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DevSecOps Principles

xMatters Service Reliability Platform

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July 2021

Why DevSecOps?

Reducing Risk

Findings of Cyber security report by Checkpoint[1] for NTSC[2]

- DevSecOps approach has been able to close the strategic gap in security posture for many organisations
- Focus on risk awareness, prevention & outlining action plan for integrating security early and often has proven business benefits
- Assessing and prioritizing vulnerabilities in applications, for example, can directly reduce the risk exposure (OWASP[3])

Creating Trust

Provision of client visibility of controls and measures (e.g. the xMatters Trust[4] site)

Protecting corporate data assets and privacy

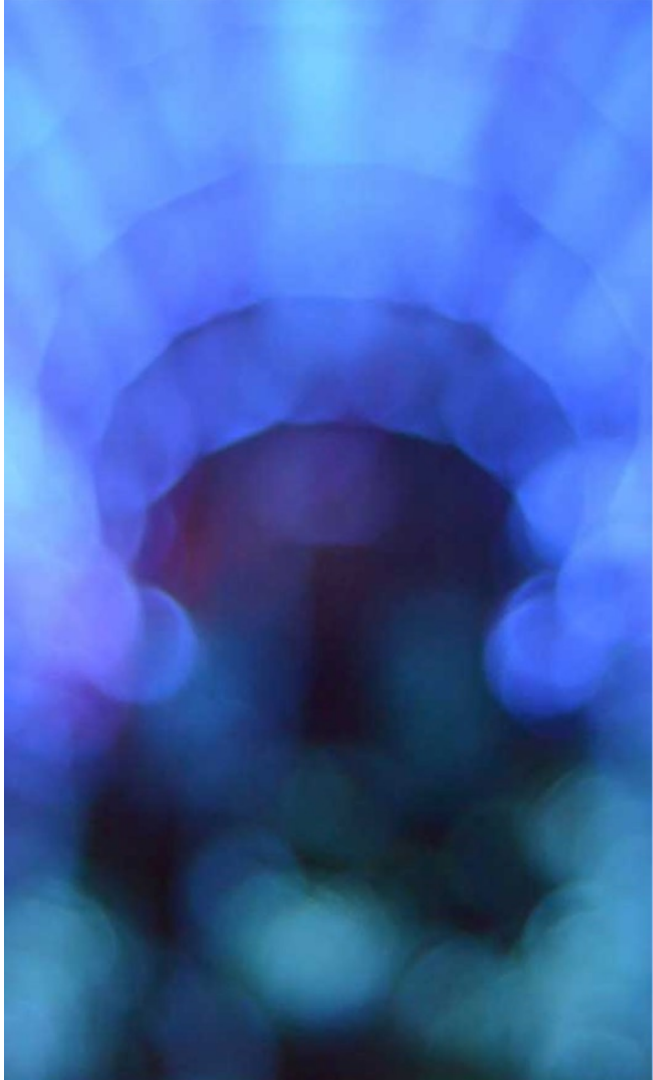
Reducing impact of security breaches

Ensure traceability and alignment of security and data privacy regulation

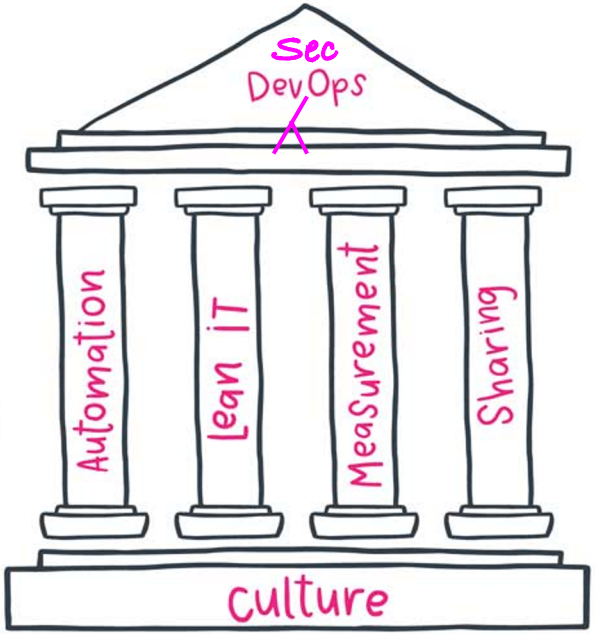
[1] https://www.ntsc.org/assets/pdfs/cyber-security-report-2020.pdf
[2] https://www.ntsc.org/
[3] https://owasp.org/
[4] https://www.xmatters.com/trust/

What DevSecOps is NOT...

