
AWS
re:Invent
NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

COP209

Automate everything: Options and best practices

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Amazon Web Services

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Sun Life

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Agenda

- Learning from the past
- Why automation matters
- A day in the life
- A day in the life – Automating everything
- Sun Life’s journey
- Summary – Next steps

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Innovation – Change



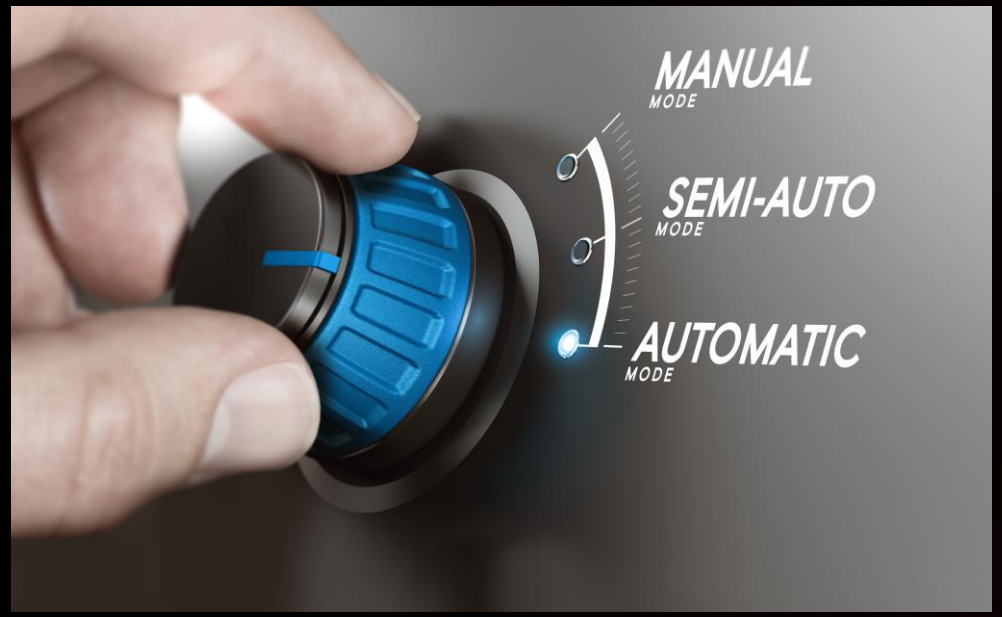
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Adapted – Thrived



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Lessons learned: Automate the process



- Understanding a process is key to being able to automate it
- Automation evolved an industry
- More innovation, better conditions

100 years later, are you using automation to thrive?

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We are still not sufficiently automated

94% of US knowledge workers surveyed spend some portion of the day performing repetitive, time-consuming work

Today, **80%** of developer time is spent in operations and maintenance*

Source: Zapier's 2021 state of business automation report
*Source: Deloitte 2019

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Elite performers = highly automated



3x
lower change failure rate



Less than 1 hour
to go from code to production



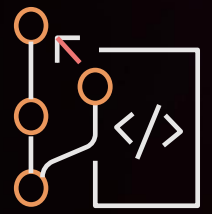
Less than 1 hour
to recover from outage

63% of SMBs say automation allowed their company to quickly pivot as a result of the pandemic*

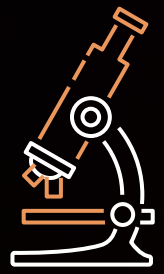
*Source: Zapier's 2021 state of business automation report
Source: DORA 2021 Accelerate State of DevOps report

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Culture around three things



Everything as code



High visibility



High degree of automation

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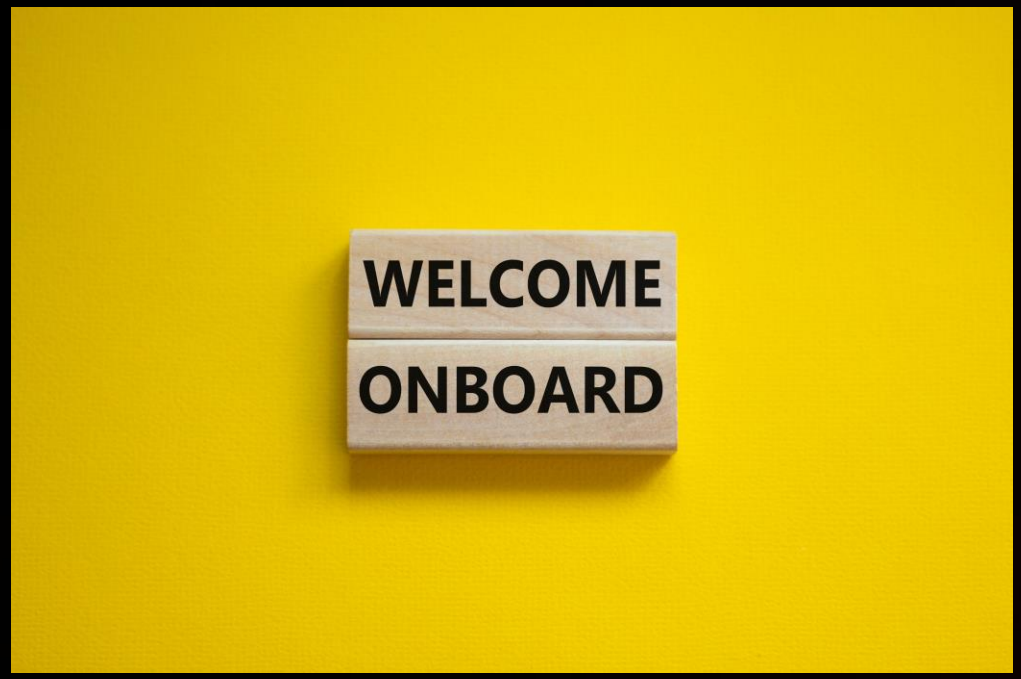
Automation improves time at work and away from work





