Create Your Cloud Strategy and Accelerate Time to Results

Structuring and Accelerating your Transformation

Inigo Soto, Practice Manager, AWS Professional Services

June 2016
What to Expect from this Session?

• The Journey to the Cloud
• AWS Cloud Adoption Framework (CAF)
• AWS CAF Core Perspectives
• Developing Your Roadmap
• Key Elements of a Successful Journey
• Cloud Adoption in Practice: the General Electric Oil & Gas case
Cloud adoption in more than just technology…

- Business Alignment
- Why?
- “Infrastructure-less” Environment
- Industry
- Why?
- Application Optimization
- Reporting
- Why Prevent the Inevitable?
- When?
- Continuous Deployment

AWS

- Why?
- Core Competency
- Compliance
- Security
- Cost Control
- DevOps
- Governance and Policy

- How?
- Operational Integration
- Plan for Failure vs. Encourage Failure
- Talent Optimization
- On Demand

- When?
- IT as a Utility

- How?
- On Demand
Cloud adoption is a journey

Knowing your current state is critical...

Current State
- High up-front costs – high risk
- Expensive to get and keep secure
- Long time to value
- Non-value add capabilities
- Not always business aligned

Desired State
- Low up-front costs & risk profile
- Security and certification built in
- Agility improving time to value
- Focusing on core business
- Enabler of the business

...Creating a vision for the future is powerful
Begin by understanding your business objectives and constraints...

- Competitive advantage in the market
- Reducing the cost of traditional IT
- Adapting to market changes quickly
- Aligning IT to business strategy
...your organization’s capabilities...

- Organization size and complexity
- Regional and global footprint
- Operational maturity
- Centralized or decentralized IT delivery model
- Internal culture
- Startup vs. well-established business
...and business vertical influences

- Industry or government-specific regulations
- Compliance and governance
- Technology adoption rates
What is my journey?

Every journey to the cloud is different…
...Let the AWS Cloud Adoption Framework be your guide

Comprehensive framework to efficiently and effectively align your cloud adoption journey to your business objectives. The AWS CAF is comprised of:

- 7 Perspectives
- Step-by-step process to build your cloud roadmap
- Execution and delivery approach

Whitepaper: https://bit.ly/1FswDZQ
CAF Core Perspectives

**Business Perspective**
Identifying, delivering, and measuring business impact using architectural approaches that align technical delivery to business imperatives.

**Platform Perspective**
Represents the technology services of the AWS cloud platform. Provides patterns, guidance, and tools for optimal use of the technology services and services to implement.

**Maturity Perspective**
Defining the target state architecture of the organization and creating the required blueprints and roadmaps.

**People Perspective**
Defining and acquiring the skills needed to adopt the AWS cloud platform. Examples guidance include role descriptions, training, certification and mentoring.

**Process Perspective**
Managing portfolios, programs and projects to deliver expected business outcome on time and within budget, while keeping risks at acceptable levels.

**Security Perspective**
Defining and implementing the required levels of security, governance, and risk management to achieve compliance.

**Operating Perspective**
Represents the ongoing management of the functioning IT environment of AWS. Provides process, guidance and tools for optimum operational service management of the AWS environment.
Developing Your Roadmap Using the AWS CAF
Understand Your Strategy and Market Drivers

Set the stage for the journey. Be bold, but be smart!

Key Activities:

- **Develop** your cloud strategy aligned to business requirements.
- Engage your stakeholders from the start and bring them on the journey with you.
- Communicate the value to the business.
- Define **measurable** goals and monitor.
Understand Where You Are Today

Determine what capabilities you require to achieve your cloud vision

Key Activities:
- **Assess** current capabilities: application portfolio, talent, operational readiness, architecture
- **Define gaps** in current state capabilities to deliver on cloud vision and strategy
- Run *workshop(s)* on gap analysis, presenting and verifying results with stakeholders

