AWS Landing Zone – Design Considerations (pt1)

Amazon Web Services

24 July 2018

Design Considerations

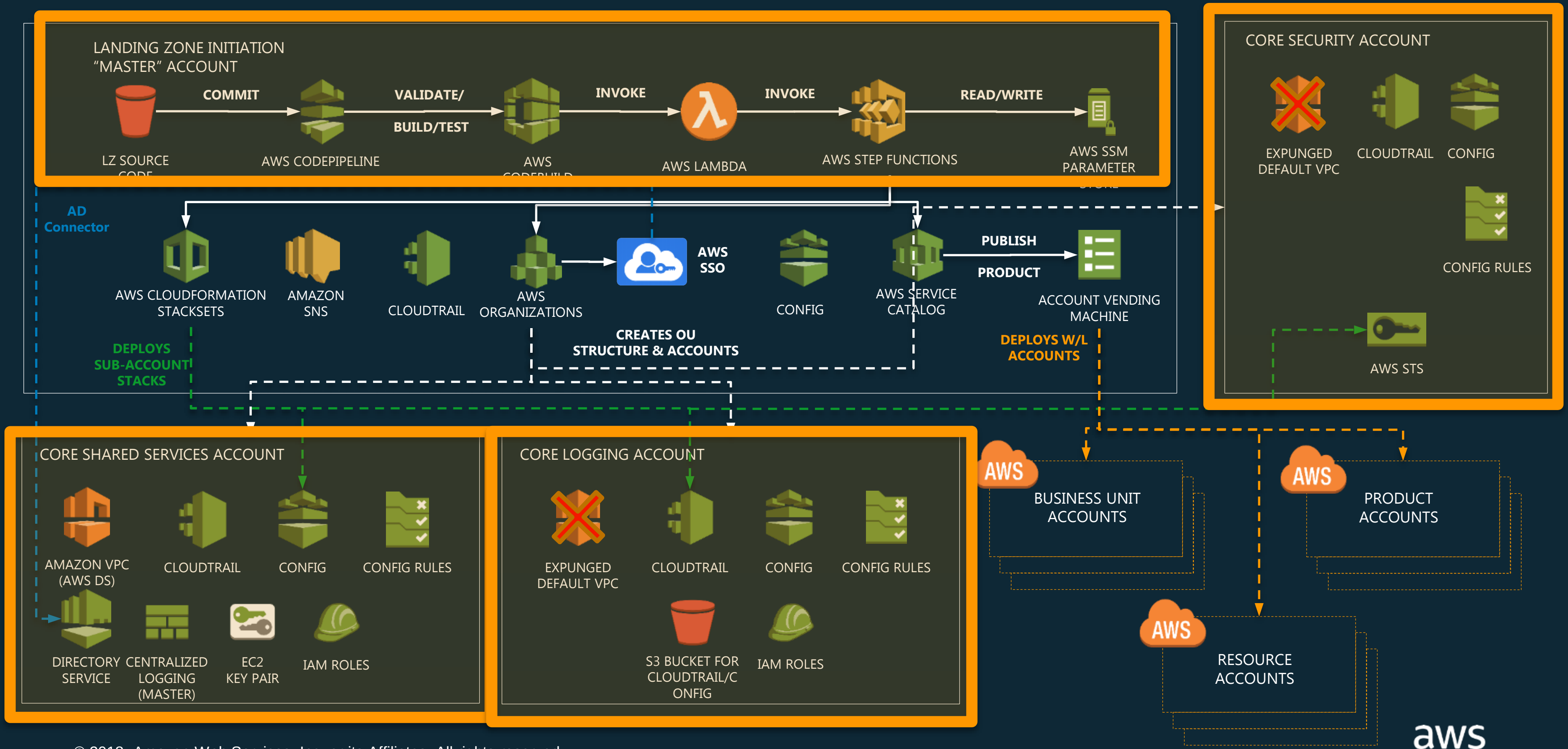
The Landing Zone Pipeline

- The baseline accounts deployed as part of the example implementation

Example Implementation - Core Accounts

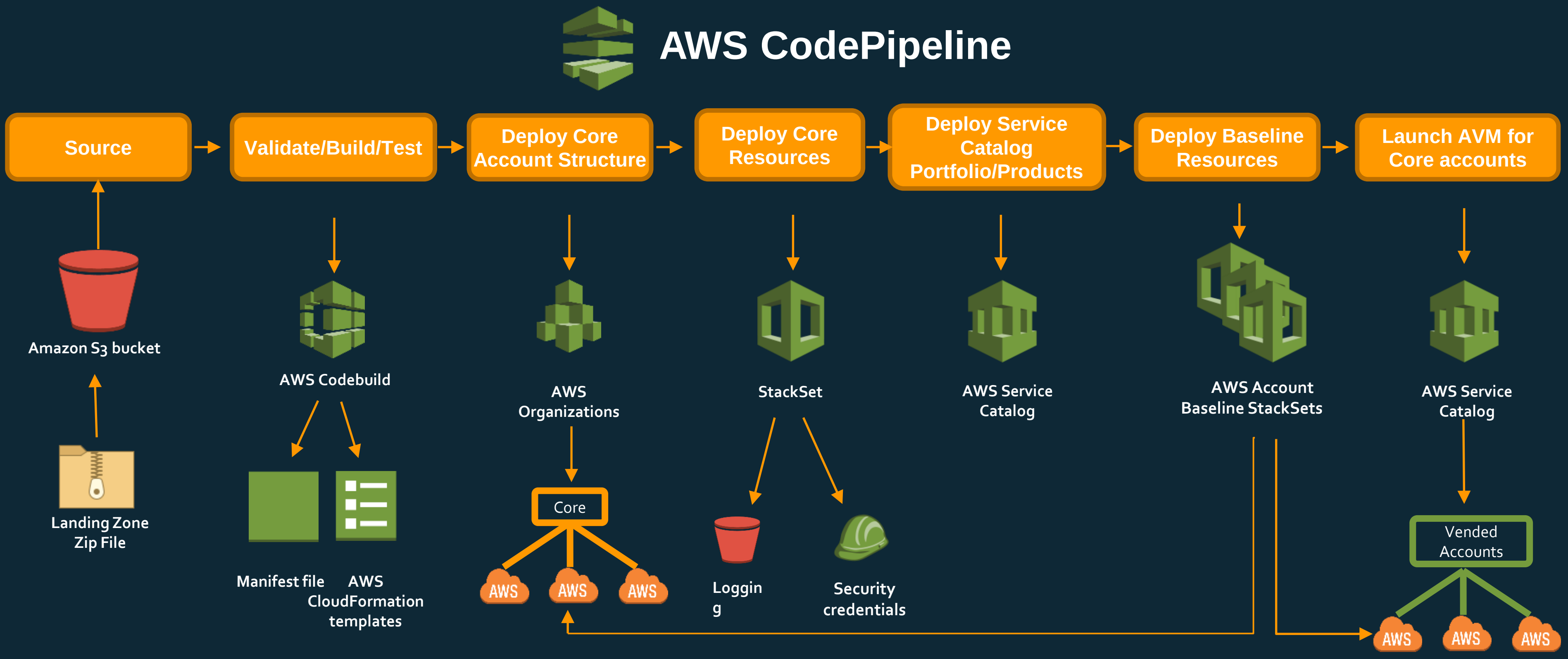
- The baseline accounts deployed as part of the example implementation

