Read Army Transition to Support

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Objective of the BRMA (Billing Meter Readings Application

The current Itron Enterprise Edition system (IEE) is FPL's Meter Data Management (MDM) solution for mass market (MM) accounts. IEE is used to house reads of ~ 5.5M meters and responsible to interface with CISII for billing of all FPL MM customers, generating ~ \$8B in revenues annually. IEE is a SOX compliant application. AC-31 is a project to replace IEE MM with a custom Cloud service solution to reduce ongoing O&M. For Load Research, a new application outside of this project will be developed to replace the current IEE feed and will get data from Data Warehouse/Data Lake that is fed from UIQ directly. The BMRA application consist of a front-end portal that interfaces with the cloud RDS database via Lambda API calls.

PowerPoint Overview - MDM

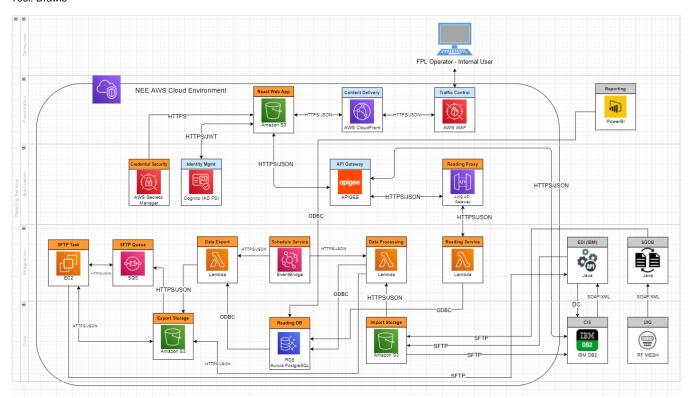
Technology Stack

Web	ReactJS , ReduX ,Jest (Unit testing), Material-ui
Back-end /API	javaScript(NodeJs), Jest (Unit testing)
Cloud	Amazon S3, AWS CloudFront, AWS WAF, AWS Secrets Manager, AWS Cognito, AWS API Gateway, EC2, AWS SQS, AWS Lambda, Amazon EventBridge, SFTP Services, AWS RDS
Database	AWS Aurora PostgreSQL

Architecture Diagram

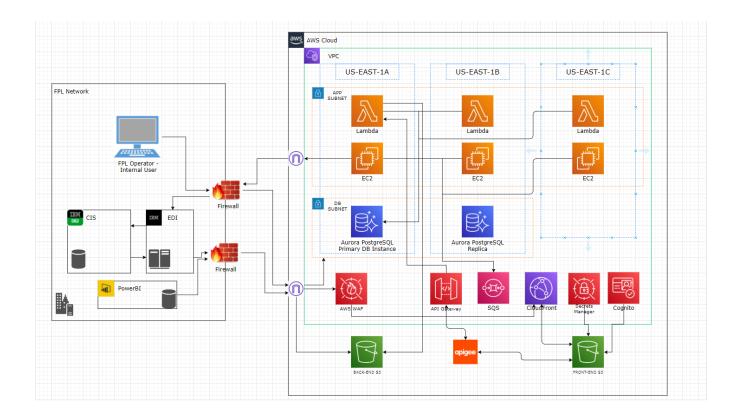
IEE_MassMarketReplacement_AWS_v2.drawio

Tool: Drawio

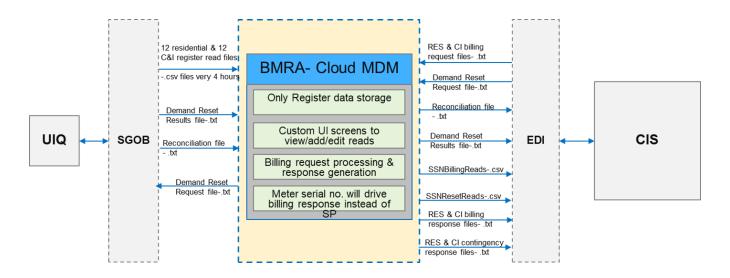


Cloud Architecture Diagram

 ${\sf IEE_MassMarketReplacement_AWS_AZ.drawio}$



Data Flow Diagram



Data Model

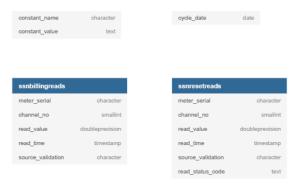
Please refer to the attachment: BMRA_MDM_DB_Schema_Alternate_Representation.pdf