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Automation is more accessible now



- Cloud computing increases opportunity for automation
- APIs enable automation
- Repeatable, automated software delivery is possible for all organizations

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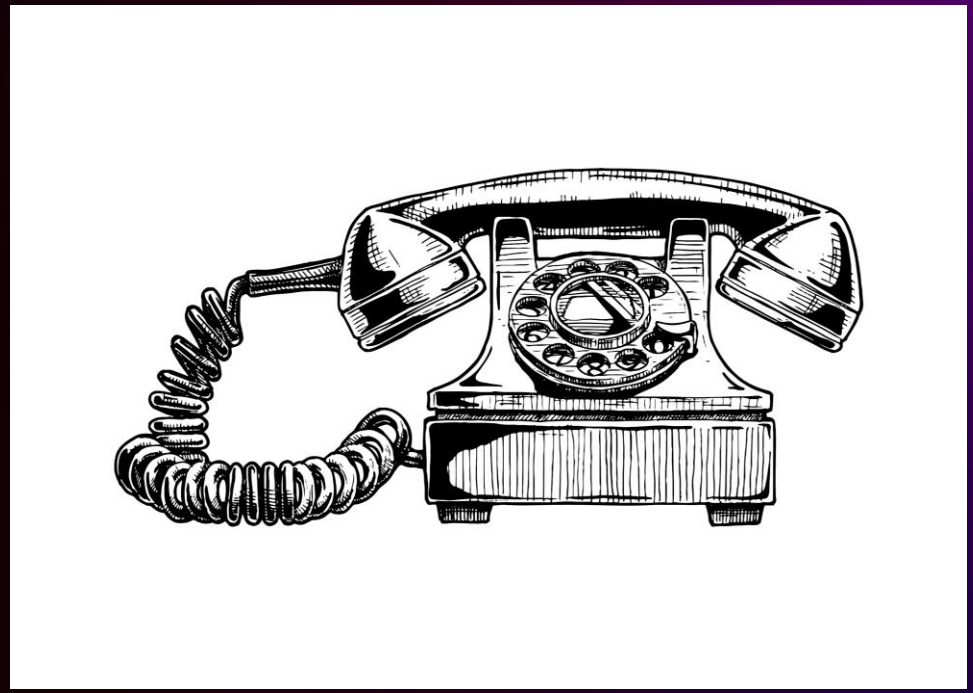
Automation was a dream not so long ago...



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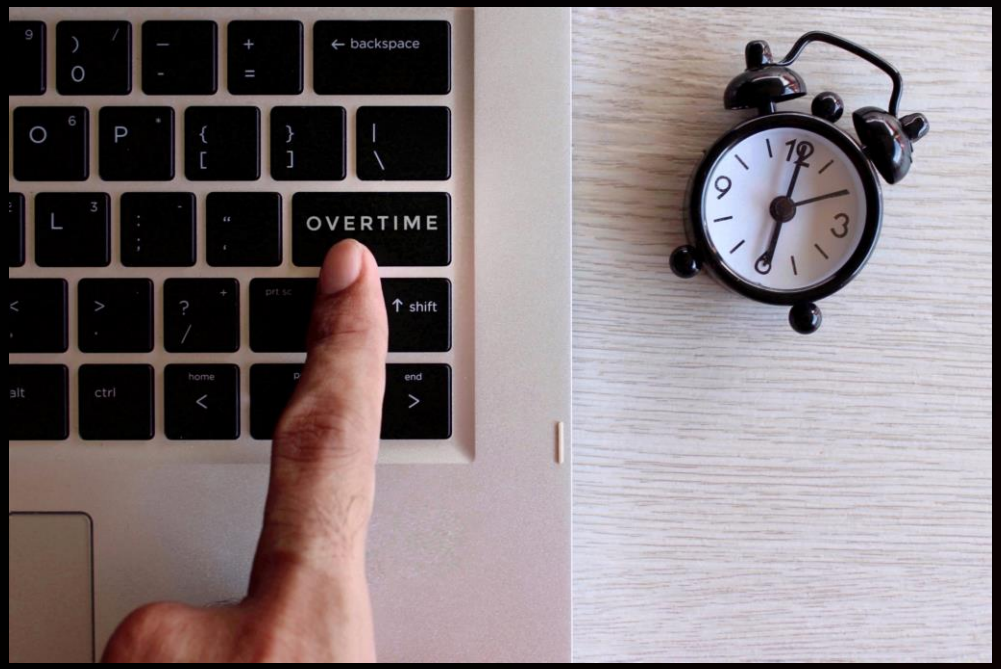
Visibility of a change in real time was hard

- Communication via conference calls
- Multiple email threads, change tickets
- Many teams and manual handoffs
- Manual orchestration of scripts
- Limited telemetry and logging



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Reduce overtime with automation



- Manual change orchestration takes time, often overtime
- Time spent documenting, communicating the change
- Hard to recover from failures
- How can automation make work and life easier?

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Some automation in place? Add more!

- Automation is more than just infrastructure automation
- What are the other repetitive tasks?
- Want more visibility and control?



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Improve reaction time



- Recall the Elite performers from the State of DevOps report
  - Lower change failure rate
  - Faster time to restore service
- Why? High levels of automation

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Automate to thrive

- Automation provides benefits regardless of team size or number of workloads
- Automation is imperative to thriving
- Without sufficient automation, little time is left for innovation



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A week with Mary's cloud team...

MON	TUE	WED	THU	FRI	WEEKEND
☹					



- Need to create new accounts
- Current process is partly automated, partly manual

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A week with Mary's cloud team...