AWS Landing Zone – Pipeline and Core Accounts

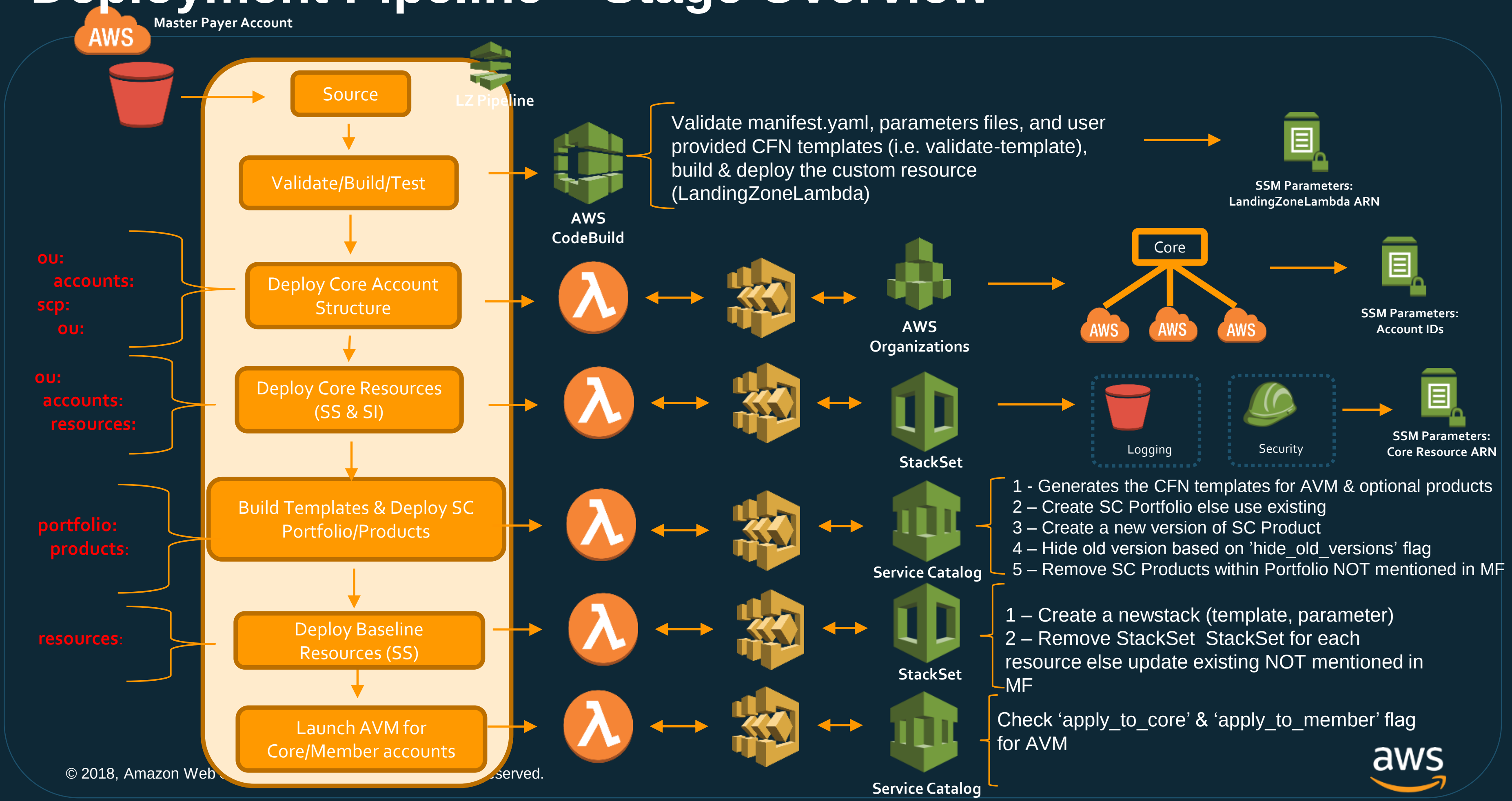


The Landing Zone Pipeline

Deployment Pipeline High Level



Deployment Pipeline – Stage Overview



Master Payer Account
AWS
LZ Pipeline
Source
Validate/Build/Test
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Build Templates & Deploy SC Portfolio/Products
Deploy Baseline Resources (SS)
Launch AVM for Core/Member accounts
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accounts:
scp:
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ou:
accounts:
resources:
portfolio:
products:
resources:
AWS CodeBuild
SSM Parameters: LandingZoneLambda ARN
AWS Organizations
Core
AWS
AWS
AWS
SSM Parameters: Account IDs
StackSet
Logging
Security
SSM Parameters: Core Resource ARN
Service Catalog
StackSet
Service Catalog
aws

Validate manifest.yaml, parameters files, and user provided CFN templates (i.e. validate-template), build & deploy the custom resource (LandingZoneLambda)

1 - Generates the CFN templates for AVM & optional products
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5 – Remove SC Products within Portfolio NOT mentioned in MF

1 – Create a newstack (template, parameter)
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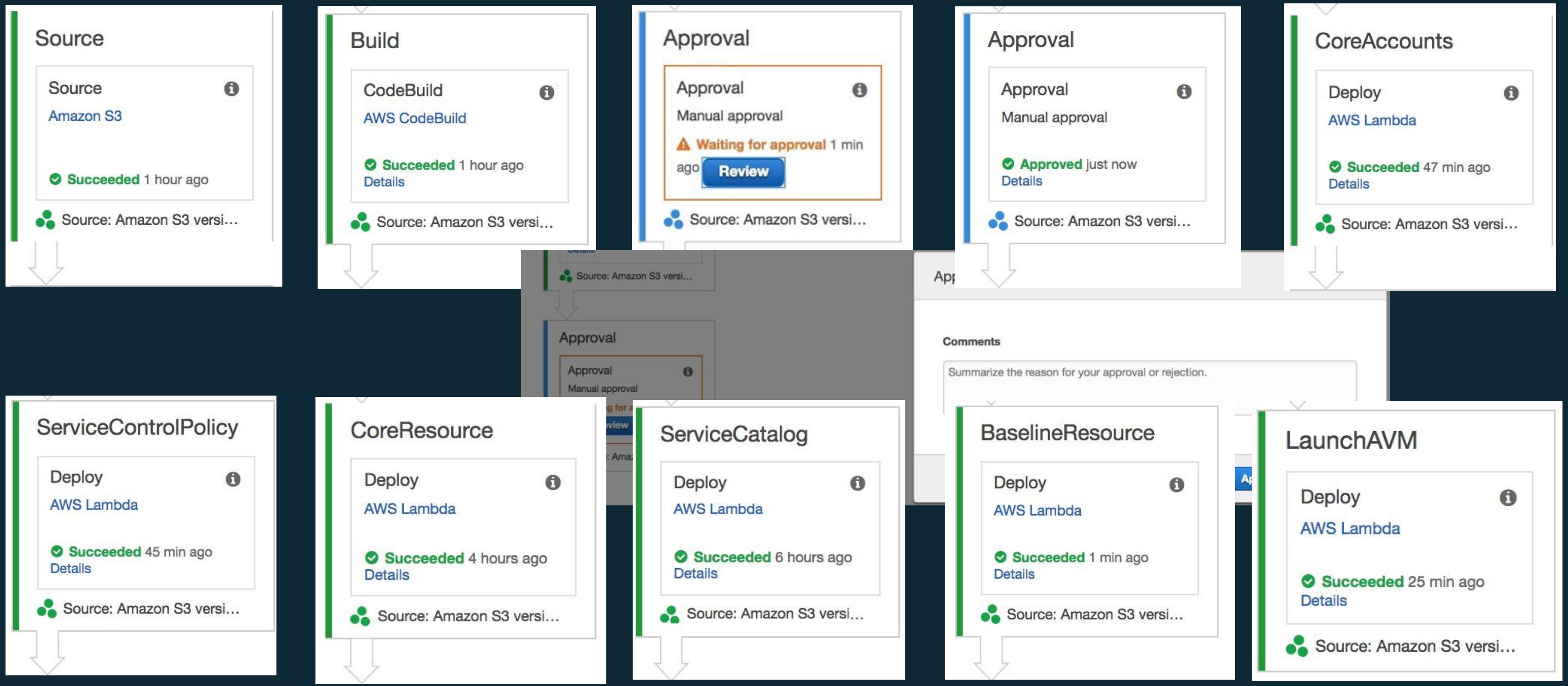
Check ‘apply_to_core’ & ‘apply_to_member’ flag for AVM

Implementation Pipeline - Stages



Source
Source ℹ
Amazon S3
✓ Succeeded 1 hour ago
Source: Amazon S3 versi…

Build
CodeBuild ℹ
AWS CodeBuild
✓ Succeeded 1 hour ago
Details
Source: Amazon S3 versi…

Approval
Approval ℹ
Manual approval
⚠ Waiting for approval 1 min ago Review
Source: Amazon S3 versi…

Approval
Approval ℹ
Manual approval
✓ Approved just now
Details
Source: Amazon S3 versi…

CoreAccounts
Deploy ℹ
AWS Lambda
✓ Succeeded 47 min ago
Details
Source: Amazon S3 versi…

Comments
Summarize the reason for your approval or rejection.

ServiceControlPolicy
Deploy ℹ
AWS Lambda
✓ Succeeded 45 min ago
Details
Source: Amazon S3 versi…

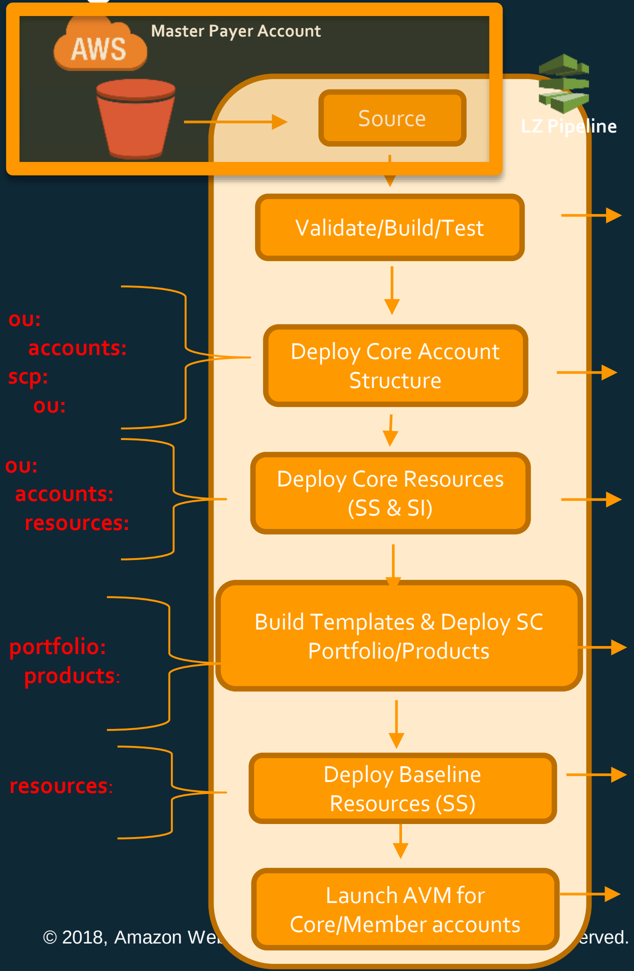
CoreResource
Deploy ℹ
AWS Lambda
✓ Succeeded 4 hours ago
Details
Source: Amazon S3 versi…

ServiceCatalog
Deploy ℹ
AWS Lambda
✓ Succeeded 6 hours ago
Details
Source: Amazon S3 versi…

