Service OnBoarding:
A Process Approach for Uniting ITIL and DevOps

Bill Cunningham
Service OnBoarding

A Process Approach for Uniting ITIL and DevOps through Standardized Non-Functional Requirements
DevOps: Goals

• - Establish a comprehensive development environment that includes the intended production environment.
  – Everything is checked in and the intended production configuration is managed through source control

• - Establish a consistent release pattern such that testing and release is automated.
Service Onboarding: Goals

• Minimize the cost and complexity of delivering and managing services by providing a structured framework for collecting and delivering non-functional Service requirements.

• Maximize the efficiency of managing the infrastructure by providing a tiered library of repeatable infrastructure builds.

• Define a standard approach to introducing new or changed services to the production environment.
DevOps: Goals

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Service Onboarding:

Goals

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• Maximize the efficiency of managing the infrastructure by providing a tiered library of repeatable infrastructure builds.

• Define a standard approach to introducing new or changed services to the production environment
Service Onboarding: Benefits

- Reduced time to bring on New Services
- Reduce number of defects and incidents in the onboarding process
- Reduce time to authorize changes
- Documented audit trail for the release

Through

- Defining standardized procedures for common & repeated steps
- Defining a standard ‘menu’ of non-functional requirements
DevOps

• DevOps = Culture + Tools

- Jez Humble
DevOps

• DevOps = Culture + Tools
  - Jez Humble

But... Beware ‘Tool Delusion’
Organizational ‘Vital Signs’

• Cross-Functional Leadership Team
  – Cf. Lencioni
  – ‘First Team’

• WIP: Understanding and control
  – Prioritization mechanism
  – Capacity

-Projects
-% Unplanned Work
Prereqs for Service Onboarding

• Change Management
  – Operational Readiness

• Cross-Functional Team
  – Management Buy-In
  – Dev & Ops – high level of cooperation

• Service Catalog ➔ CMDB
Operational Readiness

• Pre-CAB
  – Square away cross-functional responsibilities for Change execution and Warranty Support

• Checklist:
  – Security
  – Support
  – Environment Prepared
  – Etc.
ISO 20000 – Service Management System
Classic Value Chain

Michael Porter’s Generic Value Chain

<table>
<thead>
<tr>
<th>Support Activities</th>
<th>Firm Infrastructure</th>
<th>Human Resource Management</th>
<th>Technology Development</th>
<th>Procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Activities</td>
<td>Inbound Logistics</td>
<td>Operations</td>
<td>Outbound Logistics</td>
<td>Marketing and Sales</td>
</tr>
</tbody>
</table>
## IT Value Chain

<table>
<thead>
<tr>
<th>Support Activities</th>
<th>Primary Activities</th>
<th>Margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architecture, Portfolio and System Delivery</td>
<td>Demand/Relationship Management (PLAN)</td>
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<td>Risk, Security and Compliance</td>
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</table>

IT Value Chain

Primary Activities
- Demand/Relationship Management (PLAN)
- Solutions Development (BUILD)
- Service Support (RUN)

Support Activities
- Architecture, Portfolio and System Delivery
- IT Finance
- Sourcing, Staff and Vendors
- Risk, Security and Compliance
- Facilities and Operations
- IT Enablement

- Control flow
- Control WIP
- Design for Quality
  - Non-functional reqs
IT Value Chain
PLAN → BUILD → RUN

IT Value Chain
VisOps

Phases to Stabilize Operational Environment

• 1. Initial Stabilization (Control)
  – Reduce Unplanned Work
  – **Change Management** (Approval to Release)

• 2. Config & Service Cat
  – Service Dependencies (to app level)
  – ID Fragile Systems
VisOps

Phases to Stabilize Operational Environment

• 3. Repeatable Build Library
  – Repeatable process to build infrastructure from ‘bare metal’
  – Fuses
  – Release Team
  – Close loop between Pre-Production & Production
The IT Manufacturing Line Concept

Imagine a new service or application that moves from inception to production in pre-defined steps

• Each step has:
  – An Owner
  – Triggers, inputs and outputs
  – A known period of time for completion
  – Each input and output is pre-determined and predictable

• Each step’s progress is tracked and documented for transparency

• Changes to any step within the line is governed and controlled
The IT Manufacturing Line Concept

Some steps within the IT manufacturing line are manual and require a team effort to produce outcomes the business expects.
The IT Manufacturing Line Concept

