Adopting Modern Practices for Improved Cloud Security

Cox Automotive - Enterprise Risk & Security

About Cox Automotive

Cox Automotive is a leading provider of products and services that span the automotive ecosystem worldwide. Our goal is to simplify the trusted exchange of vehicles and maximize value for dealers, manufacturers and car shoppers. We've built the industry's strongest family of more than 25 brands to provide industry-leading digital marketing, software, financial, wholesale and e-commerce solutions to help our clients thrive in a rapidly changing automotive marketplace.

Our Vision

Transform the way the world buys, sells and owns cars.

33,000+
team members

40,000+
clients

MOST RECOGNIZED BRANDS
Autotrader & Kelley Blue Book

73% OF ALL CAR BUYERS
use Autotrader or KBB.com

INVENTORY SOLUTIONS

- Manheim
- DEAL SHIELD Be Assured.
- Ready Logistics
- AIM Alliance Inspection Management
- RMS AUTOMOTIVE
- CentralDispatch

RETAIL SOLUTIONS

- Dealertrack
- vAuto LIVE MARKET VIEW
- VinSolutions
- xtime
- HomeNet AUTOMOTIVE

MEDIA SOLUTIONS

- Autotrader
- Kelley Blue Book KBB.COM The Trusted Resource
- DEALER.COM

FINANCIAL SOLUTIONS

- NEXTGEAR CAPITAL

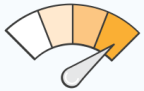
INTERNATIONAL

- Manheim MOTORS Search Smart. Buy Right .co.uk
- NEXTGEAR CAPITAL xtime
- Mahindra First Choice incadea
- Dealer Solutions Means Performance. Modix
- AUTOST. 汽车街 autostreets.com RMS AUTOMOTIVE
- BitAuto 易车 精真估 JINGZHENGU
- Dealer-Auction.com MOLICAR

Setting the Cloud Stage…

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- What was driving the move to the Cloud for Cox Automotive?
  - **Speed** and **agility** – a faster paced development environment, getting products to market more quickly with frequent updates and new feature releases
  - Focusing on **core competencies** of developing software for customers
  - **Cost savings** from future data center consolidations

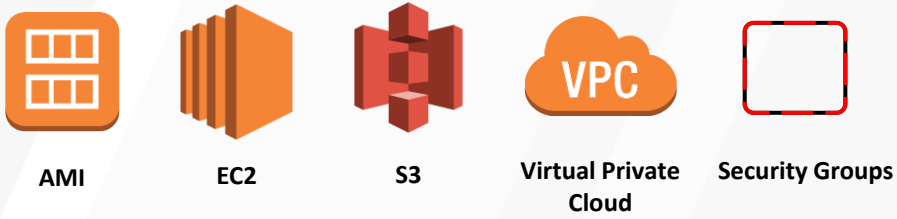


- What is the scope of Cox Automotive Cloud deployments?
  - More than half of our business units have undertaken the move of applications from on-premises to the Cloud
  - Centrally managed billing and provisioning, but various levels of maturity on the Development teams
  - **Over 500 accounts** in AWS - with over 800 Virtual Private Clouds (VPC's) in total

Observations When We Began This Program

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- "Traditions" were **changing** across the entire IT landscape
  - The business was moving faster than Security could keep up
  - Vulnerability Management practices were no longer meeting SLA's
  - Roles and processes were being moved and changed throughout the organization
  - The introduction of an entirely new lexicon…



- We're not alone on this journey
  - Many companies have begun the move to the Cloud (or are planning to shortly)
  - Hundreds of new vendors and solutions in the Security space focusing on Cloud

Why is a Cloud Security Program So Important?

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- Though AWS owns the responsibility OF the cloud, Cox Automotive owns the responsibility IN the cloud
  - OS Updates and security patches
  - Application software, patches
  - Configuration of the AWS provided security group firewalls

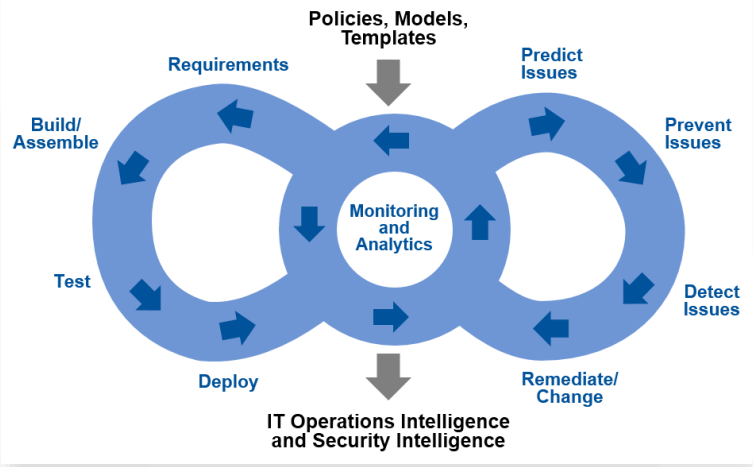
- With the lift and shift of customer facing business-critical applications…
  - Reliability
  - Uptime
  - Prevention of possible leaks, breaches, or compromises