BaselineResource
Deploy ℹ
AWS Lambda
✓ Succeeded 1 min ago
Details
Source: Amazon S3 versi…

LaunchAVM
Deploy ℹ
AWS Lambda
✓ Succeeded 25 min ago
Details
Source: Amazon S3 versi…

Stage 1 - Source code Artefact S3 Bucket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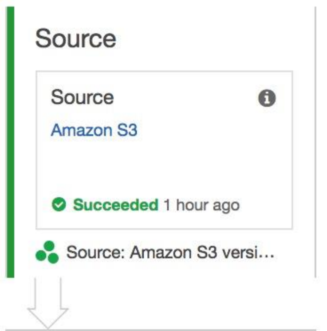
Snippet from aws-landing-zone-deployment.template


Source

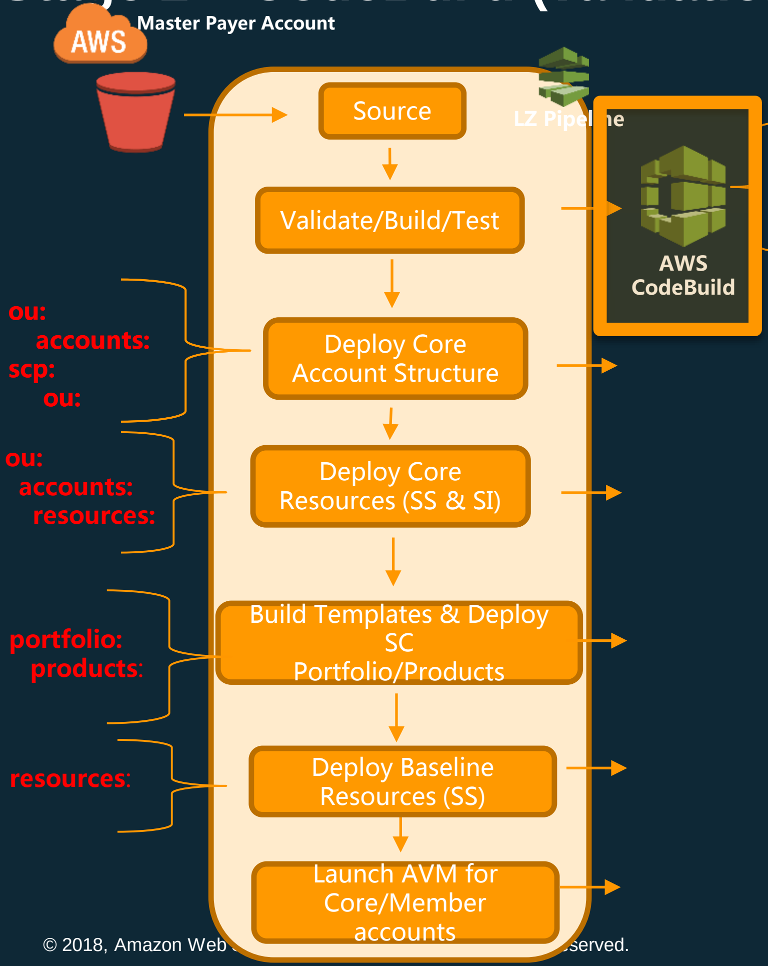
Source
Amazon S3

Succeeded 1 hour ago

Source: Amazon S3 versi…

```
Parameters:
  LandingZonePipelineS3Bucket:
    Type: "String"
    Description: "CodePipeline S3 bucket"
    Default: "landing-zone-framework-us-east-1"
  LandingZonePipelineS3Key:
    Type: "String"
    Description: "CodePipeline S3 Key"
    Default: "lz.zip"
  LandingZonePipelineArtifactS3Bucket:
    Type: "String"
    Description: "CodePipeline Artifacts S3 bucket"
```

Stage 2 – CodeBuild (validation and packaging engine)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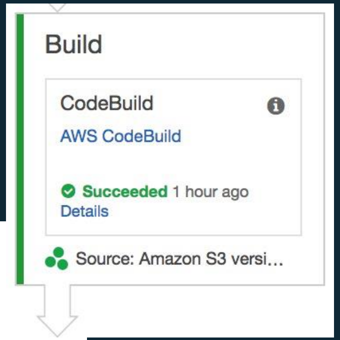

Build

CodeBuild

AWS CodeBuild

✓ Succeeded 1 hour ago

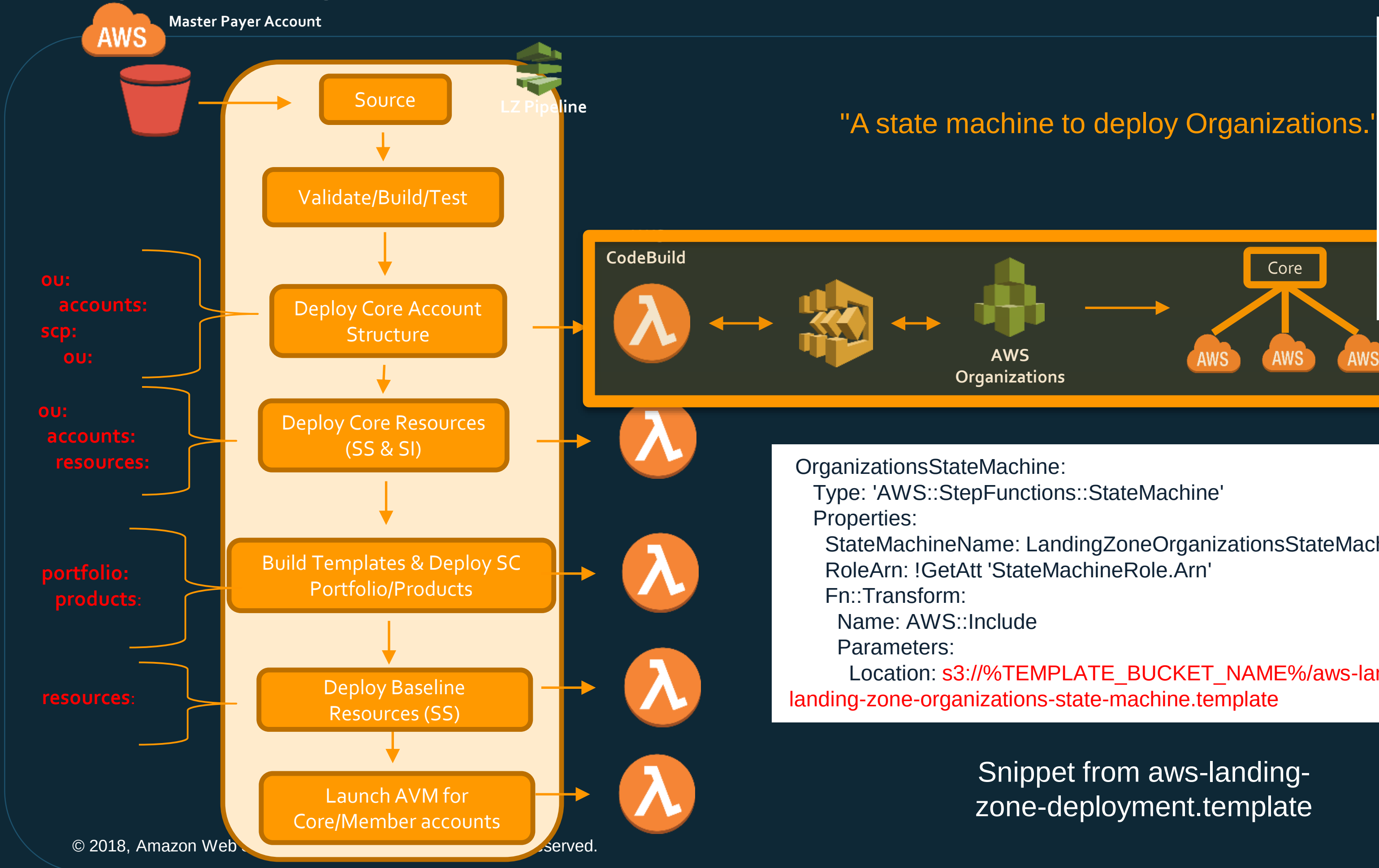
Details

Source: Amazon S3 versi...

```
LandingZoneCodeBuild:
    Type: AWS::CodeBuild::Project
    Properties:
      Name: AWS-Landing-Zone-CodeBuild
      ServiceRole: !GetAtt LandingZoneCodeBuildRole.Arn
      Source:
        Type: CODEPIPELINE
      Environment:
        ComputeType: BUILD_GENERAL1_SMALL
        Image: "aws/codebuild/nodejs:6.3.1"
        Type: LINUX_CONTAINER
      Artifacts:
        Name: !Sub ${LandingZonePipelineArtifactS3Bucket}-
Built
        Type: CODEPIPELINE
```

Snippet from aws-landing-zone-deployment.template

Stage 3 – Organizations State Machine (Step Functions)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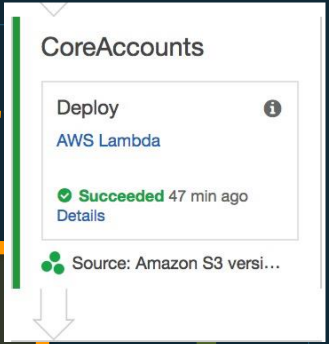
CodeBuild
AWS Organizations
Core
AWS
AWS
AWS
SSM Parameters: Account IDs

"A state machine to deploy Organizations."