app_constants	
constant_id	bigint



cis_tod_meter	
premise	character





meter_serial

Mainframe Technical Components

Transaction	KJ45	Mainframe REST Web Service triggered from MDM Portal to retrieve Meter History for corresponding Premises between a time period.
Program	CUMWS145	Mainframe REST Web Service Program to retrieve data from CIS tables and send to Portal
Generic ID	ZZZ1MDT (Test) ZZZ0MDP* (Prod)	Generic ID to trigger Mainframe transaction KJ45, Password to Generic ID are stored in APIGEE PROXY API : service is <i>CISJSMeterHistory</i>
Web Service End Point		Test-https://sc01.fpl.com:6012/fpl/cics/cis2cs/ <i>CISJSMeterHistory</i> QA- https://sc01.fpl.com:6014/fpl/cics/cis2cr/ <i>CISJSMeterHistory</i> PROD - https://sg01.fpl.com:3056/fpl/cics/cis2prod/ <i>CISJSMeterHistory</i>
Batch Programs		Go-Live CIS-BMRA.vsdx

Mainframe Transition to Support

Mainframe Transition to Support Documents

Outgoing Files

File (Days of run)	Prod Job Creating the File (Time)	Prod Job Sending the File (Time)	CS/CR Job Names	Prod Mainframe File Name (Outgoing)	Prod S3 Destination File Name
UIQ Update File (Tuesday- Saturday)	KISO817P (00:00)	KISO006X (00:00)	N/A - only prod files available from data lake	KINP.SO81702. EXCEPTN.RPT	UIQExceptionRpt_YYMMD DHHMMSS.txt
TOD Meters Unload (Monday-Friday)	KIUT933P (03:00)	KIUT006X (03:00)	KIUT06XS/KIUT06XR	KINP.EDI.UT93301	TODUnload_YYMMDDHH MMSS.csv
AMI CI Demand Reset Request (Monday-Friday)	KIMR087P (05:30)	KIMR005X (05:30)	KIMR05XS/KIMR05XR	KINP.MR08702.CI.DEM. RES.FTP	DemandResetRequest.txt
Residential Billing Request (Tuesday-Saturday)	KIMPOAED (OF 20)	KIMR002X (05:30)	KIMR02XS/KIMR02XR	KINP.EDI.MR91501	fromhost_YYMMDDHHMM SS.txt
Commercial Billing Request Tuesday-Saturday)		KIMR003X (05:30)	KIMR03XS/KIMR03XR	KINP.EDI.MR91504.CI	fromhostCI_YYMMDDHHM MSS.txt
Yearly Calendar file	KIMR082P	KIMR006X (ondemand)	KIMR06XS/KIMR06XR	KINP.MR08203.READ. SCHED.FTP	ReadingSchdule.txt

Train Cycles - Test Regions Only	KIMR917S/KIMR917R	N/A	KIMR04XS/KIMR04XS	KINT.CS.EDI.MR91701	CSTrainCycleUnload_YYM MDDHHMMSS.txt
	(train regions only)			KINT.CR.EDI.MR91701	
	, , , , , , , , , , , , , , , , , , , ,				CRTrainCycleUnload_YYM MDDHHMMSS.txt

Incoming Files

File (Expected time - Days)	Hash	Copy Over	Files used by	Late Notification /Time	Remarks
Residential Billing	KISIS55P	KIMR92 1P	KIMR06 5P	KIMR926P/15: 00	For KIMR921P run the job KIMR922P must have run
Response (14:30 - Cycle)		IF	Jr.	00	successfully. For KIMR922P to run, KISIS55P, 56P must have run.
Commercial Billing	KISIS56P	KIMR92 2P			K NP.SIS55.FROMDM.TOHOST FTP SFTP to EC
Response (14:30 - Cycle)		-			KINP.SIS56.FROMDM.CI.TOHOST.FTP SFTP to EI KISIS55P (Residential)
					KIMR922P
Demand Reset Results (13: 30 - Cycle)	KISIS53P	KIMR92 0P	KIMR09 0P	KIMR929P/13: 45	
SSN Reset Reads (13:30 - Cycle)	KISIS58P	KIMR92 4P	KIMR09 1P	KIMR930P/13: 45	
SSN Billing Reads (00:30 - Daily)	KISIS61P	KISO984P	KISO82 8P	KISO985P/00: 45	
SSN Billing Reads (14:00 - Daily)	KISIS54P	KISO983P	KISO82 9P	KISO985P/14: 15	
Reconciliation File (23:30 - Daily)	KISIS57P	KIMR92 3P	KIMR01 7P, KISO81 5P, KIMR84 2P	KIMR928P/23: 45	
Residential Contingency Billing Response (20:00 - Cycle-1)	KISIS59P	KIMR92 5P	KIMR18 4P	KIMR927P/20: 30	
Commercial Contingency Billing Response (20:00 - Cycle-1)	KISIS60P				

