Above Property Data Center

Delaware North migrated 90% of systems in 4 months

Brian Alessi – Applications Manager

Strategy

Business Objectives

- Growth
- Enhanced customer experience 24/7 business
- Operational efficiency

IT Objectives

- Improve technical agility (legacy, speed to market)
- Maximize technical investments
- Refocus from traditional IT to customer focus

Our Vision

- Started 3 years ago with Cloud, mobile, SOA, network
- Solutions need to work operationally, technically and financially
- Start small, learn, incremental improvements
  - Cloud started with move of 50 websites to AWS including
    - KennedySpaceCenter.com, YosemitePark.com, DelawareNorth.com
    - Results - operational, technical, financial
  - Set vision for Delaware North Data Center

Opportunity

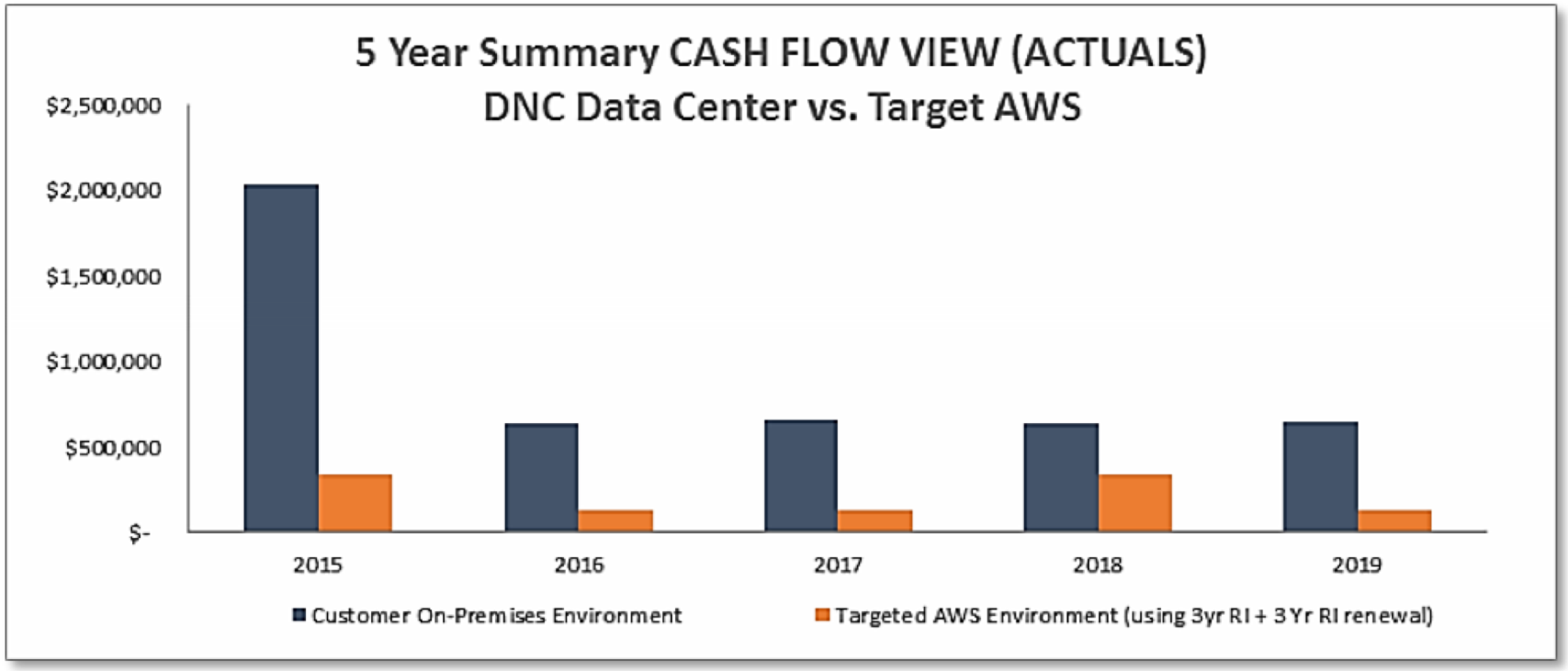
Delaware North

Use Data Center move costs to accelerate moving old Data Center to AWS.