Some steps may be automated by software
The IT Manufacturing Line Concept

The results yield:
• Predictable results
• Predictable costs
• Predictable time
• Transparency
• Efficient IT

- Setting the stage for automation
Service Onboarding: Positioning

• ‘Traditional’ – Stabilize & Structure
  – Leadership Team
  – Stabilize (VisOps)
  – Operational Readiness
  – Service Onboarding

• ‘Cloud’ – Holistic Delivery Process
  – Leadership Team → Cloud Delivery unit
  – Service Onboarding
Service Onboarding

**Inputs**
- New Service Requirements
- Project Charter
- Project Portfolio

**Activities**
- Process Design
  - Defined Service Tiers
  - Defined Process Integrations
- Service Design
- Operational Transition
- Promote to Production
- Evaluate Process Performance

**Outputs**
- Standard Build Architectures
- Updated Integrated Process Requirements
- New/Changed Services

**Supporting**
- Change/Release
- Service Operation
- Service Catalog
- CI/Service Owners
- Project Mgt.

**Receiving**
- Service Operation
- Service Transition
- CI/Service Owners

**Critical Success Factors**
- CMDB/Service Catalog
- Project Mgt. Methodology
- Culture of Requirements Definition
Planning Phases

- Management and Planning
  - Policies, Standards, Guidelines
  - Service Criticality Assessment
  - Service Tiering
  - Information Security Classification, Policy and Standards

Operational Phases

- Operational Planning
  - Define Images and Variations
  - Define Operational Hardening attributes
  - Define Coding practices
  - Develop backup, replication, monitoring,
  - Define Support structure

- Service Classification
  - Categorize Service
  - Classify Availability Tier
  - Classify Capacity Tier
  - Classify Security Tier

- Service Provision
  - Configure Network
  - Provision Standard Image & Variations base upon tiering
  - Apply Device/OS/FW Hardening
  - Application & DB Installation (if Server), Hardening
  - Configure and Customize per classification (monitoring, backups/replication, security)

- Service Turnover Planning
  - Communication plan
  - Develop support model and integration based upon tiering
  - Develop training and knowledge content
  - Test and Train

- Service Introduction
  - Assess Deployment Readiness
  - Prepare for Migration
  - Authorize Deployment
  - Deploy

Feedback/Continuous Improvement

SO: Management Planning

- 2.3.5 Define Policy
- 2.3.15 Perform Preliminary Criticality Assessment
- 2.3.20 Define Service Tiers
- 2.3.25 Define Standardization Guidelines
- 2.3.10 Define Process Steps and Integrations

Supporting Process Documentation
Organizational Strategy
Information Security Policy and Standards
Coding Policies and Standards
Infrastructure Standards
SO: Management Planning

Management Planning

- Service Catalog – w/ Application Mappings
- Supporting Process Documentation
- Project Management Method
- Organizational Strategy
- Information Security Policy and Standards
- Coding Policies and Standards
- Infrastructure Standards

- Process Definition
- Service Onboarding Process Policy
- Process Integration Points
- Updated Supporting Process Requirements
- Service Criticality Assessment
- Service Sensitivity Assessment
- Information Security Assessment
- Non-Functional Requirements Structure
A) Outputs from Management Planning
B) Architectural Constraints

Operational Planning

Cross-Functional Management and Design Team

A) Defined Standard Builds
B) Build Procedures and Work Instructions
C) Defined Standard Support Structures
D) ‘Runbook’ templates
### Storage Tiering and Service Catalog