CoreAccounts

Deploy
AWS Lambda

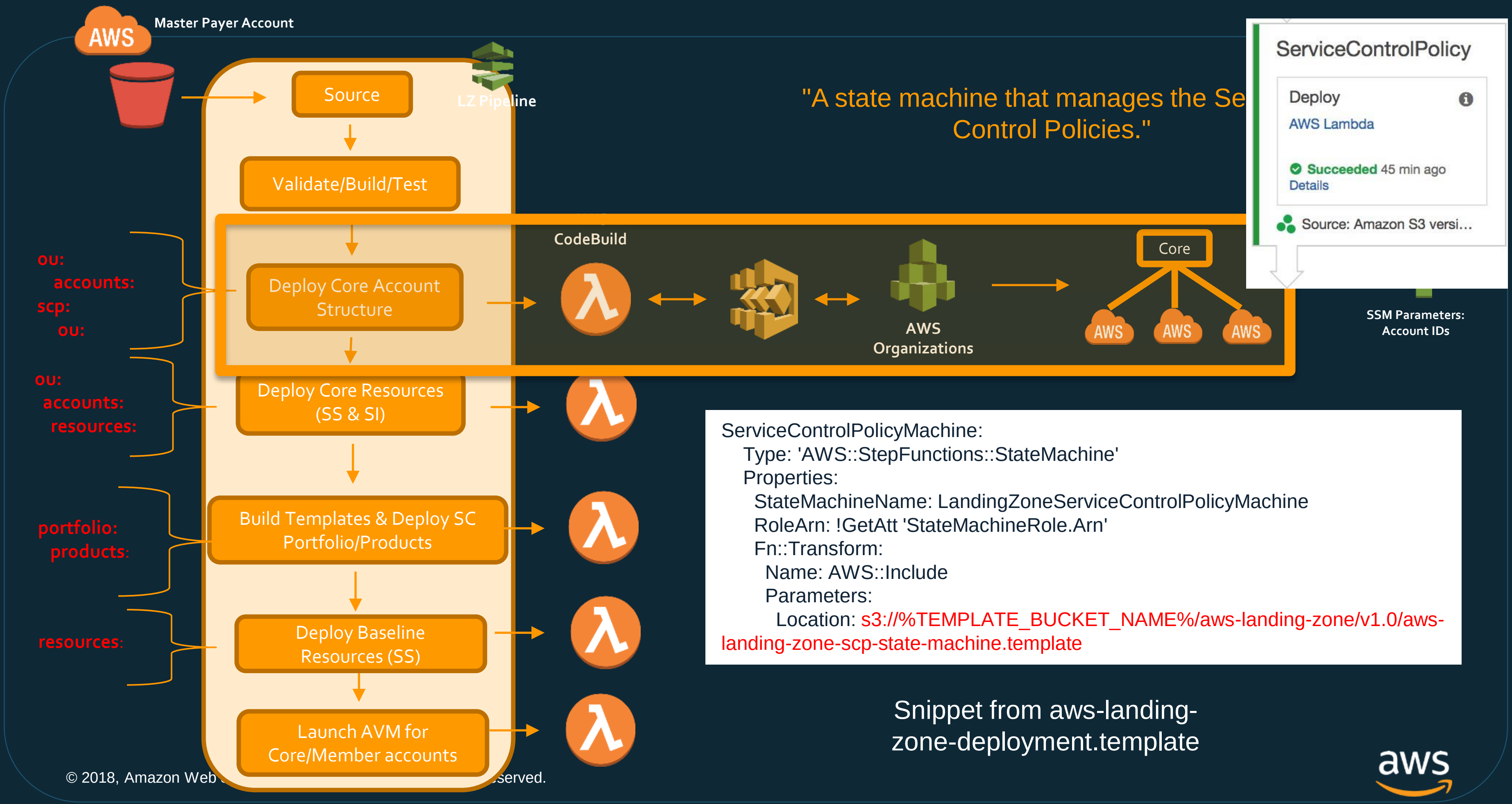
Succeeded 47 min ago
Details

Source: Amazon S3 versi...

```
OrganizationsStateMachine:
  Type: 'AWS::StepFunctions::StateMachine'
  Properties:
    StateMachineName: LandingZoneOrganizationsStateMachine
    RoleArn: !GetAtt 'StateMachineRole.Arn'
    Fn::Transform:
      Name: AWS::Include
      Parameters:
        Location: s3://%TEMPLATE_BUCKET_NAME%/aws-landing-zone/v1.0/aws-landing-zone-organizations-state-machine.template
```

Snippet from aws-landing-zone-deployment.template

Stage 3 – Service Control Policy State Machine (Step Functions)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"A state machine that manages the Se Control Policies."

ServiceControlPolicy

Deploy

AWS Lambda

Succeeded 45 min ago

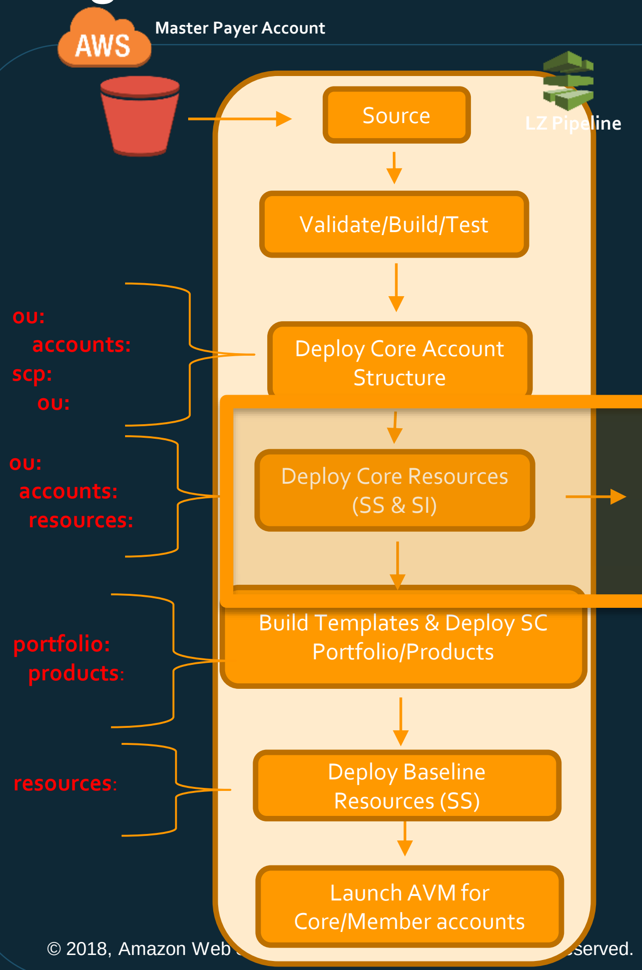
Details

Source: Amazon S3 versi...

```
ServiceControlPolicyMachine:
    Type: 'AWS::StepFunctions::StateMachine'
    Properties:
      StateMachineName: LandingZoneServiceControlPolicyMachine
      RoleArn: !GetAtt 'StateMachineRole.Arn'
      Fn::Transform:
        Name: AWS::Include
        Parameters:
          Location: s3://%TEMPLATE_BUCKET_NAME%/aws-landing-zone/v1.0/aws-landing-zone-scp-state-machine.template
```

Snippet from aws-landing-zone-deployment.template

Stage 4 – Core Resources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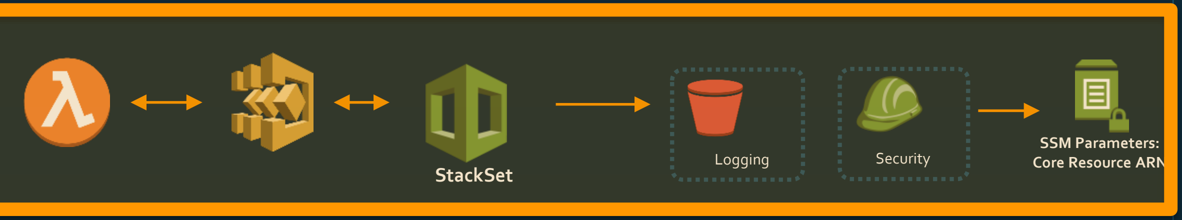
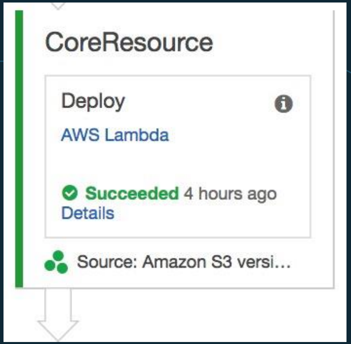