Business Justification

- Technical
  - Risk Assessment - Reliability
  - Support Model
- Operational
  - Scalable, Fast to market
- Financial
  - Proforma - Worked with AWS Business Development on TCO
  - ROI
  - Cost model

Business Financials



- We projected savings of $3.5 million over 5 years on our run rate

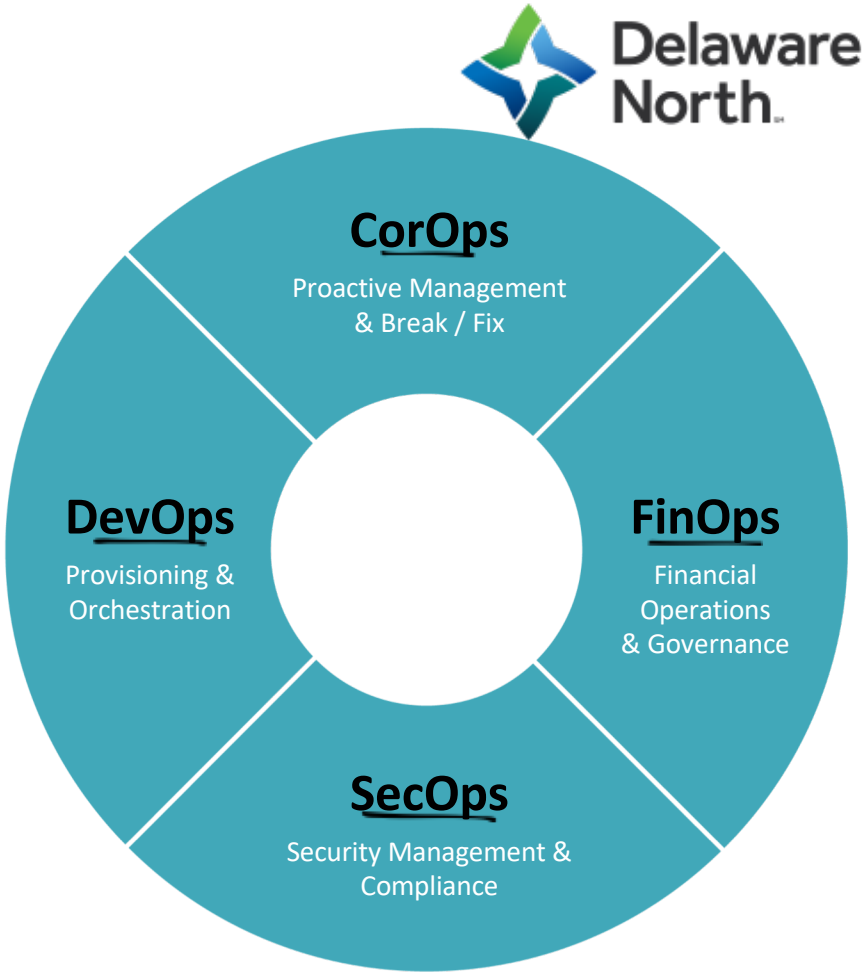
Research, Planning and Architecture

- Preparation
  - Inventory
  - Dependencies
  - Cross Team communications
- Security Baked in from the Start!
- Automation
- Governance
- Tracking the moving target
  - Agile Process

Very fast timeline soooo…… Resistance is futile!

Partner Search

- AWS Premier Consulting Partner
- AWS Managed Services
- 24/7 hours with offices in Europe, US and Canada



Then we began our Journey

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- Late February - Mid June 2015
  - Architecture
  - Build
  - Lift + Shift
  - Continuous Optimization
  - Continuous Environmental Improvement

Today

- Moved 225 of our corporate systems
- 90% of our corporate data center has been moved out
- Automating and continuous optimization and cost reduction
- Additional benefits
  - Better availability
  - Better uptime
  - Better data and reporting on our services

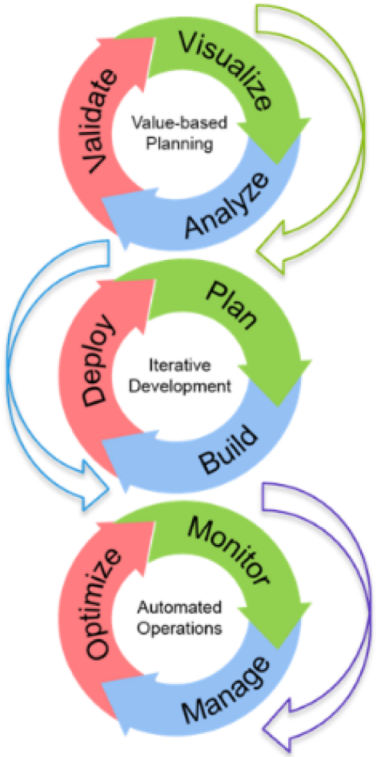
Future

- Transparent cost allocation model
- More focus on leveraging AWS cost model
  - A stadium might have 12 events per year
- Automation and continuous optimization
- Phase 2: Field Data Centers
  - 150+ locations begin migration
  - Some excellent economies of scale
  - POS / Admin
  - AWS Workspaces (PCs, POS)
  - DevOps