#### Alignment Attributes

<table>
<thead>
<tr>
<th>Scheme</th>
<th>Specification</th>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
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<tbody>
<tr>
<td>Primary Storage</td>
<td></td>
<td></td>
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<tr>
<td><strong>Guaranteed Performance</strong></td>
<td>Performance throughput per port (I/O sec)</td>
<td>5,000+</td>
<td>Upto 5,000</td>
<td>Upto 3,5</td>
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<tr>
<td></td>
<td>Response time (ms)</td>
<td>&lt; 8ms</td>
<td>7-14ms</td>
<td>12-30m</td>
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<tr>
<td></td>
<td>Availability</td>
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<td>&lt; 26.5</td>
<td>&lt; 52.5</td>
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<tr>
<td>Archiving Storage</td>
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<tr>
<td>Performance</td>
<td>Response time</td>
<td>&lt; 1 second</td>
<td>&lt; 1 second</td>
<td>&lt; 24 hour</td>
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<tr>
<td></td>
<td>Throughput</td>
<td>&lt;= 300 Mbps</td>
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<tr>
<td>Availability</td>
<td>Maximum downtime (yr)</td>
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<td>&lt; 52.66 min</td>
<td>&lt; 175.2 hr</td>
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<tr>
<td>Retention &amp; Disposition</td>
<td>Retention period</td>
<td>&lt; 30 years</td>
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<td>&lt; 28 hours</td>
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<td>Recovery Classification</td>
<td>Recovery classification</td>
<td>Complete application restore</td>
<td>Complete application restore</td>
<td>File or file system restore</td>
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<td>Operational Recovery</td>
<td>Amount of data loss</td>
<td>1 hour</td>
<td>24 hours</td>
<td>24 hours</td>
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<tr>
<td>Objective</td>
<td>Time required for recovery</td>
<td>&lt; 30 minutes</td>
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<td>7 GB/min</td>
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<td>Recoverability</td>
<td>Ability to recover backed up data</td>
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<td>100%</td>
<td>98%</td>
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<td>Retention period</td>
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<td>Objective (RPO)</td>
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<td>&lt; 48 hour</td>
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<td>Disaster Recovery Time</td>
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<tr>
<td>Objective (RTO)</td>
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*Note: The table provides a comparative analysis of storage tiering and service catalog attributes, including performance, throughput, availability, retention, recovery, and disaster recovery objectives.*
### Service-Onboarding Process

#### Roles and Responsibilities

<table>
<thead>
<tr>
<th>Role/Position</th>
<th>Tech Lead/Mgr.</th>
<th>Service Owner</th>
<th>Process Owner</th>
<th>Service Desk</th>
<th>Release Manager</th>
<th>Implementation Manager/Lead</th>
<th>Project Manager</th>
<th>Business Owner</th>
<th>Business Relationship Manager</th>
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<tbody>
<tr>
<td>Tech Lead/Mgr.</td>
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<tr>
<td>Release Manager</td>
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<td>Implementation Manager/Lead</td>
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<tr>
<td>Project Manager</td>
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<tr>
<td>Business Owner</td>
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<tr>
<td>Business Relationship Manager</td>
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</tr>
</tbody>
</table>

#### Execution Legend:
- R: Responsible, A: Accountable, C: Consulted, I: Informed

#### Activity Description

1. **Process Design**

   1. Document Policies, Standardizations & Guidelines
   2. Define Service Tiers / Classifications (DR, Security, Avail, Service Levels, Support)
   3. Define Standard Images

1. **Operational Transition Activities**

   1. Categorize Service
   2. Provision Standard Image & variations
   3. Device Hardening
   4. Application/DDB Installation (if Server)
   5. Configure and Customize (Configurations, Monitoring, Backups, Security, etc.)
   6. Record Assets & Configuration Item
   7. Test and Validation
   8. Operational Turnover / Knowledge Transfer (documentation, training, checklists, assignment groups, etc.)
   9. Promote to Production, Go Live
## IT Value Chain

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<tr>
<td>Demand/ Relationship Management</td>
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</tr>
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<td>(PLAN)</td>
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</tr>
<tr>
<td>Solutions Development</td>
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</tr>
<tr>
<td>(BUILD)</td>
<td>(BUILD)</td>
</tr>
<tr>
<td>Service Support</td>
<td>Service Support</td>
</tr>
<tr>
<td>(RUN)</td>
<td>(RUN)</td>
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</tbody>
</table>

- Control flow
- Control WIP
- Design for Quality
  - Non-functional reqs
Thank you for attending this session.