**Baseline**
- Assess and baseline current cloud / IT capabilities with respect to people, process and technology

**Gap**
- Define the key cloud adoption capabilities required to achieve business objectives
- Prioritize list of activities/initiatives when executed result in delivery of the business strategy

**Initiatives**
Develop and prioritize key initiatives for your cloud adoption roadmap to guide your execution.

Key Activities:

- Develop prioritized set of recommendations and initiatives
- Develop cloud adoption roadmap with function dependencies and timelines
- Develop communications plan and schedule
- Organize resources, partners, etc.
- Track progress, measure and report success often
Execute and Deliver

Implement roadmap items. Start small and iterate based on lessons learned. Enjoy the journey and reap the value!!!

Key Activities:

- **Explore** - why do it, what business value, gap analysis
- **Prepare** - project plan for activity, training, establish platform, establish operations, establish security
- **Migrate/Develop** - Move an existing application to the cloud or develop a new cloud native application
- **Iterate** - measure and identify opportunities to improve
What Does a Cloud Adoption Journey Look Like in Real Life?
Sample adoption roadmap

Cloud Business Case

Discovery Workshop

Define Business Case

Define Governance Structure

Training and Certification

Define Network Environment

Define Cloud Environments

Operational Integration

Cloud Environment Optimization

Define EA Policies and Practices

Application Portfolio Analysis

Define Security Strategy

Security Operations Playbook

Cost and Billing Analysis
Key elements of a successful journey

- **Executive Sponsorship**: Align on business requirements; bring all stakeholders with you
- **Cloud-First Strategy**: Create your vision; incentivize team members to follow your lead
- **Principles & Standards**: Define Architectures, patterns, governance; measure, monitor, iterate
- **Experiment**: Publish guidance and guard rails for how to adopt cloud successfully
- **Cloud Center of Excellence**: Provide centralized expertise; guide decentralized innovations
- **Organizational Change**: Define new operating models, policies, processes, economics; provide training
- **Adoption Roadmap**: Start small and iterate, measure, manage and update plan
How General Electric Oil & Gas has planned and executed their All-In Journey to AWS
GE is Migrating 9,000 Workloads to AWS Over the Next Three Years

“AWS is our trusted partner that is going to run our company for the next 140 years.”

Jim Fowler
CIO, General Electric

- GE had an existing, aging infrastructure built up over the years with legacy systems and acquisitions
- Migrating more than 9,000 workloads to AWS including 300 ERPs
- Plans to reduce datacenter footprint from 34 to 4 over the next three years
- GE Oil & Gas division leading company-wide effort, migrating more than half of its core applications while cutting 52 percent in TCO
- Using AWS with agile methodologies, automation has helped GE Oil & Gas cut outages by 98%
GE’s challenge and outcome

GE Oil and Gas defined an aggressive strategy to migrate 100% of their application portfolio to the cloud and in 18 months have migrated over 250 applications to AWS.

Agile methodologies empowered a team to eliminate roadblocks and produced innovative concepts such as cloud parties where 27 applications went live in AWS in 1 week. A focus on automation and self-service functionality reduced outages by 98%, enhanced user experience and delivered significant ROI.

By effectively partnering with business leaders and application owners they have reduced their on premise infrastructure by 50% while eliminating obsolescence and simplifying operations, driving business outcomes with rapid speed and agility.

Topics will include application portfolio discovery, refactoring and obstacles that were overcome with an emphasis on rapid experimentation, creative use of native AWS services, integration of enterprise services and processes and impact to operations in the cloud.
O&G cloud journey

Progress 261 complete
On the road to 400 ...
- 100+ apps in 6 migration parties
- 80% cloud first adoption
- 98% reduction in P1/P0’s
- 15 cloud services created
- Velocity = 50 apps/qtr.

