity Mapping	Pending, filed 8/30/2016, us 15/251,708
Secure Payment Processing Within Messaging Systems	Pending, filed 9/23/2016, us 15/275,015
Voice Authentication Within Messaging Systems	Pending, filed 9/23/2016, us 15/274,947
Multifactor Authentication from Messaging Systems	Pending, filed 9/23/2016, us 15/275,002
Virtual Reality Transaction Integration	Pending, filed 3/28/2017, us 15/471,532
Cooperative Fraud-detection Processing	Pending, filed 9/28/2017, us 15/719,158

Certifications

Certified Information Systems Security Professional (CISSP)	#385815, 2/15/2011
Certified Information Privacy Professional, US Private Sector (CIPP/US)	6/20/2015
Certified Secure Software Lifecycle Professional (CSSLP)	#385815, 5/02/2016

Work Experience

NCR Corporation
Application Security Architect   **2014 to Present**

NCR Corporation is a global technology company specializing in financial, payment, and retail software and hardware. The Software Solutions Application Security (SWSAS) team is responsible for ensuring that NCR's applications are developed securely, exposing NCR and its clients to a minimum of risk.

Responsibilities

- As a founding member of the SWSAS team, establish policies and grow the team within NCR
- Dedicated application security architect for the Epsilon, NCR EPS, RPOS (PCR), Fuel Connect, and Optic products.
    - Conduct security design and code review
    - Perform risk assessment for application changes
    - Oversee internal and external penetration testing
    - Create client facing security and Payment Application Data Security Standard (PA-DSS) compliance documentation
    - Manage product PA-DSS compliance program, including facilitating 3rd party assessment
    - Address client security questions and incident reports
    - Primary point of contact for internal secure development guidance
- Key custodian for Epsilon and NCR EPS encryption keys
- Provide PA-DSS and PCI DSS expertise to NCR Legal, including contract & patent review
- Develop security talent within engineering teams

Notable Accomplishments

- ✓ Conducted PA-DSS assessments for over 30 major releases of NCR software.
- ✓ Grew SWSAS team from 2 to 10 members.

- ✓ Co-developed NCR's open source component vulnerability management program, including tool procurement, policy creation, and implementation
- ✓ Evaluated and selected NCR's standard container vulnerability scanning and protection engine
- ✓ Drove adoption of standardized code signing solutions within NCR
- ✓ Create SWSAS internal portal including secure coding guidelines, PA-DSS compliance tracking programs, and stack-exchange-like questions system.

Awards

- ❖ Runner up NCR Innovator of the Year 2016

NCR Corporation

Application Developer III (Electronic Payment Systems)   **2011 to 2014**

NCR Corporation acquired Radiant Systems in 2011. Radiant was a provider of both off the shelf and customized point of sale software and hardware. The Electronic Payment Systems (EPS) team is responsible for implementing and customizing the Epsilon/NCR EPS interfaces to 3rd party payment systems, allowing the Radiant Point of Sale to tender transactions via credit, debit, fleet, EBT, ACH, etc. The system also allows loyalty point accumulation or redemption and 3rd party gift card activation.

Responsibilities

- ▪ Epsilon maintenance, compliance, and security technical lead.
- ▪ Investigate Epsilon escalated cases, provide temporary workarounds, and implement permanent fixes
- ▪ Design and implement security enhancements to the core Epsilon application framework.
- ▪ PA-DSS technical point of contact for the EPS team. This includes creating customer-facing compliance documentation such as implementation guides and high-level security models, answering customer questions regarding PCI-DSS, and supporting certifications and audits.
- ▪ Train new hire employees and customers in EPS development standards, software architecture, and support techniques.
- ▪ Implement payment industry mandates such as Visa/MasterCard partial authorizations and compliance with new State and Federal laws such as FACTA.
- ▪ Maintain and support more than 100 credit products.
- ▪ On call 24/7/365 for emergency escalated support cases.