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- Team skipped some steps when creating new accounts
- Exposed to security events

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A week with Mary's cloud team...

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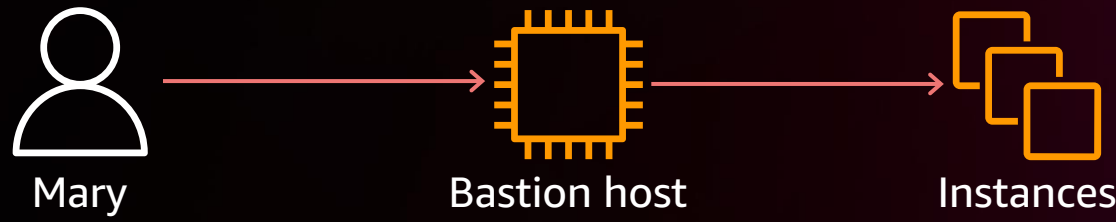


- Need to patch CRM workload running on Amazon EC2 instances
- Provide report to security team on patch level

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A week with Mary's cloud team....

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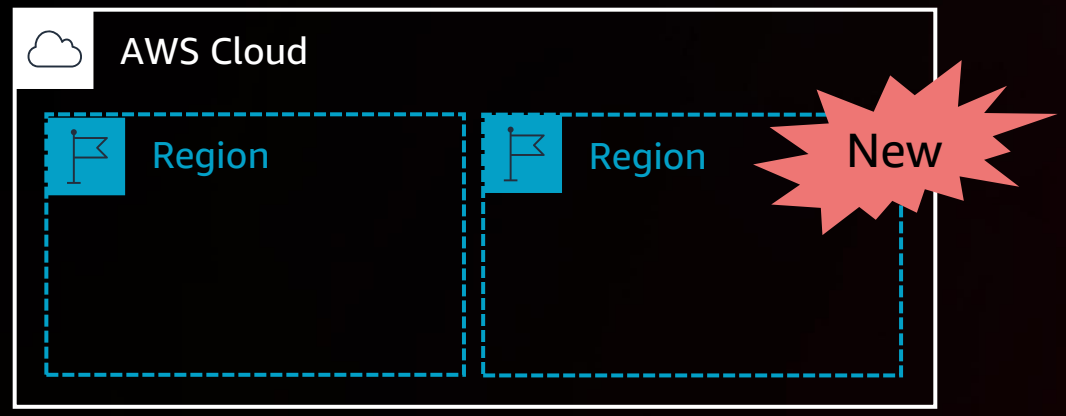


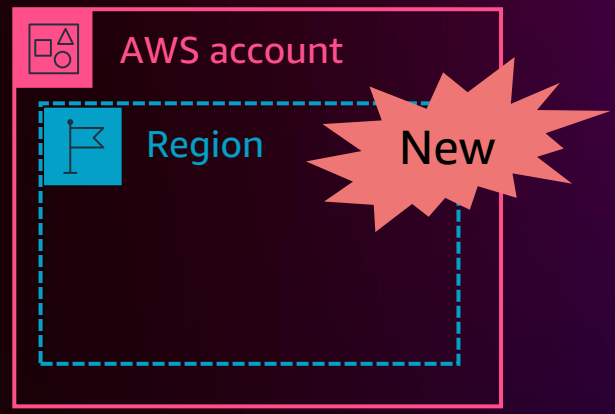
- Need to log into COTS workload running on Amazon EC2 instances
- Need to run scripts to update configuration on advice of COTS vendor

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A week with Mary's cloud team...

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Business strategy team requirements

- Run more workloads in another AWS region
- Acquire a company already using AWS but in another region

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Your journey to operating at cloud scale

Get started with AWS Cloud Operations

1) Setup



Establish a secure foundation for governance and compliance

2) Build and migrate



Migrate applications to the cloud or build new applications

3) Operate



Monitor application performance, detect and remediate noncompliance or operational risks quickly

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Why AWS Cloud Ops?



Return on investment (ROI)

241% ROI over 3 years*



Staff productivity

62% more efficient IT infrastructure staff



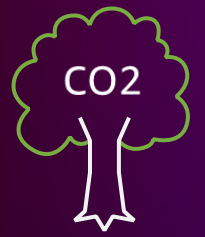
Operational resilience

57% decrease in downtime



Business agility

37% decrease in time to market



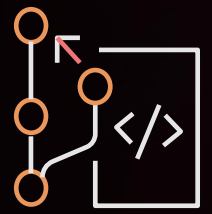
Carbon savings

88% reduction in carbon footprint of IT operations

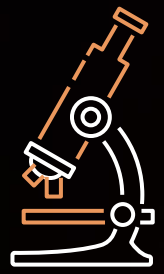
Based on independent research of 1,500 AWS enterprise customers
*Source: "The Total Economic Impact of AWS Cloud Operations: Cost Savings And Business Benefits Enabled By Operation on AWS. May 2022. A commissioned study conducted by Forrester Consulting on behalf of Amazon Web Services."