CoreResource

Deploy

AWS Lambda

Succeeded 4 hours ago

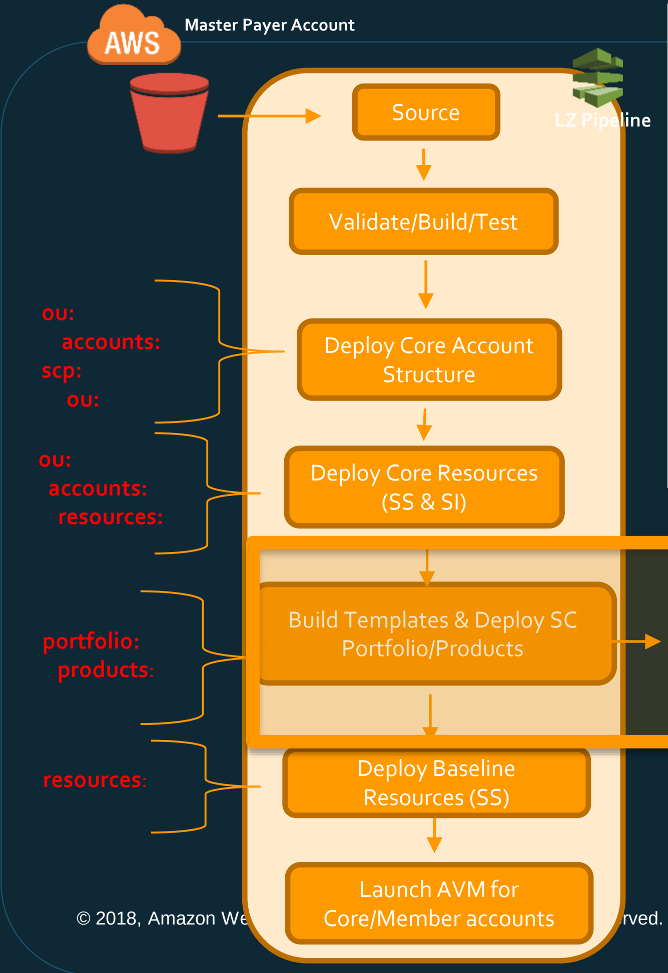
Details

Source: Amazon S3 versi...

```
 if account_id is not None:
          #Deploying Core resource Stack Set
          stack_name = "AWS-Landing-Zone-{}".format(resource.name)
          sm_input =
self._create_stack_set_state_machine_input_map(stack_name,
template_full_path, params, [str(account_id)], resource.regions, ssm_map)
      else:
          #Deploying Baseline resource Stack Set
          stack_name = "AWS-Landing-Zone-Baseline-{}".format(resource.name)
          sm_input =
self._create_stack_set_state_machine_input_map(stack_name,
template_full_path, params, [], [], ssm_map)
```

Snippet from LandingZoneStateMachineTrigger Lambda

Stage 5 – Service Catalog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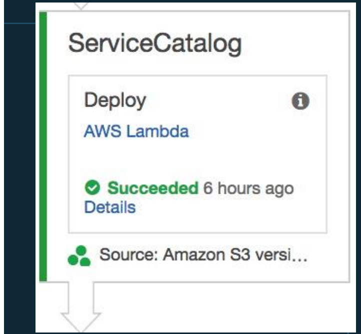
```
def start_service_catalog_sm(self, sm_arn_sc):
        try:
            logger.info("Processing Service catalogs section from {}
file".format(self.manifest_file_path))
            list_sm_exec_arns = []
            for portfolio in self.manifest.portfolios:
                for product in portfolio.products:
                    sm_input =
self._create_service_catalog_state_machine_input_map(portfolio, product)
                    self._run_or_queue_state_machine(sm_input, sm_arn_sc,
list_sm_exec_arns, product.name)
            self._save_sm_exec_arn(list_sm_exec_arns)
            return
        except Exception as e:
            message = {'FILE': __file__.split('/')[-1], 'METHOD': inspect.stack()[0][3],
'EXCEPTION': str(e)}
            self.logger.exception(message)
            raise
```

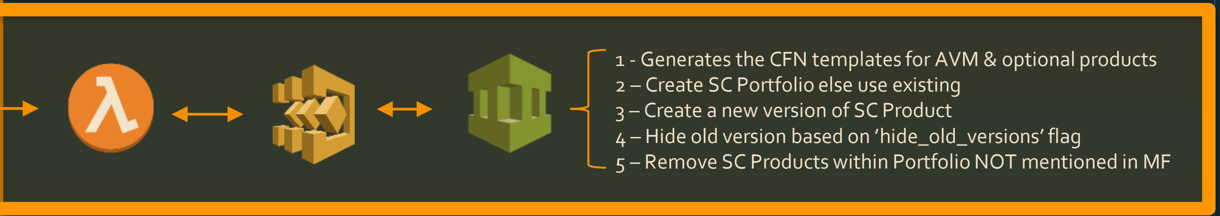

ServiceCatalog

Deploy
AWS Lambda

✓ Succeeded 6 hours ago
Details

Source: Amazon S3 versi...

Snippet from LandingZoneStateMachineTrigger Lambda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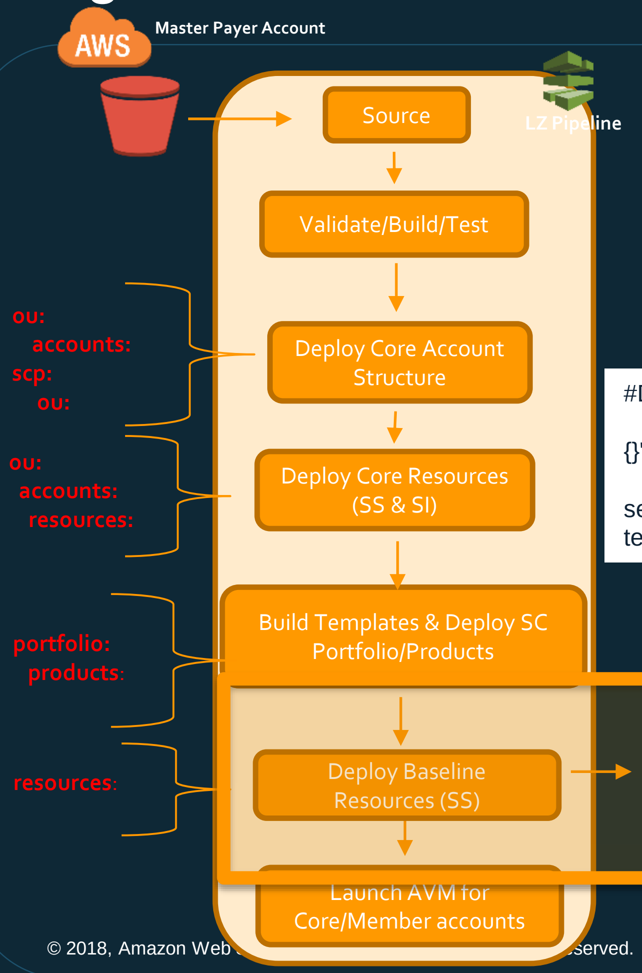
5 – Remove SC Products within Portfolio NOT mentioned in MF

Stage 6 – Baseline Resources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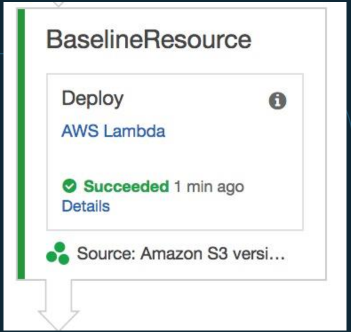


BaselineResource

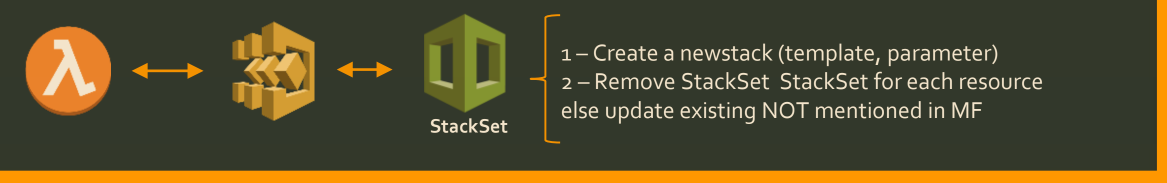
Deploy
AWS Lambda

Succeeded 1 min ago
Details

Source: Amazon S3 versi...

