How Security Best Practices Enable a DevOps Security Transformation in the Cloud

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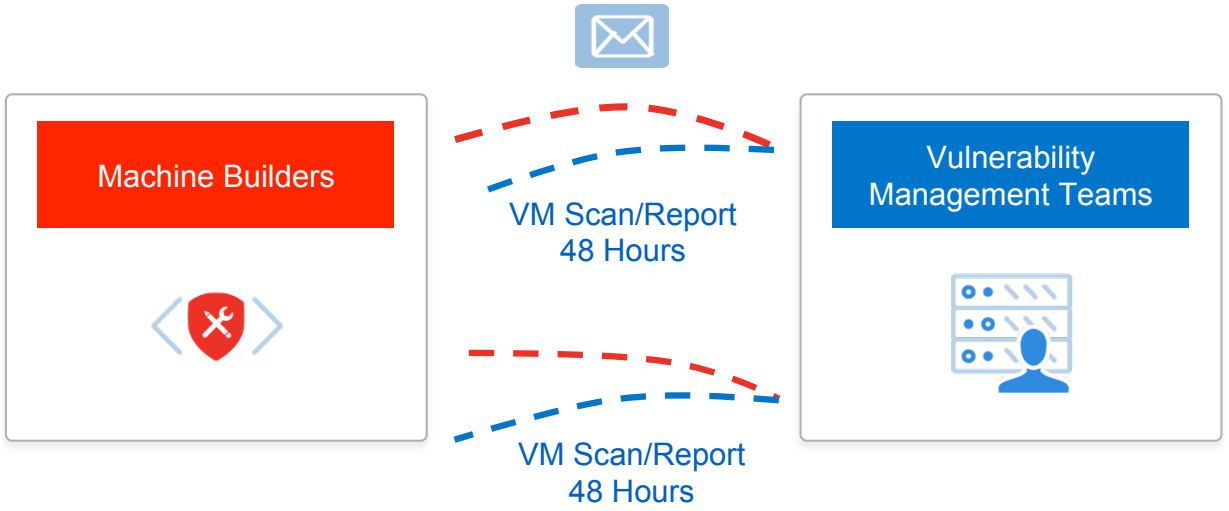
Capital One's Current Environment and Structure

- 2012 - Capital One owned and maintained 8 data centers
- Current day: 3 data centers remain and our shift to Co-locations is in full swing
- We are working to migrate Capital One infrastructure into the Cloud
- Focus: ensuring new assets spun up in the cloud are secure and free of Vulnerabilities and meeting configuration compliance requirements as defined by the CIS Benchmarks

Machine Shop: Baseline AMI Production

- Machine shop: centralized team that controls gold images that all EC2 hosts are provisioned from.
- Machine shop creates new AMIs
  - Includes both Linux and Windows flavors
  - Qualys scanner baked into AMIs
  - Removes security team from equation for DevOps
  - Automate vulnerability and compliance scans with APIs
  - Machine builders took ownership of certification process
  - Security team provides high-level oversight