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Culture around three things



Everything as code



High visibility

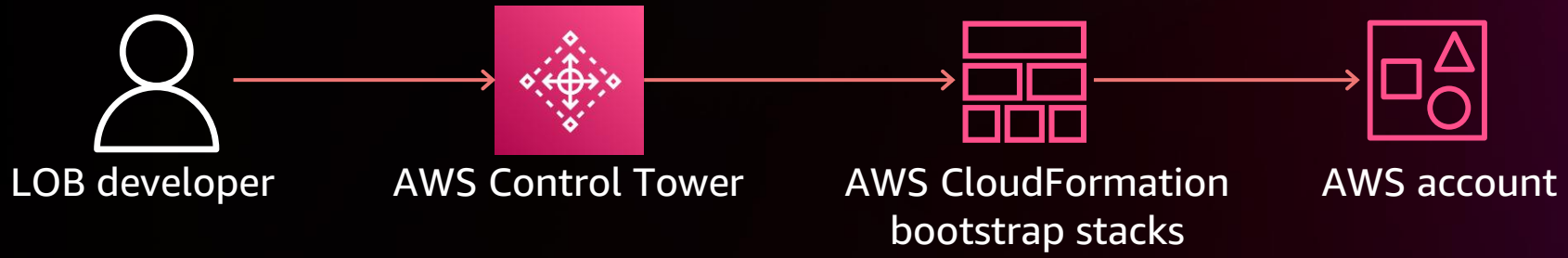


High degree of automation

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A week with Mary's thriving cloud team!

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- LOB self-serves new accounts thanks to **automation**
- Account creation codified and fully **automated**, including preventative & detective controls

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Dashboard
Getting started
Organization
Account factory

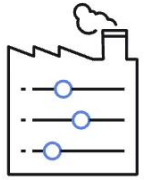
Controls library
Categories Preview
All controls Preview

Users and access
Shared accounts
Landing zone settings
Activities

AWS Marketplace for Control Tower

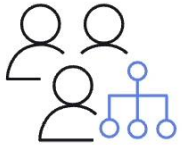
See What's New in AWS Control Tower
View our AWS Control Tower Blogs

Recommended actions



Programmatically manage controls with APIs

AWS Control Tower customers can manage controls programmatically across their organization, at scale.



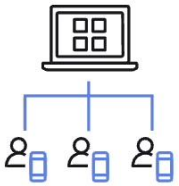
Add or register organizational units

Add or register organizational units (OUs) to organize accounts and projects.



Enable more controls

Enable additional controls to meet your security, operational, and compliance requirements.



Review users and access

Review your user identity store and single sign-on access for your users across accounts.



Review shared accounts

Review the settings of the shared accounts that AWS Control Tower has set up for you.

Environment summary

6	11
Organizational units	Accounts

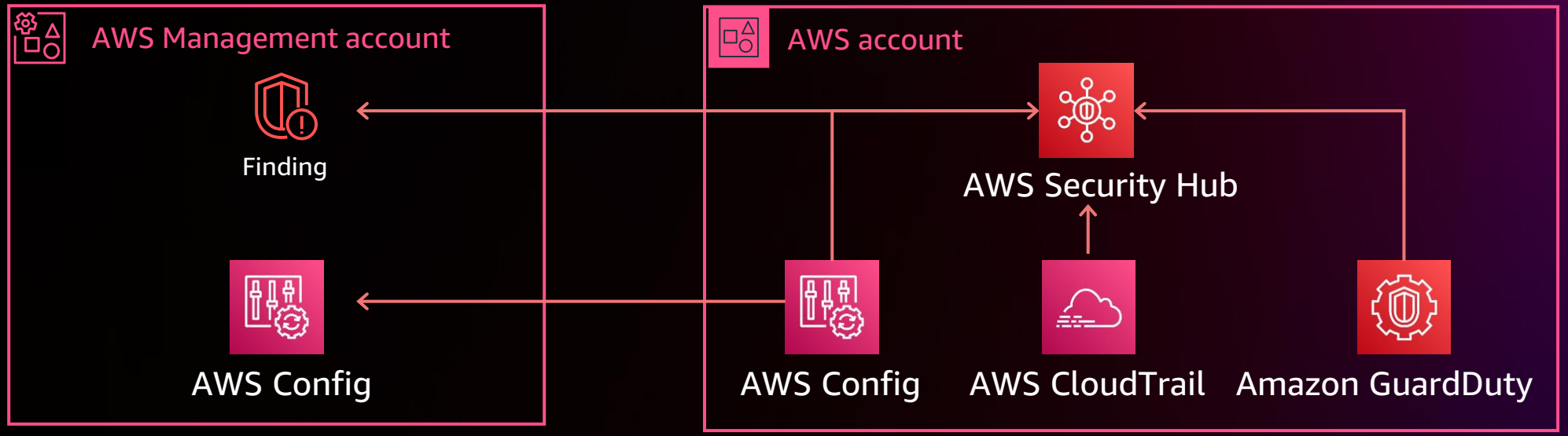
Enabled control summary

27	10
Preventive controls	Detective controls

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Using AWS Config and AWS Security Hub, Mary **automatically** confirms that the new account complies with internal standards and security and compliance guardrails

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Search

AWS Account (9)

account001

Audit

AWSAdministratorAccess Management console | Command line or programmatic access

BusinessUser

demo1c

Developer100

emilydemo1

Log archive

Network

Terms of Use

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- AWS Systems Manager Patch Manager runs a daily scan to **automatically** check compliance
- During the weekly maintenance window, missing patches are **automatically** installed
- **Automated** report sent to security: non-compliant instances are AWS Security Hub findings

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AWS Systems Manager

https://us-east-1.console.aws.amazon.com/systems-manager/home?region=us-east-1#

aws | Services | Search [Option+S] | N. Virginia

Systems Manager | CloudFormation | EC2 | CloudWatch | Amazon EventBridge | IAM | S3 | Cloud9 | Step Functions | Console Home | CodePipeline | CodeBuild | Control Tower

AWS Systems Manager

- Quick Setup
- Operations Management
  - Explorer
  - OpsCenter
  - CloudWatch Dashboard
  - Incident Manager
- Application Management
  - Application Manager
  - AppConfig
  - Parameter Store
- Change Management
  - Change Manager
  - Automation
  - Change Calendar
  - Maintenance Windows
- Node Management
  - Fleet Manager
  - Compliance

MANAGEMENT TOOLS

AWS Systems Manager
Gain Operational Insight and Take Action on AWS Resources.