An Agile Approach

To the Migration Factory

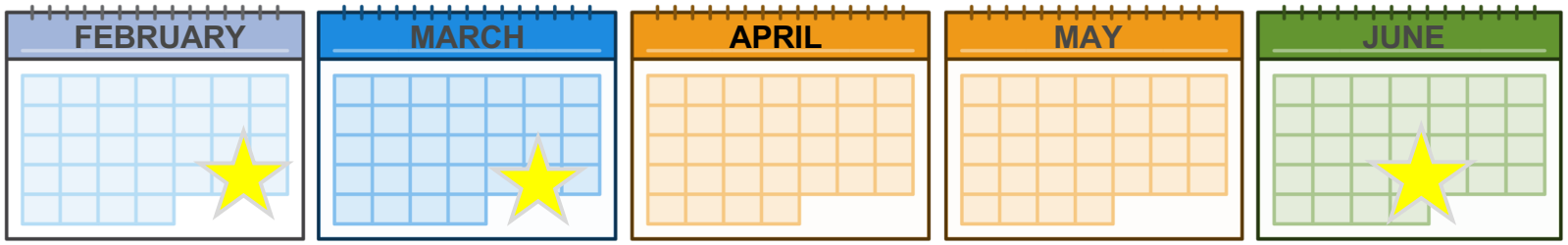
Migration Methodology



Three principal phases:

1. Assessment
2. Migration Factory
3. Optimisation

Project Timeline



Project Start

Discovery & Design

Migrations

Migrations

Project End

Estate Discovery

Pre-Migration Estate

- VMware estate
- Over-provisioned in places
- Legacy OSs
- Legacy apps

Estate Discovery

- How do you know what you have?
- Affinity between applications
- Automated tooling to clarify scope for migration
  - Speed
  - Accuracy
  - Confirmation
- No silver bullet – We had a few “Oops” moments

Buildout and PCI Compliance

AWS Environment Build

- Built using CloudFormation, Troposphere and Boto
- Entire network architecture version-controlled
- Custom CLI utility used for updates
- Governance automation checks policy compliance
- Alerting via HipChat for non-compliance

PCI Considerations

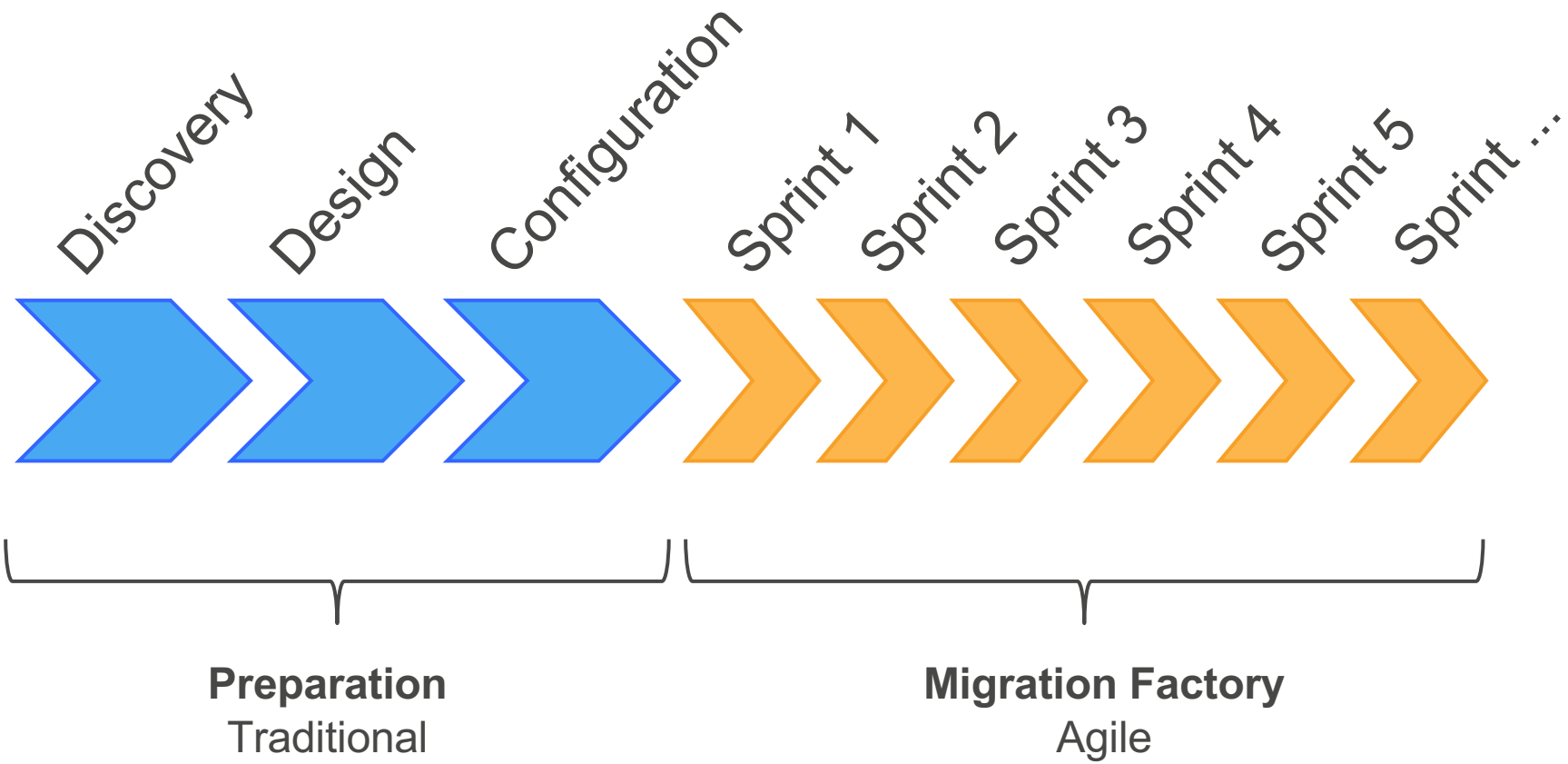
- Estate components subject to PCI compliance
- Source machines with no Internet access
- Dedicated:
  - AWS account
  - VPC
  - Direct Connect link
  - Access to instances
- Involve QSAs early