- Applying more layers of security
  - DevSecOps must remain lean and not add additional toil
- Establishing a dedicated security team
  - DevSecOps is about the collaborative use of teams
- A big transformation project
  - Any transformation should be made based upon an iterative, risk based backlog
- Compromising ROI
  - Implementing Security should ADD value, not remove it.



Culture
Automation
Lean IT
Measurement
Sharing



Proactive, shift-left

Culture

- Default inclusion of security as part of a requirement
- Product Managers and Engineers should be constantly challenged
- End User empathy to services
- ALL elements targeted by Ethical hackers
- Manual Ethical Hacking approach to innovation

Automation

- Inclusion of Security in CI/CD pipeline:
- SAST (Statistical analysis)
- DAST (Dynamic Analysis)
- Security code coverage analysis
- Digitally signed secure repositories for built binaries
- Penetration Tests
- Smoke Tests

Lean

- Security inclusive definitions
- Security inclusive designs
- Security inclusive engineering
- Security inclusive testing
- Security inclusive deployments

Reactive, shift-right

Culture

- No fortress is impregnable
- Production Smoke testing from ‘Time Zero’ as part of monitoring/ observability
- Chaos Engineering approach to Prod AND non-Prod
- Root cause analysis with data captured in real time

Automation

- Continuous Security monitoring of Prod AND non-Prod
- Chaos Engineering, including automated security testing, of Production environments

Lean

- Treating Major Incident Management (MIM) as a Value Stream - *Every second counts!*
- Response times to stopping an attack
- Response times for Return to Value
- Feedback to engineering for future prevention & Technical Debt

Common

Measurement

- Security professionals to determine measures, such as from regulatory requirements, e.g. GDPR
- Measurements of both Prod AND non-Prod
- Definition of security as part of Business Value AND Success Criteria
- Security Scorecards, updated in real time

Sharing

- All parts of the organization must consider themselves responsible for security
- Autonomous ability to identify and implement security
- In the event of an attack;
  - a Security-led Damage Analysis team, supported by IT, must run in parallel to
  - an IT-led Remediation team, supported by Security
- Empowerment by leadership with shared accountability in a safe environment
  - Red Team vs Blue Team functions
  - Security Drills

Use Cases

Solarwinds (Early 2020)

Event

- Introduced malicious code into a system called “Orion”
- Used in a large number of companies to manage IT resources
- Included in system updates between March and June 2020 as recorded in SEC documents
- initial attack vector through the companies Microsoft Office 365 email system
- Malicious code added through Solarwinds own Continuous Delivery Pipeline

Result

- Cascaded out to almost 18,000 Orion product customers
- Initial mitigating hotfix update was provided
- Second update was prepared to address the vulnerability fully at a later date
- Impacts to business via:
  - Fines
  - Trust
- Impacted “approximately $343m, or approximately 45% of total revenue”

Lesson Learned (report[1])

- Adherence to security strategies & ID of points of exposure
- Risk-analysis performed on third-party components and a full analysis of the build with the engineering team
- Inclusion of pen testing, smoke tests & targeted dynamic scanning (DAST) as a function of any other automated test approach
- Ensuring that designs, code, infrastructure, tests and pipelines are available to ethical hackers

[1] https://www.sec.gov/ix?doc=/Archives/edgar/data/1739942/000162828020017451/swi-20201214.htm

British Airways (2018)

Event

- Vulnerability was discovered to be in a third-party Javascript used on BA's website
- A hacking group inserted 22 lines of code that diverted crucial information around payment details to a separate site controlled by the hackers
- Vulnerability had been well known since 2012