Get Started with Systems Manager

View operational data for groups of resources, so you can quickly identify and act on any issues that might impact applications that use those resources.

How it works

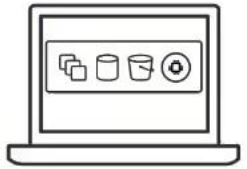


Group your resources



View insights

See relevant operational



Take action

Mitigate issues by

More resources

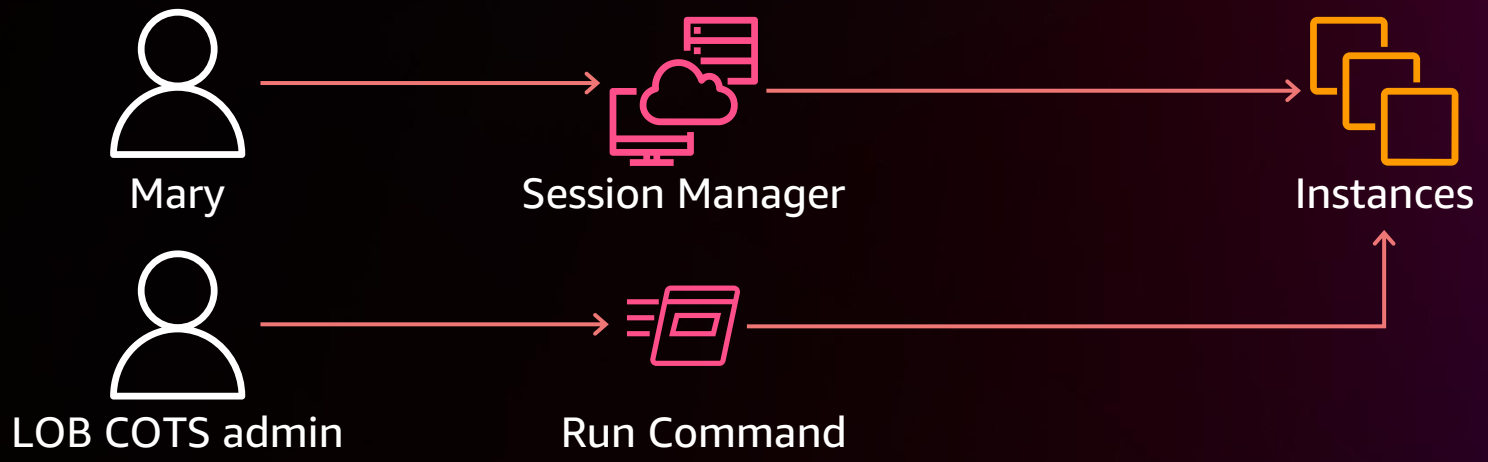
- Documentation
- API reference
- FAQs

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A week with Mary's thriving cloud team!

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- Reduce infrastructure & eliminate bastion hosts with Session Manager for break glass scenarios
- Allow admins to use Run Command through automation runbooks to update software config; runbook takes snapshot of instances before performing changes

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AWS Systems Manager

https://us-east-1.console.aws.amazon.com/systems-manager/home?region=us-east-1#

aws | Services | Search [Option+S] | N. Virginia

Systems Manager | CloudFormation | EC2 | CloudWatch | Amazon EventBridge | IAM | S3 | Cloud9 | Step Functions | Console Home | CodePipeline | CodeBuild | Config | Security Hub

- Application Manager
- AppConfig
- Parameter Store

Change Management

- Change Manager
- Automation
- Change Calendar
- Maintenance Windows

Node Management

- Fleet Manager
- Compliance
- Inventory
- Hybrid Activations
- Session Manager
- Run Command
- State Manager
- Patch Manager
- Distributor

Shared Resources

- Documents

MANAGEMENT TOOLS

AWS Systems Manager

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How it works

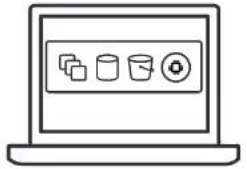


Group your resources



View insights

See relevant operational



Take action

Mitigate issues by

More resources

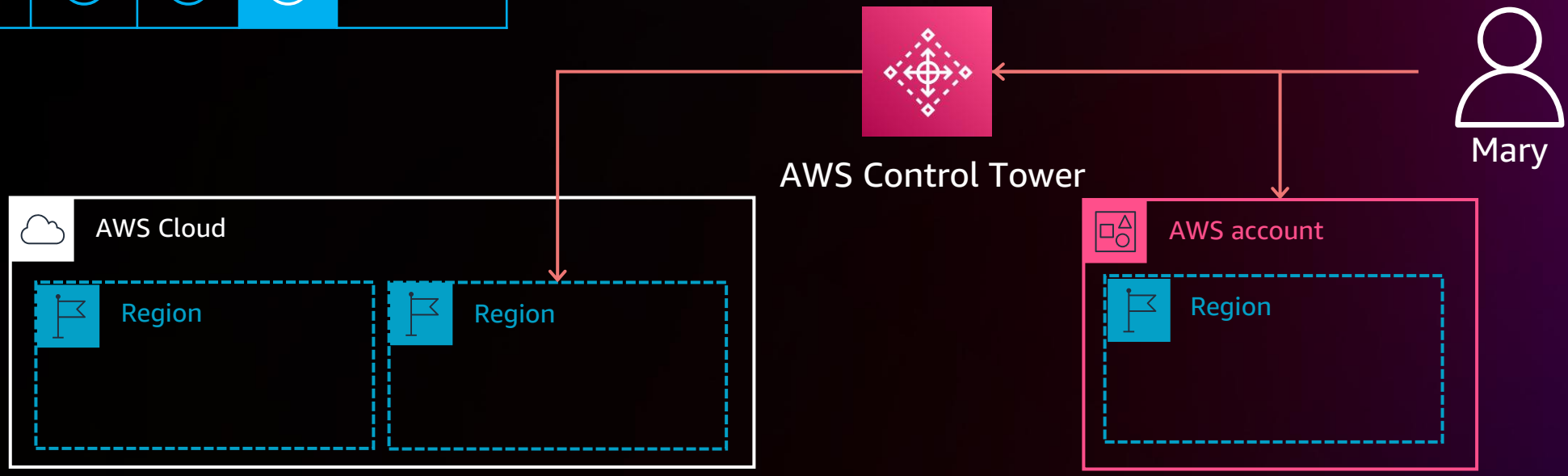
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A week with Mary's thriving cloud team!