Before: Lack of Security Automation Delays Release



At least two weeks until the AMI is certified for production

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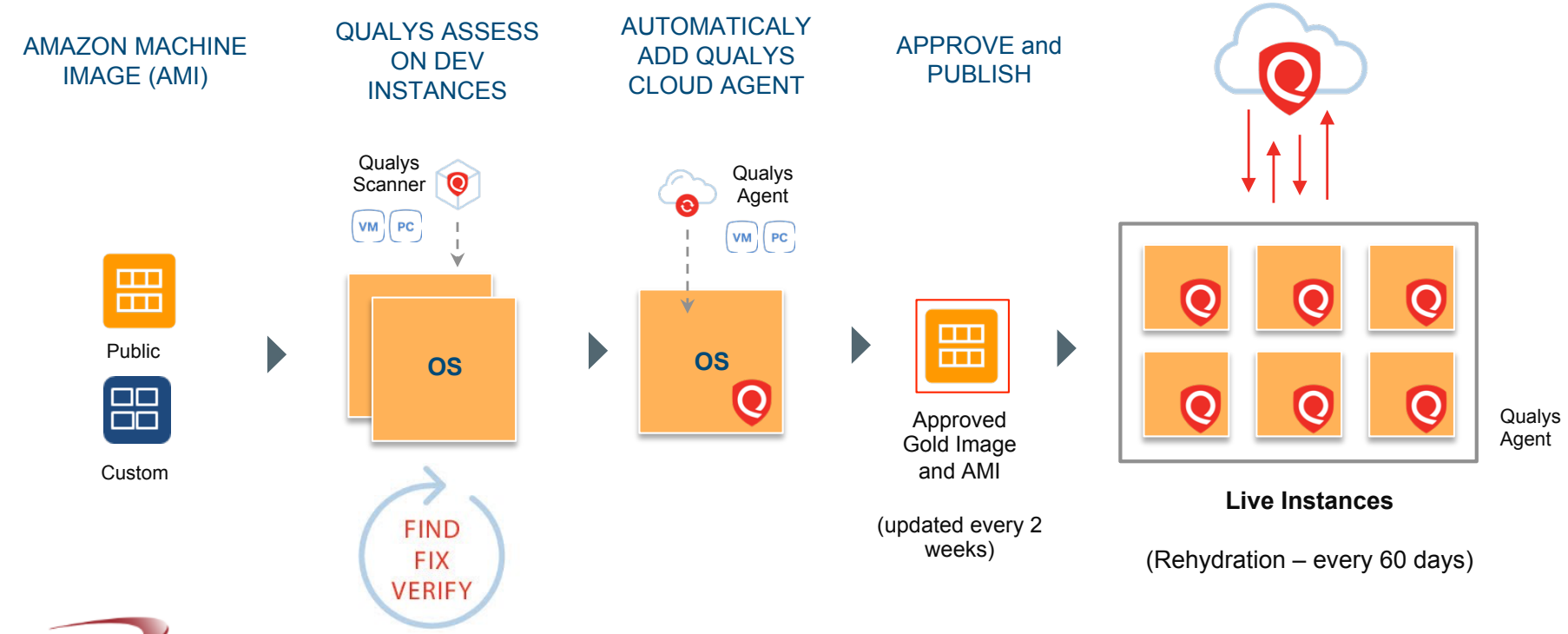
Introduce Security at the Source

Bake Qualys Security into AMIs



Movement to the Cloud and Containers in AWS

- Cyber goals: enable the business, safeguard the business, undergo data transformation
- With the migration to the cloud, Capital One has encountered unique security challenges
  - Open Source- knowing where to pull the blessed versions of software from
  - Knowing what versions of software are in the real-time instances being spun up
    - Middleware- testing and compatibility with legacy applications
    - The Qualys Agent reports out more instantaneous results on software versions and vulnerabilities in the pre-production software development process

Shifting Left:
You Build It, You Own It, You Secure It

- This movement is part of Capital One's journey towards achieving a true DevOps culture in building and maintaining software
- Developing a more proactive approach to remediation
  - Working to resolve issue in the build pipeline while applications are in development
  - Automating processes so it's as easy and consumable as possible for engineers
- DevOps teams are responsible for ensuring their application remains secure
  - Middleware patches are not included in the gold images from the Machine shop
  - Java patching is driven by the application teams
- Rehydration alone is not enough

Best Practices for Developers at Capital One

- Utilize a single-source of truth for software
  - Navigate to one centralized location to view and pull software
- Keep software current
  - Ensure teams are pulling the latest versions
- Patch using a 60 day rehydration cycle
  - In addition to AMI rehydration, make sure middleware is being patched with the latest version of software available- at a minimum every 60 days
- Leverage enterprise vulnerability scanning tools to scan your images and containers
  - Utilize the Qualys agent and Qualys self service Ad-Hoc Portal

Vulnerability Reporting at Capital One

- Leverage an external vulnerability management tool
  - Ingestion of Qualys data to tool
- Prioritization of vulnerabilities for remediation
  - Asset prioritization: aging, threat posture, regulatory compliance, environment/ attack surface
- Emphasis on education
  - Internal trainings and certification for secure software engineering

A more comprehensive vulnerability and compliance management view, enterprise wide

- Near real-time vulnerability identification
  - Helps with remediation and prioritization based on aged vulnerabilities
  - Dramatic reduction of vulnerabilities within the enterprise
- Near real-time misconfiguration detection of CIS benchmarks
- Qualys cloud agents extend coverage & provide continuous assessment
  - Asset discovery and better ServiceNow data integrity
- Continuous training for software engineers
- Seamless API integration to manage scans and reporting
- Overall cost savings

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Questions??