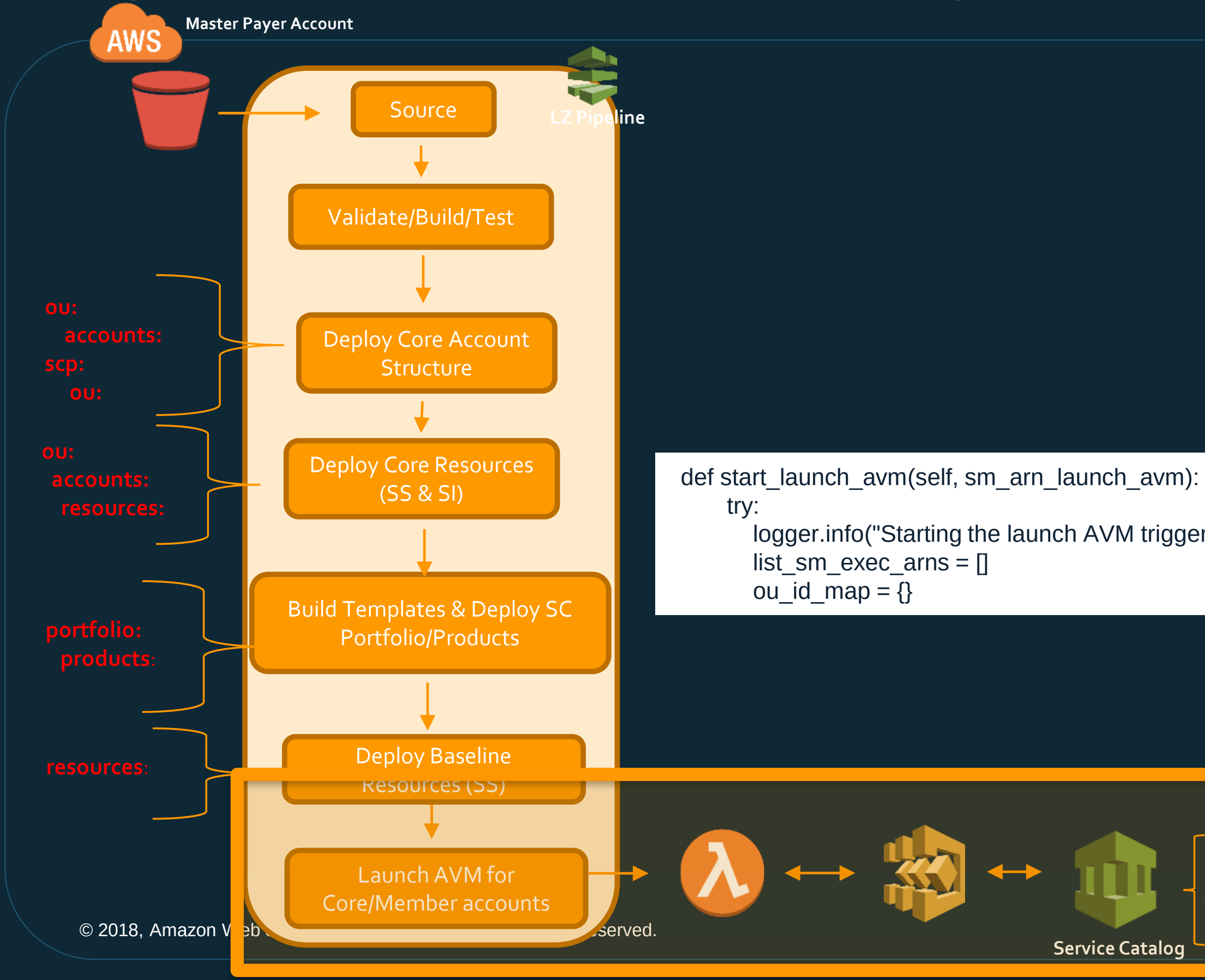
Snippet from
LandingZoneState
MachineTrigger
Lambda

```
#Deploying Baseline resource Stack Set
            stack_name = "AWS-Landing-Zone-Baseline-
{}".format(resource.name)
            sm_input =
self._create_stack_set_state_machine_input_map(stack_name,
template_full_path, params, [], [], ssm_map)
```



1 – Create a newstack (template, parameter)
2 – Remove StackSet StackSet for each resource else update existing NOT mentioned in MF

Stage 7 – Launch Automated Vending Machine (AVM)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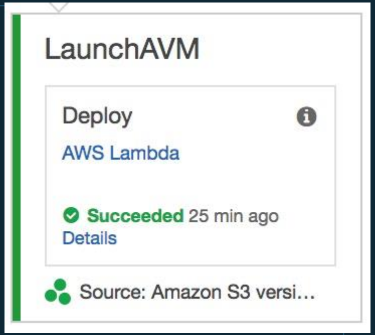
Check 'apply_to_core' & 'apply_to_member' flag for AVM

```
def start_launch_avm(self, sm_arn_launch_avm):
    try:
        logger.info("Starting the launch AVM trigger")
        list_sm_exec_arns = []
        ou_id_map = {}
```

Snippet from LandingZoneState MachineTrigger Lambda



LaunchAVM

Deploy

AWS Lambda

Succeeded 25 min ago

Details

Source: Amazon S3 versi...

The Core Account Structure

Core Accounts

The following Accounts are created automatically as part of the **Example Multi-Account Implementation:**

- AWS Organizations Master Account
- Shared Services Account
- Security Account
- Logging Account

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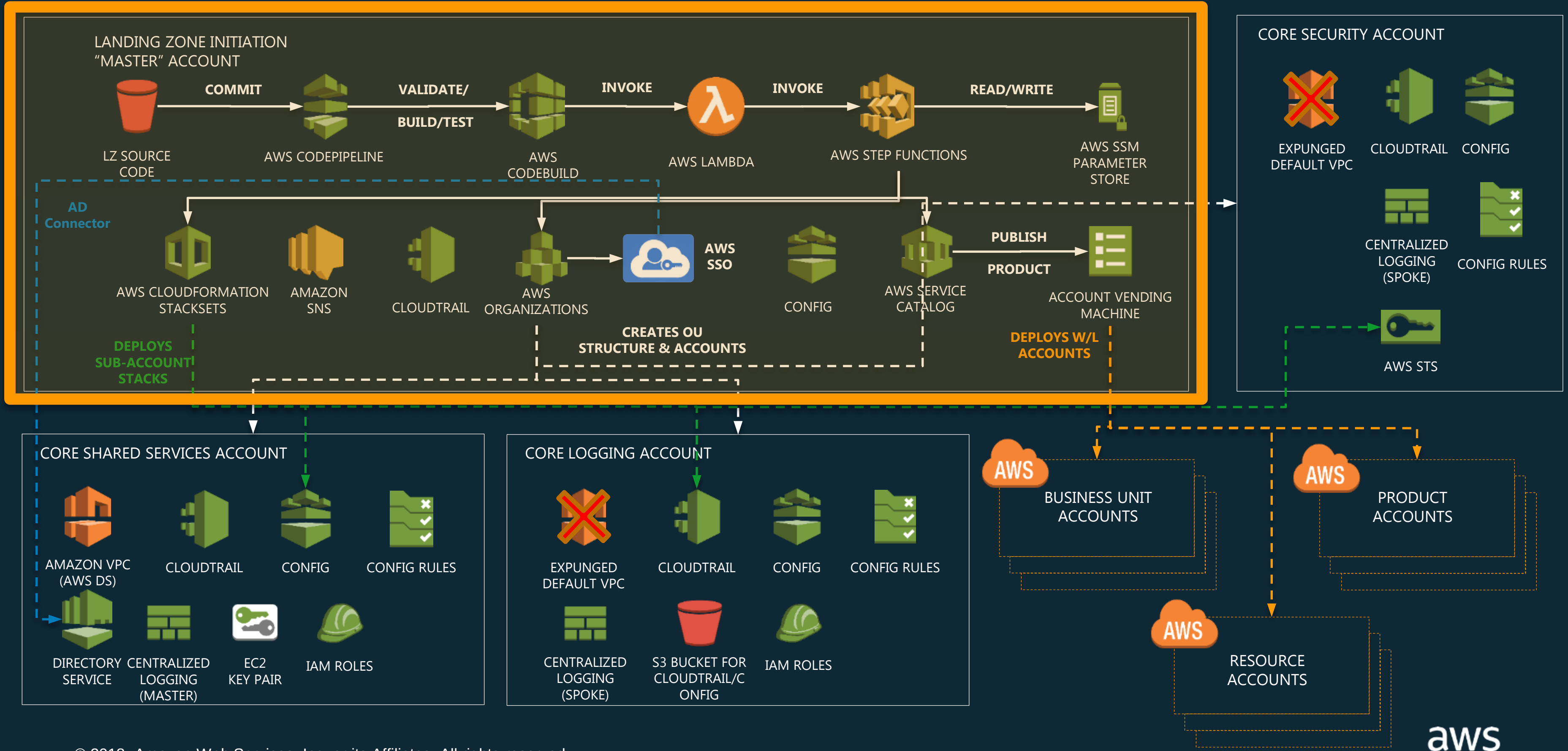
Organizations Master Account