MON	TUE	WED	THU	FRI	WEEKEND
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- Using AWS Control Tower, Mary sets up a new region with the set of **automated** controls
- Mary invites the acquisition AWS account to the existing AWS Organization; once registered and enrolled, the acquisition account also benefits from the **automatically** applied controls

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A week with Mary's thriving cloud team!

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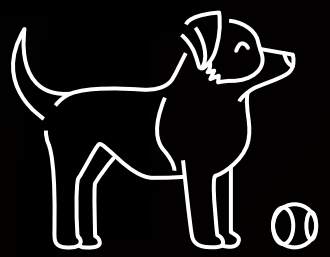
- AWS Well-Architected Operational Excellence best practice is to evolve!
- Dedicate time and resources to continuous improvement
  - Explore more of AWS Systems Manager
  - Try out AWS Secrets Manager
  - Prepare a learning and feedback session

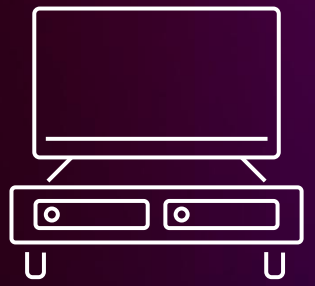


- Get ready for the weekend!

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Automation improves Mary’s weekend






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Sun Life's Cloud Ops automation journey using AWS Control Tower

Ashiesh Wadhwa

Director of Cloud Engineering
Sun Life

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Sun Life – Who we are

Who we are	Sun Life is a global leader in insurance, wealth, and asset management
What is our purpose?	Helping our clients achieve lifetime financial security and live healthier lives
Our presence	• North America – Canada, US • Asia – India, Singapore, Hong Kong, Malaysia, Indonesia, Philippines, Vietnam • UK, Ireland • Bermuda

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“I dream of the day when we get client insights in the morning and deliver a solution by the evening. I’m excited to know we can realize this dream with our teams working differently using AWS.”

Laura Money

Executive Vice President and Chief Information Officer, Sun Life

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Sun Life’s cloud enablement journey

- Pace of cloud adoption and change was happening **faster than maintainability**
- Needed to find a consistent way to lower human touchpoints, **reduce undifferentiated heavy lifting**
- Needed to foster a rapidly growing foundation **without having to match growth in the cloud team**



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Cloud infrastructure maturity at Sun Life

Priorities

01	Provision developer autonomy
02	Business agility with security controls
03	Enable cloud automation

How do we do that?

AWS workload accounts	AWS Control Tower implementation	Cloud automation

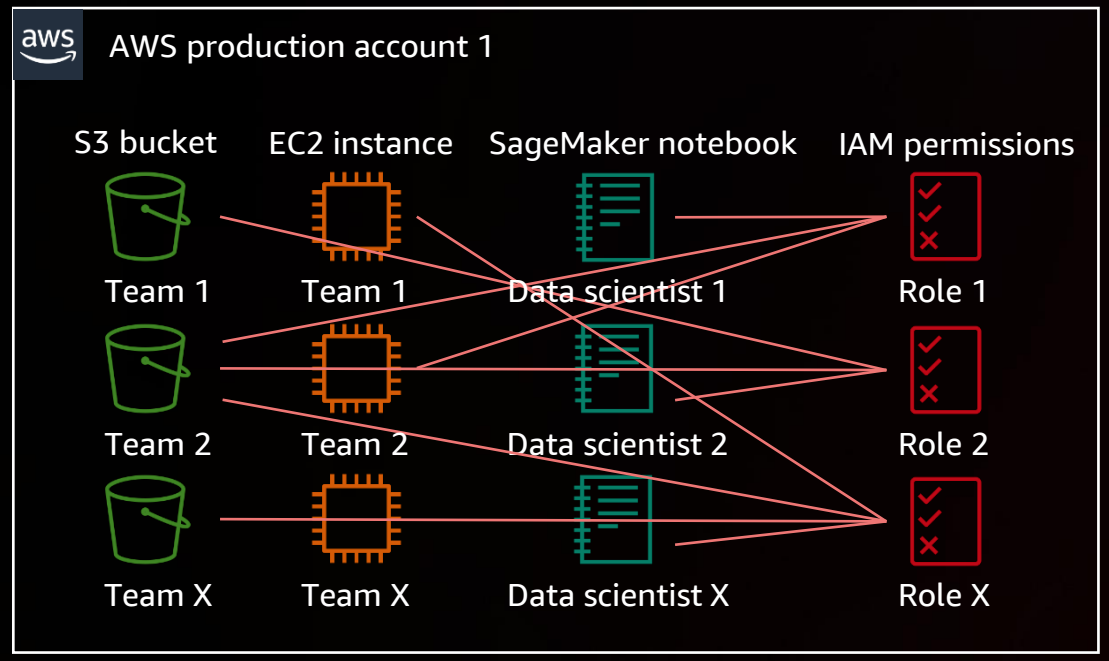
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AWS workload accounts at Sun Life