- Driving compliance with legal and regulatory requirements

Guiding Principles of the Cloud Security Program

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

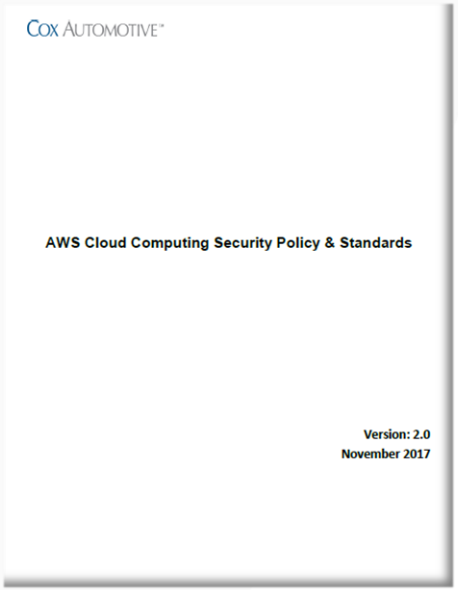
- Speed, Agility, Automation
- Continuous Improvement & Delivery
- “Shift Left”
- Shared Responsibility Model (Internally)



Cloud Security Program Foundations

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- A Formal Development of a **Cloud Computing Security Policy & Standards**
  - Based off sources and standards including:
    - The Center for Internet Security (CIS)
    - AWS Well-Architected Framework
    - AWS Security Best Practices
  - Provides a common security approach and baseline for all cloud deployments
  - Contributors from many cross functional teams across the company
  - Made through a series of virtual working sessions, some reaching 5-6 hours in length over a 2 month period



Cloud Computing Security Policy & Standards

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

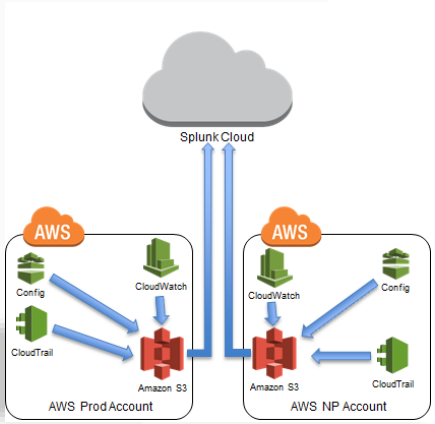
- Cloud Computing Security Policy & Standards
  - Covers two categories of controls Level 1 and Level 2, determined by sensitivity of data in the application
  - Viewed as a **Living Document**
    - Will incorporate lessons learned as we deploy more and more infrastructure into the cloud
  - **Areas of Focus:**
    - Identity & Access Management
    - Logging & Monitoring
    - Networking
    - Vulnerability Management
    - Data Protection
    - Business Resiliency

- An Engineering Handbook of the Cloud Computing Standards
  - A guidebook on how Engineering teams can execute on these standards

Building The Baseline...

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- Centrally managed account provisioning process
- Standard configuration automatically applied to all accounts
  - Using Terraform modules to create a standard set of IAM groups, users, and roles on each AWS account
- Security
  - AWS Billing, CloudTrail, CloudWatch and Config logs are turned on by default for all accounts and stores the audit data in an S3 bucket on the account
  - Splunk Cloud is configured to process this data to enable dashboards and querying of the data centrally
  - **Secured Root Accounts**: Root account access key removed and MFA enabled on account
- Jive site and Slack channels for team collaboration



Cloud Security Technical Implementations

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- As Cloud–specific security standards were developed, new technologies, such as CloudSploit, were leveraged to maintain visibility and compliance
- We also leveraged Cloud versions of on-premises technologies for Vulnerability Management, and integrated many other traditional applications (including our SIEM) for monitoring and alerting
- In-house cloud security analytics, dashboards, and alerting capabilities were built to proactively identify misuse and malicious activity

What Were the Results of This Program?

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- Stronger security
  - Met or exceeded the existing on-premises security requirements
- Visibility into critical application and infrastructure vulnerabilities and misconfigurations
  - Immediately upon the deployment of each of these technologies, we discovered hundreds of sub-optimal configurations, privileged access usage, and vulnerabilities across our Cloud deployments
  - Worked on a plan to quickly and efficiently prioritize and remediate the findings
- Enabled the self-identification of security issues by Dev teams (Shift Left)
  - Earlier detection and remediation
- Customized specific alerting to what is important for our business, identifying emerging threats, and showed value to IT operations company-wide in bringing Cloud security awareness
- We've already successfully launched a few of our customer-facing applications 100% in the Cloud

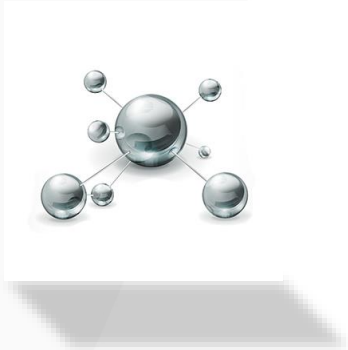
Lessons Learned…

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- Don’t resist change
  - Just because you’ve always done something a certain way, doesn’t mean you need *or* should continue to do so

- Terminology is new and different
  - BUT… don’t be intimated, the risks are the same

- Centralization is essential
  - Having dedicated teams with oversight of helps with visibility, standardization, and ultimately the security of Cloud deployments



Key Takeaways…

COX AUTOMOTIVE TECHNOLOGY
QUESTION – CREATE – COLLABORATE

- Relationship / Partnership building is very important!
  - For the development of security controls and standards
  - For the remediation of outstanding security issues
  - Instead of saying “no”, provide more secure ways and say “yes”
- Shift Left
  - Embedding security into the pipeline should be the goal
- Cloud security has a rapidly changing solution landscape
- Automate, Validate, Delegate

Thank You

Cox Automotive™