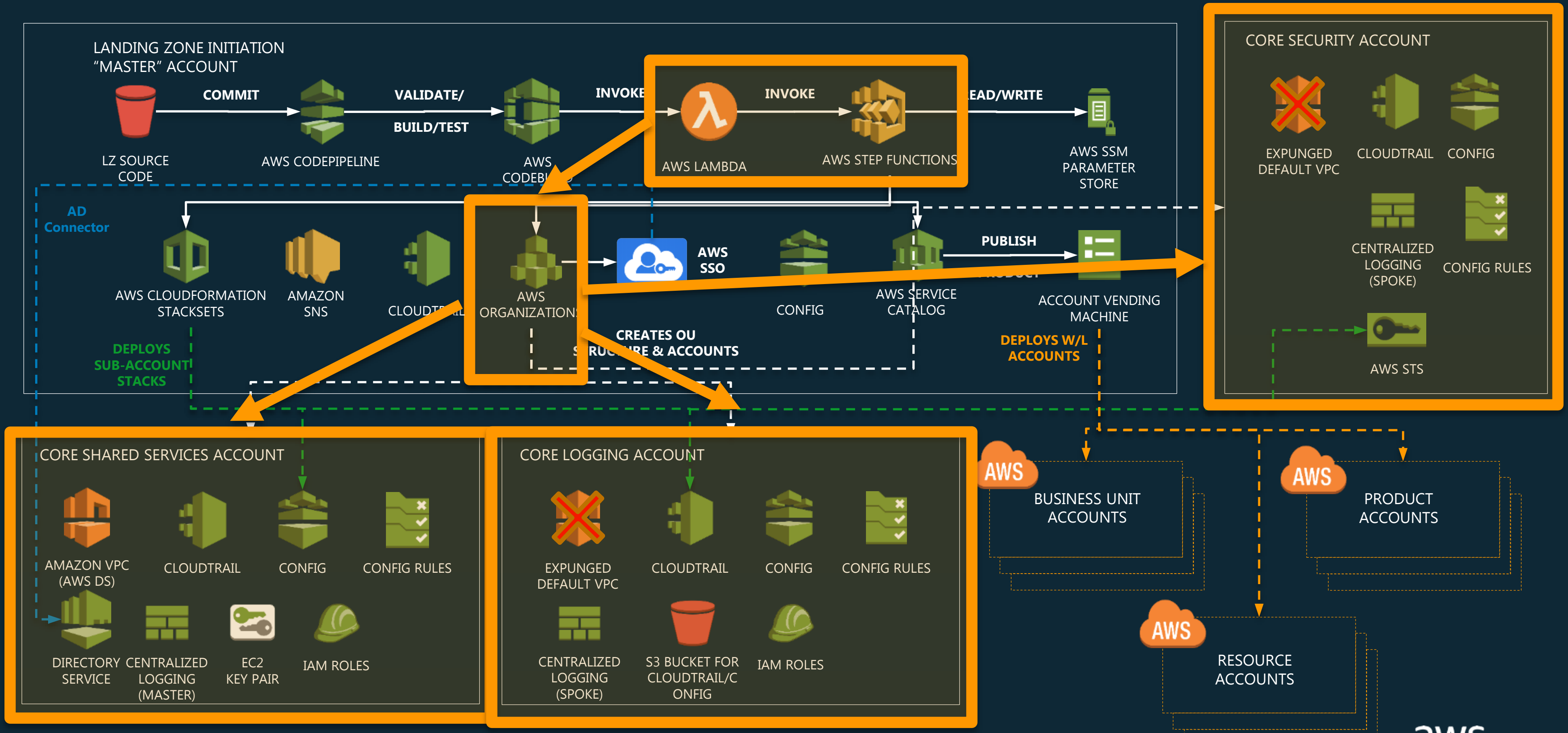


Organizations Master Account - Functionality

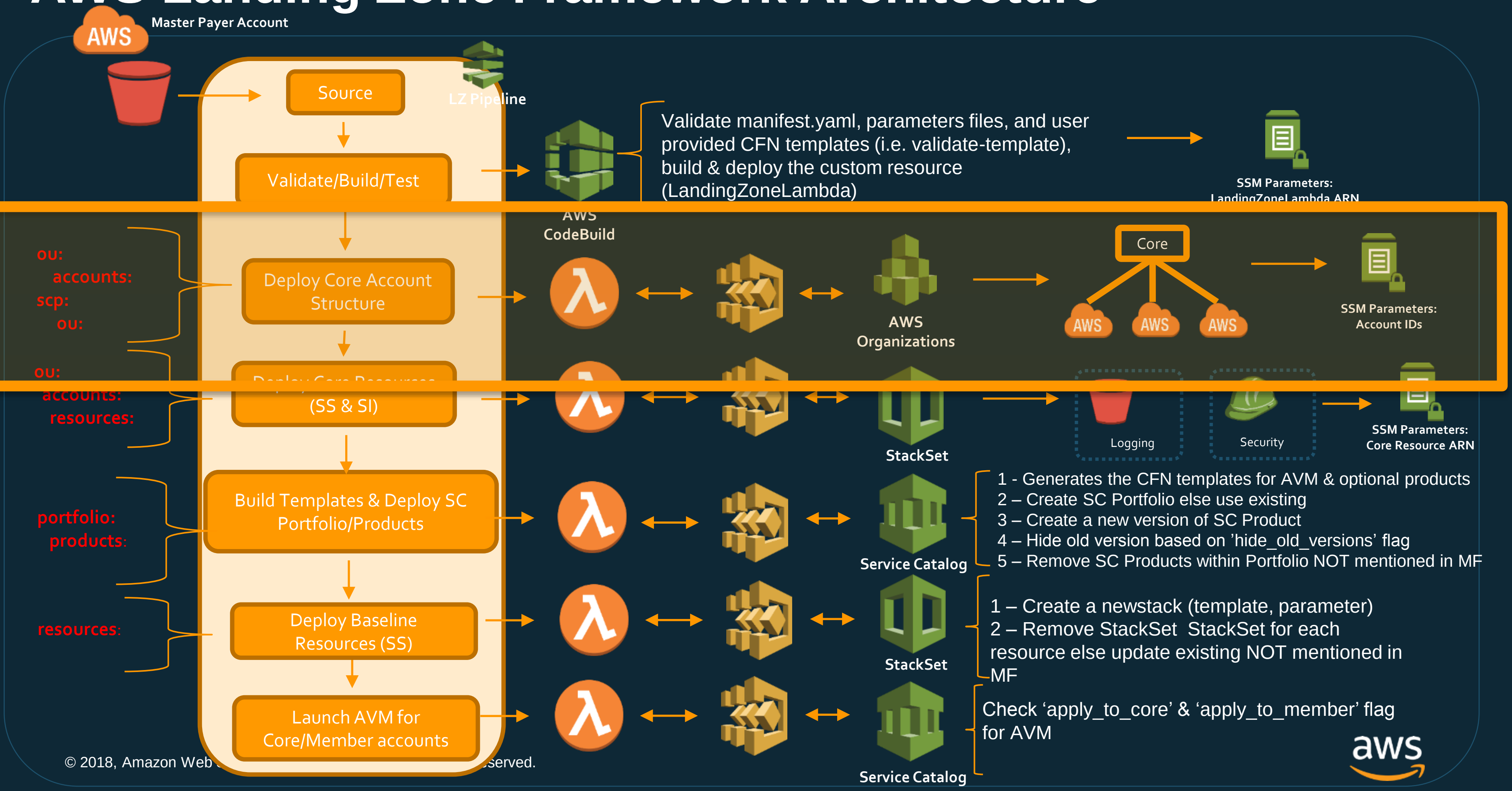
The 1st and only manually created account in the process containing:

- **Deployment Pipeline** – the implementation and configuration pipeline
- **Account Management** – creates / manages new AWS accounts with AWS Organizations
- **Account Vending Machine** – hosts a self-service Account creation product for end user account creation.
- **Service Catalog** – this is the engine presenting the Account Vending Machine and Future products (Custom-built, Marketplace)
  - The account creation could be integrated with Ticketing Systems such as ServiceNow for example.

Organizations and Core OU within Master Account



AWS Landing Zone Framework Architecture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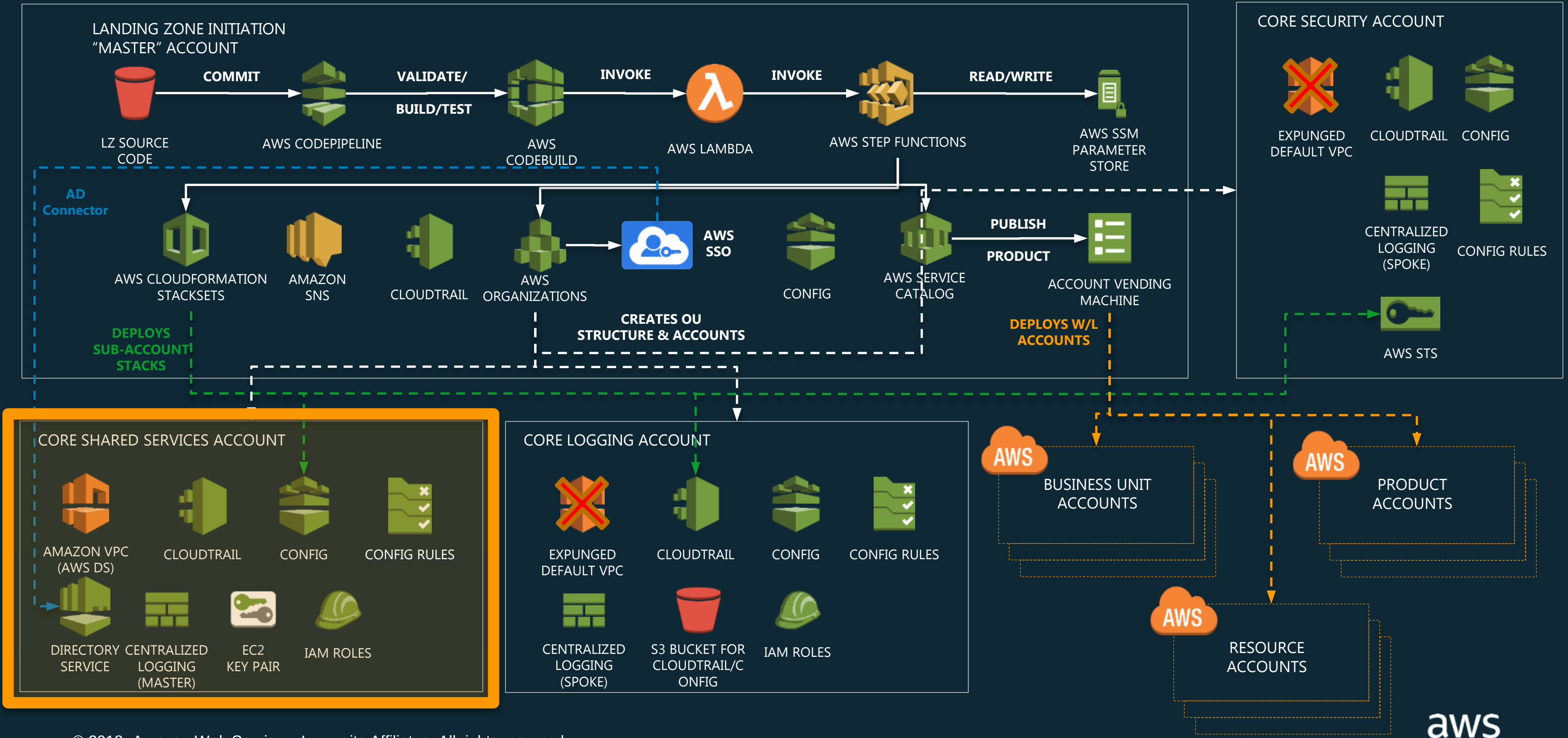
Shared Services Account