EMPOWERING THE APPLICATION DEVELOPERS ON CLOUD

Old approach

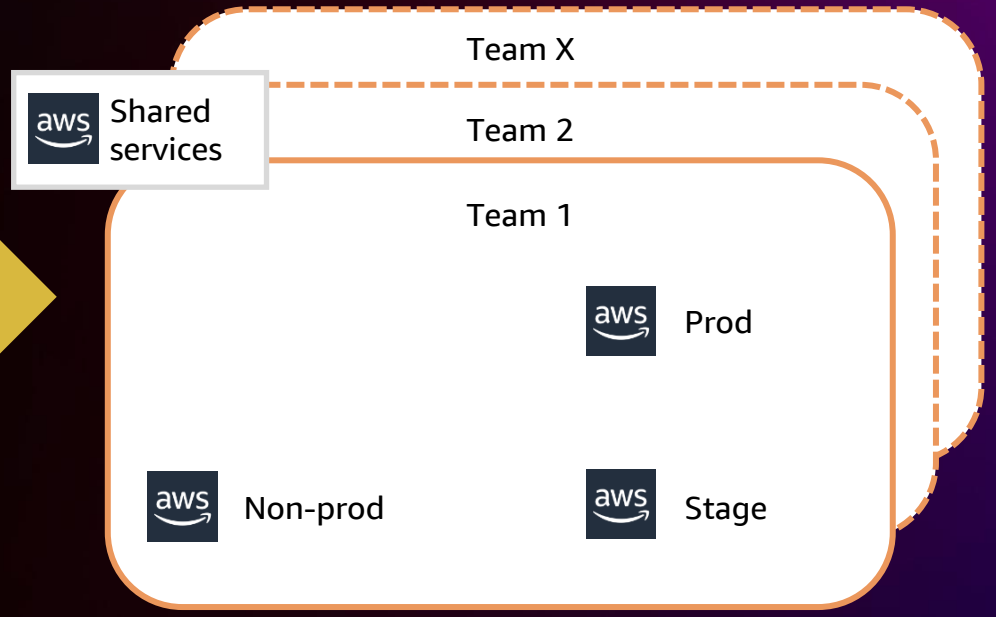
Few accounts – minimal isolation, automation, and control



2022

New approach

Workload accounts using blueprints and automation



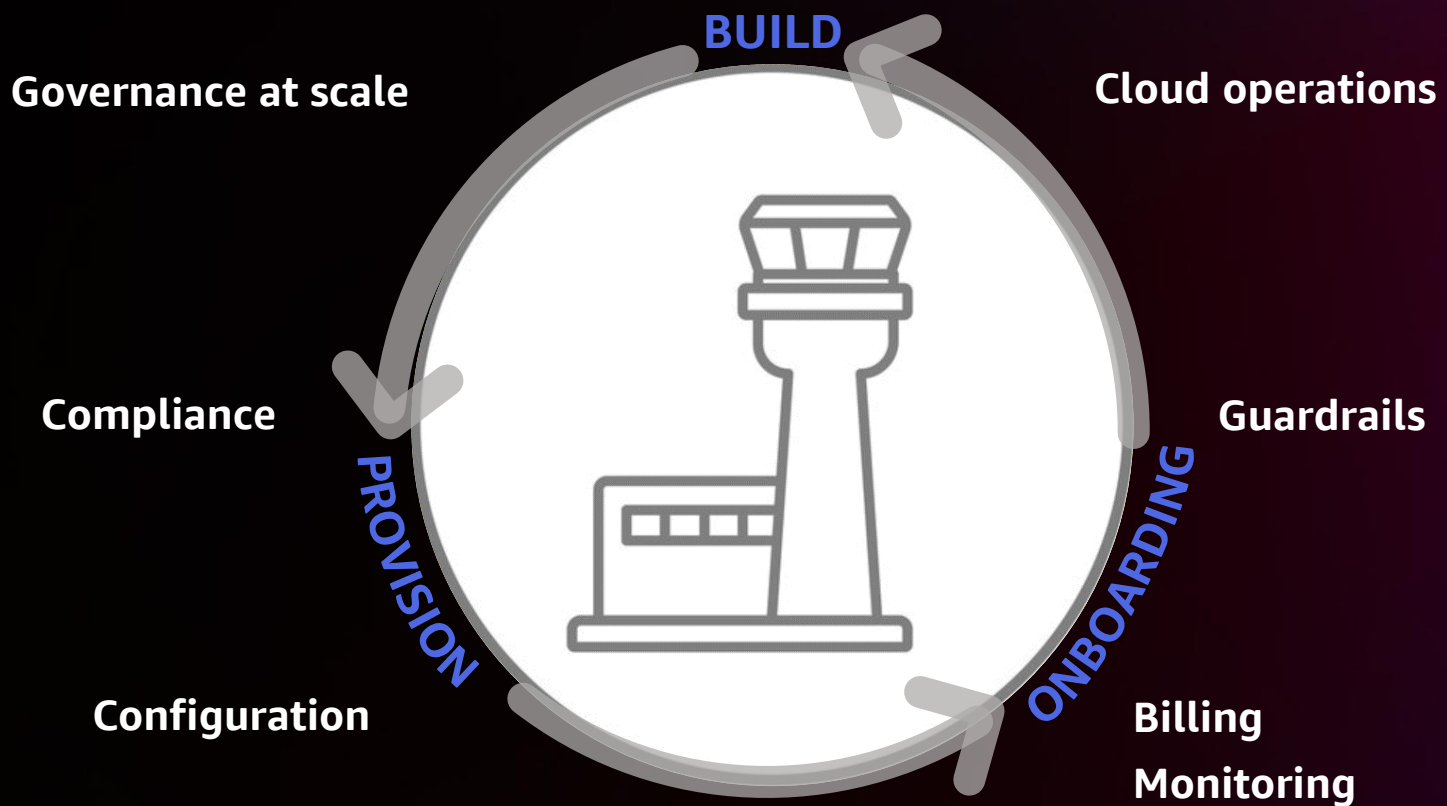
Each environment is built via automation