Automation The Bot Army Rises
15 O&G Bots deployed ...
- 179 instances terminated
- 49 TB storage released
- 95 instances downsized
- 72 instances upgraded
- 2 Self-(micro) Service Tools
- DB Script Execution
- Synthetic App Monitoring

KPI’s Simplification
Program Savings: 13M
Apps Eliminated: 57
Servers Eliminated: 791
Apps in Cloud: 261
Accelerators
S3Shuttle

s3 Publish & Subscribe

Java + AWS Native Services

- Flexible bucket/folder config
- Leverages multipart upload
- STS support w/ AWS SDK
- SNS notification on upload
- SNS notifies SQS queue
- Loosely coupled with SQS
- Simple command line interface
- Optional delivery notification

Cloud Service CTQ’s

<table>
<thead>
<tr>
<th>Cross Business</th>
<th>Migration Acceleration</th>
<th>Cycle Time Reduction</th>
<th>Automation</th>
<th>Cost Benefit</th>
<th>Simplification</th>
<th>Service Status</th>
</tr>
</thead>
</table>
Automated rehosting

Cloud Migration Solution

Racemi Benefits

- Deployed on Source server.
- Secure and firewall friendly.
- Supports Live capture, low overhead, fault tolerant.
- Simple Command line interface
- Supports security delegation via AWS Identity and Access Management (IAM) and AWS STS services.
- Capture once, deploy many.

Cloud Service CTQ’s

- Cross Business
- Migration Acceleration
- Cycle Time Reduction
- Automation
- Cost Benefit
- Simplification
- Service Status
The Bot Army
This is what “No-Ops” looks like

<table>
<thead>
<tr>
<th>Bot</th>
<th>Benefits</th>
<th>Update</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC2-Ogre</td>
<td>Kills Instances powered off &gt; 30 days</td>
<td>Operational, has cleared 243 VMs</td>
<td>●</td>
</tr>
<tr>
<td>EBS-Ogre</td>
<td>Snaps, then deletes unmounted EBS</td>
<td>Live, has freed 34.2TB, saving $3.4k</td>
<td>●</td>
</tr>
<tr>
<td>Chef-Ogre</td>
<td>Removes orphaned Chef nodes</td>
<td>Live, keeps Chef environment clean</td>
<td>●</td>
</tr>
<tr>
<td>EC2 Tag Refinery</td>
<td>Auto tags AssetID, UAI from AppCI</td>
<td>Daily, distributed to Cloud Community</td>
<td>●</td>
</tr>
<tr>
<td>RDS Tag Refinery</td>
<td>Auto tags AssetID, UAI from AppCI</td>
<td>Runs daily, 100% accurate tagging</td>
<td>●</td>
</tr>
<tr>
<td>ADOrganizerBot</td>
<td>Automated access provisioning</td>
<td>Corp AD team asked for guidance</td>
<td>●</td>
</tr>
<tr>
<td>DevDownsizer</td>
<td>Downsizes underutilized EC2s</td>
<td>Downsized 96. Distributed to Community</td>
<td>●</td>
</tr>
<tr>
<td>GenUpgrader</td>
<td>Upgrades generation of EC2 (C1-＞C4)</td>
<td>New! Upgraded 73 last execution.</td>
<td>●</td>
</tr>
<tr>
<td>AppTag Enforcer</td>
<td>Powers off EC2s if tags are not</td>
<td>Based off CMDB, gives 2 days to fix</td>
<td>●</td>
</tr>
<tr>
<td>IDMLinkBot</td>
<td>Enables IDM self service for Cloud</td>
<td>In place today, waiting for bugfix</td>
<td>○</td>
</tr>
<tr>
<td>EC2ReportDroid</td>
<td>Single pane of glass Amazon EC2</td>
<td>Heavily used by Admins</td>
<td>●</td>
</tr>
<tr>
<td>RDSReportDroid</td>
<td>Single pane of glass Amazon RDS overview</td>
<td>Statistics tracking for Chef, Apps, etc</td>
<td>●</td>
</tr>
<tr>
<td>DiskCleaner</td>
<td>Self-healing from Nagios alarms</td>
<td>Under development</td>
<td>○</td>
</tr>
<tr>
<td>DiskExpander</td>
<td>Self-healing from Nagios alarms</td>
<td>Under development, Windows live</td>
<td>○</td>
</tr>
<tr>
<td>AutoTTO</td>
<td>Ensure infra ready to go when apps go live</td>
<td>Requirements gathering</td>
<td>○</td>
</tr>
</tbody>
</table>
DevDownsizer