Shared Services Account

A core shared services account is created for hosting landing zone infrastructure dependencies including

- An LDAP Directory Service for managing user access for Single Sign-On
- An initial location for log analytics capabilities
  - Elasticsearch is an option as part of the Deployment
  - Could just as easily be Splunk instead or even build in another account

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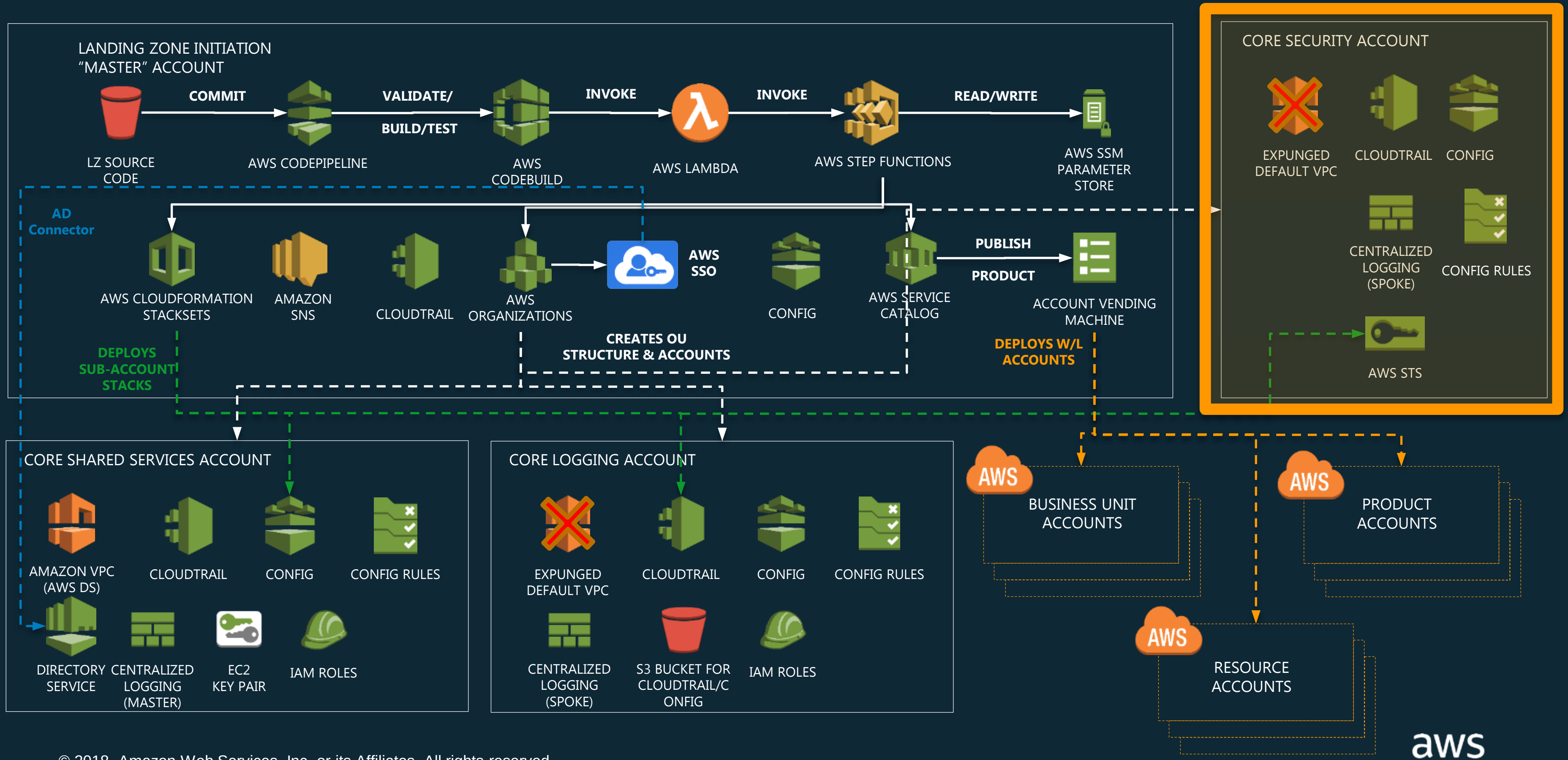
Security Account



Security Account

A core security account is created to facilitate:

- Customer’s security department-controlled audit and security remediation access to all accounts.
- Access to this account should be highly controlled
- Cross-account read-only and administrative access will be pre-provisioned to all new accounts as part of the security baseline
- This provides ‘break-glass’ access to the security team

Core Accounts

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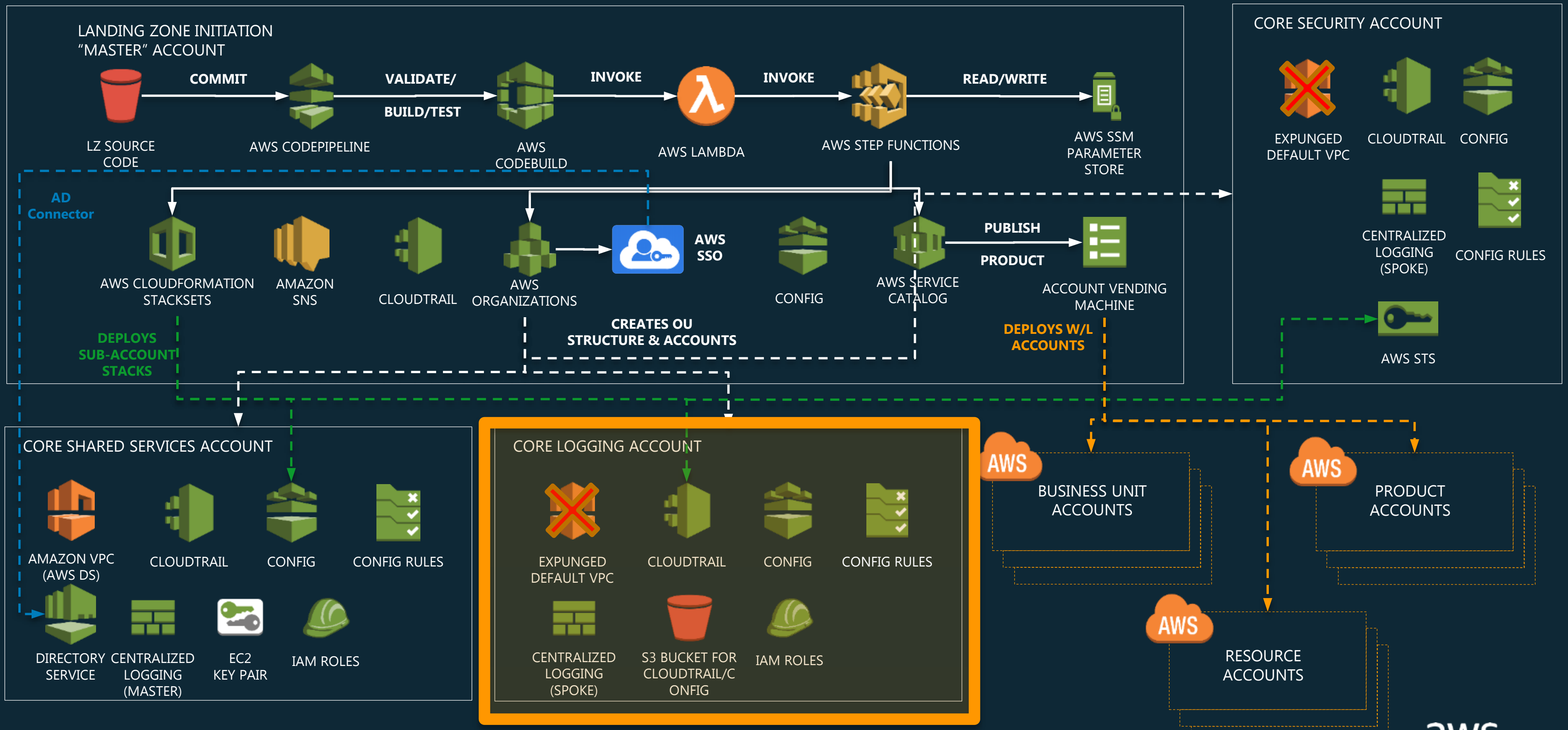
Logging Account



Logging Account

A dedicated account for securely storing logs for archiving and forensic activities. This Account Contains

- Centralized location for copies of every account’s Audit and Configuration compliance logs
- Additional buckets in the Logging Account could and should be used to centralize and store other audit and compliance logs

Lab 2 – Review Deployment

What’s next?

- ✓ Module 1 / Lab 1 – Initial Thought Process / Deploy Example Landing Zone
- ✓ Module 2 / Lab 2 – Design Considerations (pt1) / Review Deployment
- ○ Module 3 - Design Considerations (pt2)
- ○ Module 4 - Design Considerations (pt3)
  - Lab 3 - Configure AD and SSO
  - Lab 4 - Deploy a Member Account
  - Lab 5 - Deploy Centralised Logging Hub
- ○ Module 5 – Extending the Landing Zone
- ○ Lab 6 – Configure Centralised Logging Spoke and new Config Rule