- Appropriate guardrails
- Required data – non-prod, production
- Sun Life approved AWS services

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AWS Control Tower

ACCELERATING SPEED TO CLOUD WITH CLOUD AUTOMATION



AWS Control Tower enables the automation of a landing zone, enabling security and compliance with pre-approved configuration and best practice blueprints

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Controls examples

Control	Type	Requirement
Enable MFA for the root user	Detective	Strongly recommended
Disallow public read access to Amazon S3	Detective	Strongly recommended
Enable AWS Config in all available Regions	Preventive	Mandatory
Disallow policy changes to log archive	Preventive	Mandatory
Integrate CloudTrail events with CloudWatch Logs	Preventive	Mandatory
Disallow Amazon S3 buckets that are not versioning-enabled	Detective	Elective
Disallow delete actions on Amazon S3 buckets without MFA	Detective	Elective

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Cloud Ops with AWS Control Tower

Benefits

- Automated account configuration
- Centralized governance
- Automate ongoing policy management
- Consistent guardrails globally
- View policy-level summaries of your AWS environment
- Enhanced management of a multi-account environment (workload accounts)

Where we are

All AWS accounts centrally managed globally (North America, Asia, Europe)

All AWS accounts in Sun Life are run through AWS Control Tower

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Sun Life's results

- Guardrails provided more consistent, controlled environments
- AWS Control Tower guardrails have **remained up to date on best practices** and new features
- Less custom environments **lowered the training barrier** for onboarding new engineers
- **More control** given back to builders and developers
- **Easier troubleshooting**, easier to find issues faster, less custom scripts to investigate



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How to thrive

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In addition to AWS Control Tower



Services enabled by Control Tower



AWS Organizations
Policy-based management for multiple AWS accounts



AWS IAM Identity Center
Securely manage access to AWS services and resources



AWS CloudTrail
Track user activity and API usage in AWS accounts



AWS Config
Assess, audit, and evaluate configurations of AWS resources



AWS Systems Manager
Operational hub to view and control infrastructure



AWS Secrets Manager
Easily rotate, manage, and retrieve database credentials, API keys, and other secrets through their lifecycle



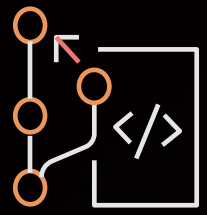
AWS Security Hub
Cloud security posture management



Amazon GuardDuty
Threat detection within AWS accounts and resources

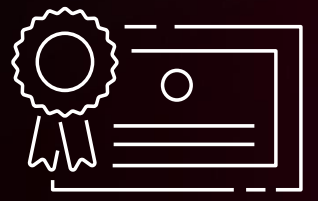
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In review



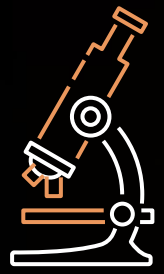
Everything as code

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High visibility

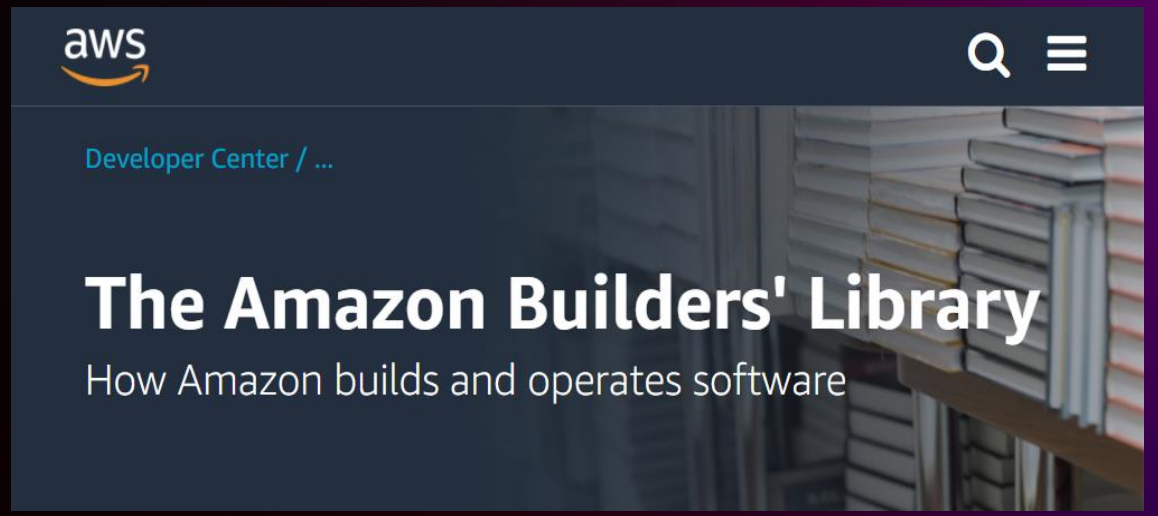


High degree of automation

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Resources to help evolve your automation









aws
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AWS Systems Manager
Quick Setup

AWS Systems Manager
Patch Manager

AWS Systems Manager
Session Manager

AWS Config
User guide

AWS Security Hub
Setting up

Amazon GuardDuty
Setting up

Centralized operations
Use cases and case studies

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Thank you!

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