**Maximize efficiency**

- Pulls "underutilized" EC2s from AWS Trusted Advisor report, monthly
- Leverage AWS Powershell SDK
- What is underutilized?
  - <10% CPU utilization for 14 days
  - <5MB network I/O for 4 days or more
- Scheduled against Development envs today
- 96 machines downsized
- Cost Savings

**Downsize underutilized EC2s**

- Pulls "underutilized" EC2s from AWS Trusted Advisor report, monthly
- Leverage AWS Powershell SDK
- What is underutilized?
  - <10% CPU utilization for 14 days
  - <5MB network I/O for 4 days or more
- Scheduled against Development envs today
- 96 machines downsized
- Cost Savings
Cloud Migration Parties
WOW – what happened here?

Better project plans  No
Better Issue management  No
Ahhh….. I got it….
You implemented a new tool!!!  No

Here is the answer …Wait for it  Wait for it
It was mandated!!!  So you fudged the numbers! 😊 No
What did we change?

- Backlog
- Standups
- Pivot
- Progress

Apps Moved in 2014

Step change in performance

Agile Execution Mechanism YTD

- 52 Week Journey effort
- 26 Sprints
- Every 2 Weeks completions
- Cloud Party after 2-3 Sprints reviews
- 9 Product Streams driving execution
It’s about working differently

Development Teams
- Project Manager
- Functional Lead
- Technical Lead
- Development Team
- Test

Sad users

Large distributed teams that need oversight

Backlog
- Large work pieces

Small work pieces

Agile Team
- Ninja Team

Simpler approach
- Monitoring
- Automation
- Automated testing

System

Happy users

It’s about clock speed – cycle time
Navigating the roadblocks

**Management**
**Preparation**
Pre-work and timeline coordination for future success

**Planning**
Take into consideration application upgrades and team schedules

**Team Composition**
**Wing to Wing**
Evolve siloed workers to be cross functional

**Third Party Vendors**
**Validate**
Confirm that licensing supports cloud
**Educate**
Demystify cloud for vendors
**Collaborate**
Partner with vendor on application migration

**Apps to Pipeline**
**SME Partnership**
Leverage SME to build migration funnel and force prioritization

**Social engineering**
Ask the right questions to stretch the scope of discussion

**Capability & Functionality**
Incentivize movement through next generation cloud aware toolsets

**Team Composition**
**Wing to Wing**
Evolve siloed workers to be cross functional

**Third Party Vendors**
**Validate**
Confirm that licensing supports cloud
**Educate**
Demystify cloud for vendors
**Collaborate**
Partner with vendor on application migration
Lessons Learned

**Automate, then Automate More**
Everything we do is with automation in mind, from deployment to operations. This is the only way to survive at scale.

**Embrace Agile**
From organization structure to project management, everything we do is with agile principles in mind.

**Work Instead of Workflow**
Embracing automation has allowed our employees to concentrate on doing work, instead of filling out workflows.

**Security at Every Layer**
Fully utilizing the security provided in the public cloud allows us to have confidence in a multi-tenant world.

**Bias toward action**
Everyone has a reason not to move to cloud. Our mission is to find more reasons why we should.

**Encourage (calculated) Risks**
Celebrate failure. Talk about pivots. Continuously examine new tools. This leads to rapid innovation resulting in progress.

**Enablers**

- **Collaboration** - Embed Security & Risk teams, CIO + CTO + Corp partnership
- **Transformation** – Rebuild technology skill sets, encourage diversity and embrace “hands-on”
- **Cloud Aware** – Rehosting is OK if it maximizes margin, agility, resilience & performance
- **Pipeline** – A pipeline of 50+ will ensure consistent velocity
¡Gracias!