BMRA Checklist

Path to the Code Repository

http://neer-bitbucket:7990/projects/MDM (for UI and Lambda)

Bitbucket Branch Information and Jenkins

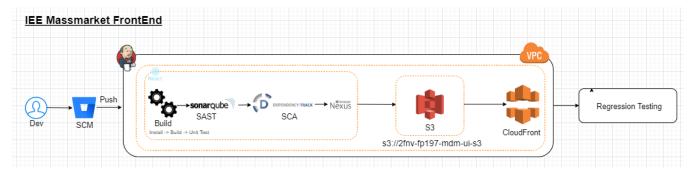
Branch name	mapped environment
master	FPLPROD
release	FPLQA
integration	FPLTEST
development	FPLNONPROD
feature	Will run the build only (no deployment to any environment)

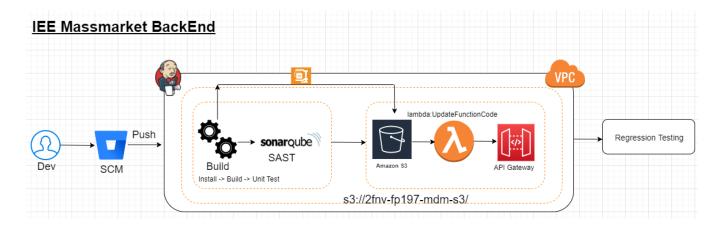
Jenkins Pipeline

https://jenkinsqa.fpl.com/job/IEE/

Jenkins Architecture

(Jenkins pipeline was built with references to IEE. MDM project replaced IEE, but Jenkins naming convention cannot be changed)



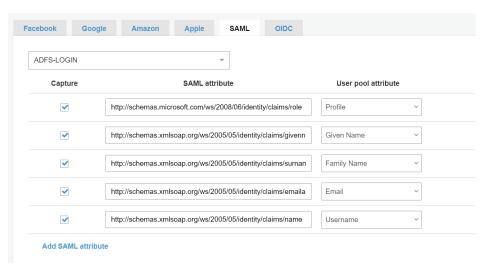


AWS Cognito Details

AWS Console Request: Requesting AWS Console Access

Items	DEV	TEST	QA	PROD
AWS Console	Account Name Account No Role	Account Name Account No Role	Account Name Account No Role	Account Name Account No Role
Access	fplnonprodneeaws - 977465404123 D evOps-ADFS	fpltestneeaws - 516627182506 DevOps- ADFS	fplqaneeaws - 485449107334 DevOps-ADFS	fplprodneeaws - 430004966399 ViewOnly-ADFS
USERPO OL	us-east-1_0k0ecpPlk (2FNV-FP197- MDM-USERPOOL)	us-east-1_6oi4gwfvC (2ftv-fp197-mdm- USERPOOL)	us-east-1_zW926lBkN (2fqv-fp197-mdm- USERPOOL)	us-east-1_6DdNRzzbf (2fpv-fp197-mdm- USERPOOL)
DOMAIN	https://mdm-portal-dev.auth.us-east- 1.amazoncognito.com	https://mdm-portal-fpltest.auth.us-east-1.amazoncognito.com	https://mdm-portal-fplqa.auth.us-east-1. amazoncognito.com	https://mdm-portal-fplprod.auth.us-east-1. amazoncognito.com
ADFS Trust	https://mdm-portal-dev.auth.us-east- 1.amazoncognito.com/login? response_type=token&client_id=79ck edqtisvp90qtpphed6rd38&	https://mdm-portal-fpltest.auth.us-east-1. amazoncognito.com/login? response_type=token&client_id=3u2qgnns0r 8pahrm9n4fi0jmoe&	https://mdm-portal-fplqa.auth.us-east-1. amazoncognito.com/login? response_type=token&client_id=3a41ae387v 4nma2822dfonkaut&	https://mdm-portal-dev.auth.us-east-1. amazoncognito.com/login? response_type=token&client_id=79ckedgtis vp90gtpphed6rd38&
	redirect_uri=https://d1a9k758p2q2uo. cloudfront.net/login&	redirect_uri=https://d2bnqdgsykx3du. cloudfront.net/login&	redirect_uri=https://d23hcidq1z9kj8. cloudfront.net/login&	redirect_uri=https://d1a9k758p2q2uo. cloudfront.net/login&
	response_type=TOKEN&client_id=IA MANID&scope=aws.cognito.signin. user.admin email openid phone profile	response_type=TOKEN&client_id=IAMANID &scope=aws.cognito.signin.user.admin email openid phone profile	response_type=TOKEN&client_id=IAMANID &scope=aws.cognito.signin.user.admin email openid phone profile	response_type=TOKEN&client_id=IAMANI D&scope=aws.cognito.signin.user.admin email openid phone profile
AD Groups for cognito	AWS-DEV-FP197-MDM- DEVELOPER AWS-DEV-FP197-MDM-USER AWS-DEV-FP197-MDM-ADMIN	AWS-TEST-FP197-MDM-DEVELOPER AWS-TEST-FP197-MDM-USER AWS-TEST-FP197-MDM-ADMIN	AWS-QA-FP197-MDM-DEVELOPER AWS-QA-FP197-MDM-USER AWS-QA-FP197-MDM-ADMIN	AWS-PROD-FP197-MDM-ADMIN