Migration Workflow

Migration Workflow

Tips for a Successful Migration

#1 - Velocity = Preparation + Agility



#2 - Sprint for 100 Meters, not 400

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Shorter sprints means:

More chances to show success to management

More sprint retros, so more frequent feedback

More momentum, higher velocity

#3 - Play Poker

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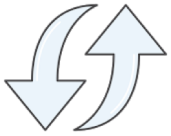
- Impossible to accurately estimate migration times
- Use relative complexity estimates
- Build a complexity baseline of points per week
- Complexity estimations during sprint planning

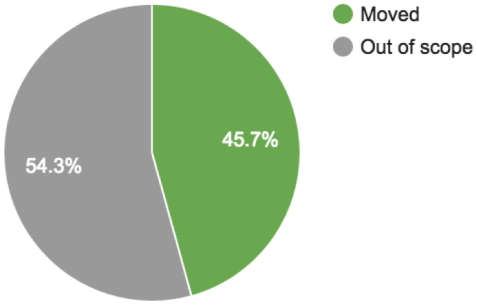
CloudEndure as a Migration Tool

Migration Challenges

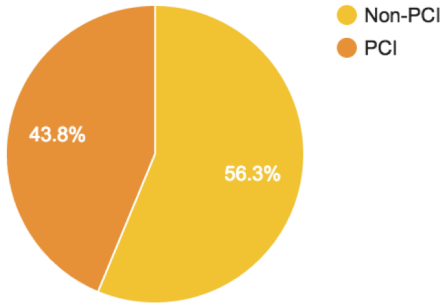
	No Interruptions	
	Low Cutover Times	
	Multiple Applications and Operating Systems	
	Converting On-premise Workloads to AWS	

Achievements and Lessons

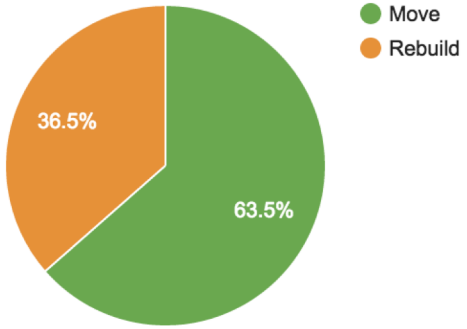
Some Migration Statistics



96 servers moved to AWS
114 out of scope inc.
~100 decommissioned



42 PCI/DMZ servers
54 non-PCI servers



61 Lift & Shift
35 Rebuilt

Lessons Learned - What Worked

- Migrations in Agile mode
- Adapting to customer's tooling
- Systematic LLD validation/sign-off
- Ability to take advantage of time zones
- **Committed core team**
    - Competing workloads managed so core team could remain focused

Lessons Learned - Challenges

- PCI environment connectivity
- Need to shield migration team in war room
- Lift-and-shift first, optimize later
- Biggest Challenge:
  - **Acceptance of change from larger IT group**
  - **Education of larger IT group**

Thank you!