Radiant Systems

Applications Developer (Electronic Payment Systems)   **January 2004 to 2011**

Responsibilities

- ▪ Design and implement new credit network interfaces and enhancements to existing products & support tools.
- ▪ Design and implement enhancements to the core Epsilon application framework.
- ▪ Visa CISP and PA-DSS technical expert within the Electronic Payment Systems team.
- ▪ Train new hire employees and customers in Radiant development standards, software architecture, and support techniques.
- ▪ Maintain and support more than 30 credit products.
- ▪ Develop high performance software, ensuring that the electronic payment system can run under constrained resources (<32MB RAM, <20MB storage, <400MHz SH3 CPU) while maintaining sub second transaction times.

Notable Accomplishments

- ✓ Designed and developed an interface to the ISD Corp payment network. The TCP/IP based ISD network includes customizations allowing the client to issue their own credit, fleet, and gift cards.
- ✓ Designed and developed an interface to the Payspot gift card network, allowing clients a wide selection of high-profit 3rd party gift cards.
- ✓ Designed an interface to Heartland Payment Systems NWS payment network and lead the development team through certification. The NWS project included TCP/IP, Datawire, and dialup (Visa1) application protocols. Its generic nature allows multiple clients to use it to lower interchange rates.
- ✓ Designed and developed an interface to the Mannatec electronic payment device including RS-232 serial communication, allowing the client a low-cost customizable fleet card solution. Due to the generic nature of my design, this product has been reused several times for other projects including NBS and eFueling.

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- ✓ Co-designed and developed an interface to the Moneris (Shell Canada) payment network including Canadian/Interac debit, internationalization support, and extensive host-based configuration tools.
- ✓ Designed and implemented an Integrated Development Environment for an in-house automation language including auto-complete, in-line error detection, and "guided development." This allows clients and business analysts to create powerful scripts for automated testing and administrative tasks related to Radiant software.
- ✓ Redesigned proprietary Radiant remote access software user permissions system to increase security granularity and created a pluggable architecture for new permissions.
- ✓ Proactively began publishing a semi-weekly internal security newsletter with current security related news, secure computing tips, and secure development best practice reminders.
- ✓ As developer point of contact for one of Radiant's largest clients, increased customer satisfaction from detractor to passive in 2007.
- ✓ Diagnosed and solved Windows kernel memory leak in 3rd party driver enabling release of P845 (EPC3) hardware platform which is standard equipment for sites using Radiant's electronic payments platform.
- ✓ Assisted in diagnosis of a deadlock issue in Windows CE 3.0 FAT16 file system and development of a workaround solution.

Awards

- ❖ Nominated 2007 & 2010 Developer of the Year ("PCS eXtreme Developer").
- ❖ Numerous "World of Thanks" awards (given quarterly by peers for outstanding teamwork or assistance).

Education

2000 to 2003	**Bachelor of Science with Honor, Computer Science**

Georgia Institute of Technology, Atlanta, GA

Specializations in Networking, Databases, and Artificial Intelligence

Computer Science GPA: 3.5, Overall GPA: 3.3

- ▪ Developer, CAESAR Project (https://www.sae.org/standardsdev/tsb/cooperative/caesar.htm): A PHP/postgreSQL web application for The Center for Assistive Technology & Environmental Access (catea.org), the Society of Automotive Engineers & United States Air Force to provide a browsable online database of ergonomic data with 3d models and statistical analysis.
- ▪ Team Leader, C++ (w/ ClanLib) Windows multiplayer OpenGL space shooter game.
- ▪ Developer, Vision controlled soccer programming of Sony Aibo.
- ▪ UI developer, Online bookstore using Java and Oracle.
- ▪ Team leader, Java implementation of Monopoly.
- ▪ Team leader, Squeak (Smalltalk variant) implementation of an extensible 3d adventure game engine.

References

Reviews and personal references available upon request