Result

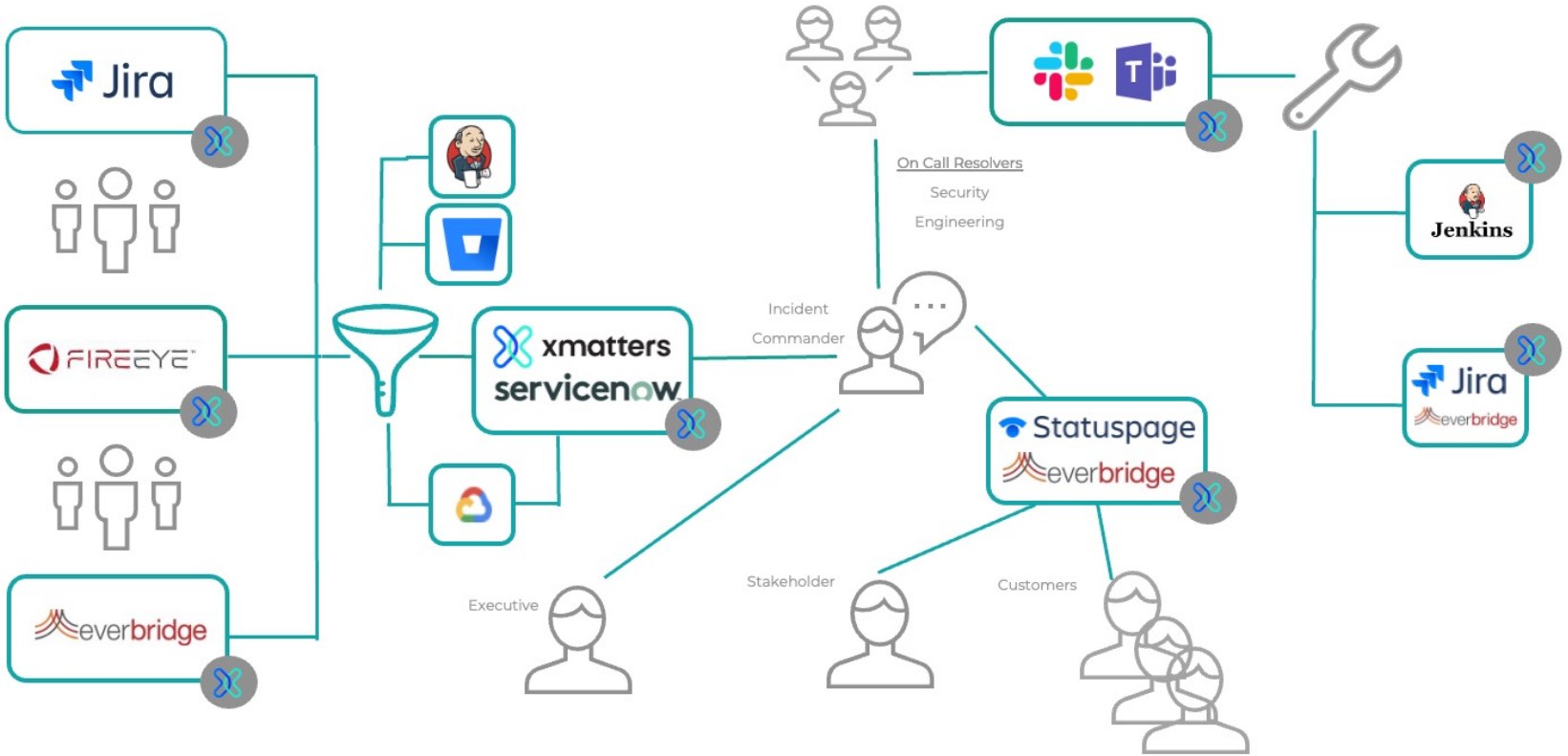
- Accessed the personal data of approximately 429,612 customers and staff according to the findings of an ICO report
- Included names, addresses, payment card numbers and CVV numbers of 244,000 BA customers
- Usernames and passwords of BA employee and administrator accounts
- Usernames and PINs of up to 612 BA Executive Club accounts

Lesson Learned (report[1])

- Lack of cultural acceptance of security as a value
- ID of a known exposure point & a weakness in the defences should have led to an immediate action
- The lack of use of Red Teams and automated monitoring of production systems was extremely severe
- The response times upon discovery of issue were deemed unacceptable and a leaner approach to MIM practices around security was required

[1] https://ico.org.uk/about-the-ico/news-and-events/news-and-blogs/2020/10/ico-fines-british-airways-20m-for-data-breach-affecting-more-than-400-000-customers/

People, Process & Technology: An example



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