Please don’t forget to complete a session evaluation on the conference app.
Continuous Delivery

• The purpose of Continuous Delivery is to reduce the cycle time between an idea and usable software:

* Automate (almost) everything necessary to create usable software
* Version complete software systems (not just source code) for every change committed to version control system
* Employ a Deployment Pipeline in which the entire system is recreated whenever a change is committed to the version-control system and provide continuous feedback
* Identify one delivery team consisting of various delivery experts - build, deploy, provisioning, database, testing, etc. - a concept emphasized in the DevOps movement

- Blurb on ‘Continuous Delivery’ by Jez Humble
4 Types of Work

- Business Project
- Internal IT Project
- IT Changes
- Unplanned Work
  - Identify sources
  - Eradicate (cf. 2\textsuperscript{nd} Way)

Are there really IT Projects?
SERVICE ONBOARDING: A PROCESS APPROACH FOR UNITING ITIL AND DEVOPS

Supplemental Handout

Bill Cunningham
bill.cunningham@cppit.com
Service Onboarding: A Process Approach for Uniting ITIL and DevOps

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Service Onboarding - Process Summary

**Inputs**
- New Service Requirements
- Project Charter
- Project Portfolio

**Activities**
- Process Design
  - Defined Service Tiers
  - Defined Process Integrations
- Service Design
- Operational Transition
- Promote to Production
- Evaluate Process Performance

**Outputs**
- Standard Build Architectures
- Updated Integrated Process Requirements
- New/Changed Services

**Supporting**
- Change/Release
- Service Operation
- Service Catalog
- CI/Service Owners
- Project Mgt.

**Critical Success Factors**
- CMDB/Service Catalog
- Project Mgt. Methodology
- Culture of Requirements Definition

**Receiving**
- Service Operation
- Service Transition
- CI/Service Owners
# Service Onboarding – Phase Breakdown

## Planning Phases

- Policies, Standards, Guidelines
- Service Criticality Assessment
- Service Tiering
- Information Security Classification, Policy and Standards

## Operational Phases

- Define Images and Variations
- Define Operational Hardening attributes
- Define Coding practices
- Define Support structure

## Service Classification

- Categorize Service
- Classify Availability Tier
- Classify Capacity Tier
- Classify Security Tier

## Service Provision

- Configure Network
- Provision Standard Image & Variations base upon tiering
- Apply Device/OS/FW Hardening
- Application & DB Installation (if Server), Hardening
- Configure and Customize per classification (monitoring, backups/replication, security)

## Service Turnover Planning

- Communication plan
- Develop support model and integration based upon tiering
- Develop training and knowledge content
- Test and Train

## Service Introduction

- Assess Deployment Readiness
- Prepare for Migration
- Authorize Deployment
- Deploy

## Feedback/Continuous Improvement

---

1. The **Planning Phases** are undertaken to define the process. Similar to any business process (or ITIL process), Service Onboarding should be established with a clear Process Owner, process policies and documentation. Service Onboarding should include the establishment, up front, of organizational standards and Service tiers.

2. The **Operational Phases** are the structured process that is established during the Planning Phased. Each new or significantly changed service is then processed through these phases.
Service Onboarding – Management Planning:

Inputs and Outputs
Service Onboarding – Operational Planning

The Operational Planning phase uses the policies and standards defined in Management Planning to define standard builds and practices for the design and support of services.

The Service Onboarding Design Team is accountable for using the outputs of the Management Planning phase and defining the Operating Standards for the Operational Phases. The IT Governance structure is accountable for overseeing and accepting the definition, policies, standardizations and process steps that will define the overall Service Onboarding process.
### Storage – Sample Tiering Scheme

<table>
<thead>
<tr>
<th>Alignment Attributes</th>
<th>Specification</th>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
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<tr>
<td>Scheme</td>
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<td>Tier 3</td>
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<tr>
<td></td>
<td>Response time (ms)</td>
<td>&lt;3ms</td>
<td>7-14ms</td>
<td>12-30ms</td>
</tr>
<tr>
<td></td>
<td>Availability</td>
<td>&lt;26.6</td>
<td>&lt;26.6</td>
<td>&lt;62.6</td>
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<tr>
<td><strong>Archiving Storage</strong></td>
<td></td>
<td>Tier 1</td>
<td>Tier 2</td>
<td>Tier 3</td>
</tr>
<tr>
<td>Performance</td>
<td>Response time</td>
<td>&lt;1 second</td>
<td>&lt;1 second</td>
<td>&lt;24 hour</td>
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<tr>
<td></td>
<td>Throughput</td>
<td>&lt;=300 Mbps</td>
<td>&lt;=700 Mbps</td>
<td>&lt;=280 Mbit/s</td>
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<tr>
<td>Availability</td>
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<td>&lt;52.56 minutes</td>
<td>&lt;175.2 hour</td>
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<tr>
<td>Retention &amp; Disposition</td>
<td>Retention period</td>
<td>&lt;30 years</td>
<td>&lt;10 years</td>
<td>&lt;3 years</td>
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<td>Data shredding compliance</td>
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<td>No</td>
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<td>&lt;Hourly</td>
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<td>No</td>
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<td>Offsite</td>
<td>Recovery point objective</td>
<td>&lt;1 minute</td>
<td>&lt;28 hours</td>
<td>&lt;38 hour</td>
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<tr>
<td><strong>Operational Recovery</strong></td>
<td>Recovery classification</td>
<td>Complete application restore</td>
<td>Complete application restore</td>
<td>File or file system restore</td>
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<tr>
<td>Operational Recovery Point Objective</td>
<td>Amount of data loss</td>
<td>1 hour</td>
<td>24 hours</td>
<td>24 hour</td>
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<tr>
<td>Operational Recovery Time Objective</td>
<td>Time required for recovery</td>
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<td>&lt;30 minutes</td>
<td>7 GB/min</td>
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<tr>
<td>Recoverability</td>
<td>Ability to recover backed up data</td>
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<td>100%</td>
<td>99.9%</td>
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<td>Length of time that data is retained</td>
<td>2 hours</td>
<td>24 hours</td>
<td>3 weeks</td>
</tr>
<tr>
<td><strong>Disaster Recovery</strong></td>
<td>Disaster Recovery Point Objective (RPO)</td>
<td>Amount of data loss</td>
<td>0 minutes</td>
<td>&lt;4 hours</td>
</tr>
<tr>
<td></td>
<td>Disaster Recovery Time Objective (RTO)</td>
<td>Time required to restore data</td>
<td>&lt;2 hours</td>
<td>&lt;12 hours</td>
</tr>
</tbody>
</table>
Service OnBoarding – Process Integration
IT Value Chain

Service Onboarding and the Value Chain
## Service Onboarding: Sample ARCl

### SERVICE ON-BOARDING PROCESS

Roles and Responsibilities

<table>
<thead>
<tr>
<th>Execution Legend:</th>
<th>Tech Lead/Mgr.</th>
<th>Service Owner</th>
<th>Process Owner</th>
<th>Service Desk</th>
<th>Release Manager</th>
<th>Implementation Manager/Lead</th>
<th>Project Manager</th>
<th>Business Owner</th>
<th>Business Relationship Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Responsible, A-Accountable, C-Consulted, I-Informed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Activity Description

#### 1.0 Process Design

<table>
<thead>
<tr>
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<th>Business Owner</th>
<th>Business Relationship Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Document Policies, Standardizations &amp; Guidelines</td>
<td>I</td>
<td>CI</td>
<td>A</td>
<td>I</td>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2 Define Service Tiers / Classifications (DR, Security, Avail, Service Levels, Support)</td>
<td>I</td>
<td>R</td>
<td>A</td>
<td>I</td>
<td>I</td>
<td>C&lt;sup&gt;1&lt;/sup&gt;</td>
<td>R&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3 Define Standard Images</td>
<td>CI</td>
<td>A</td>
<td>I</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 2.0 Operational Transition Activities

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>Tech Lead/Mgr.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2.1 Categorize Service</td>
<td>AR</td>
<td>I</td>
<td>R</td>
<td>C&lt;sup&gt;1&lt;/sup&gt;</td>
<td>R&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Provision Standard Image &amp; variations</td>
<td>A</td>
<td>R</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3 Device Hardening</td>
<td>A</td>
<td>R</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4 Application/DB Installation (if Server)</td>
<td>A</td>
<td>R</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 Configure and Customize (Configurations, Monitoring, Backups, Security, etc.)</td>
<td>A</td>
<td>R</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.6 Record Assets &amp; Configuration Item</td>
<td>A</td>
<td>R</td>
<td>R</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.7 Test and Validation</td>
<td>CI</td>
<td>A</td>
<td>R</td>
<td>R</td>
<td>C&lt;sup&gt;2&lt;/sup&gt;</td>
<td>I&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.8 Operational Turnover / Knowledge Transfer (documentation, training, checklists, assignment groups, etc.)</td>
<td>CI</td>
<td>A</td>
<td>CI</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>I</td>
<td>I</td>
<td></td>
</tr>
</tbody>
</table>

#### 3.0 Promote to Production, Go Live

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</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>A</td>
<td>I</td>
<td>R</td>
<td>I</td>
<td>R</td>
<td>I</td>
<td>I</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>