Attributes



AWS CloudFront Details

DEV	TEST	QA	PROD
Cloud Front Distribution ID: EOQRVZBQ 9HX0R Domain Name: https://d1a9k758p2q2uo.cloudfront.net	Cloud Front Distribution ID: EU5829N7 ZK4LI Domain Name: https://d2bnqdgsykx3du. cloudfront.net	Cloud Front Distribution ID: E1TZ8RDF HVFGSF Domain Name: https://d23hcidq1z9kj8. cloudfront.net	Cloud Front Distribution ID : E1M8JW1V WK4H26 Domain Name : https://d2g11eyg2yo5sj.cloudfront.net

AWS S3 Details

DEV	TEST	QA	PROD

UI: s3://2fnv-fp197-mdm-ui-s3

File System: 2fnv-fp197-mdm-s3

File System: 2ftv-fp197-mdm-s3

UI: s3://2ftv-fp197-mdm-ui-s3

File System: 2ftv-fp197-mdm-s3

Lambda: 2ftv-fp197-mdm-cf-s3

Lambda: 2ftv-fp197-mdm-cf-s3

UI: s3://2fpv-fp197-mdm-ui-s3
File System: 2fpv-fp197-mdm-s3
Lambda: 2fpv-fp197-mdm-cf-s3

AWS S3 Filepaths

Lambda: 2fnv-fp197-mdm-cf-s3

List of Filepaths

AWS Lambda Details

List of Lambda functions

AWS RDS Database Details

Name	DEV	TEST	QA	PROD
database	mdmd	mdmt	mdmq	mdmp
rds_prox y_host	aws-2fnv-fp197-mdm-rds-proxy.proxy- c4ucntsmqjsv.us-east-1.rds. amazonaws.com	aws-ftv-fp197-mdm-rds-proxy.proxy-cq5nryu9qrxd.us-east-1.rds. amazonaws.com	aws-fqv-fp197-mdm-rds-proxy.proxy- clfn2h31qwxn.us-east-1.rds. amazonaws.com	aws-fpv-fp197-mdm-rds-proxy.proxy-cgqep0gwcrlg.us-east-1.rds. amazonaws.com
rds_port	5432	5432	5432	5432
secret_n ame	2fnv-fp197-mdm-RDS-Secret	2ftv-fp197-mdm-RDS-Secret	2fqv-fp197-mdm-RDS-Secret	2fpv-fp197-mdm-RDS-Secret

AWS EC2 Server Details

Functionality	DEV	TEST	QA	PROD
Jenkins pipeline	2FNV-GC-FP19703 (us-east-1a, M3.medium)	2FTV-GC-FP19701 (us-east-1a, M3.medium)	2FQV-GC-FP19701 (us-east-1a, t3.medium)	2FNV-GC-FP19701 (us-east-1a, t3.medium)
SFTP	2FNV-GC-FP19705 (us-east-1a, t2. micro)	2FTV-GC-FP19705 (us-east-1a, t2. medium)	2FQV-GC-FP19704 (us-east-1a, t2.medium)	2FNV-GC-FP19704 (us-east-1a, t2.medium)
		2FTV-GC-FP19706 (us-east-1b, t2. medium)	2FQV-GC-FP19705 (us-east-1b, t2.medium)	2FNV-GC-FP19705 (us-east-1a, t2.medium)

AWS SFTP Processes

SFTP Putty Process

Power BI Reports

BMRA-MDM Power BI Reports.xlsx

S r. N o.	Report Name	Description	Dev Link	Prod Link
1	MDM-On Cycle Billing Export Statistics	Report detailing on cycle billing statistics for current cycle day	http://corpbidev/corpanalytics/report/CS- Customer%20Care/BPS/MDMBI/AWS%20MDM /MDM-%20On%20Cycle%20Billing%20Export% 20Statistics	http://corpbi/corpanalytics/report/Customer% 20Service/BPS/Reports/AWS%20MDM/MDM-% 20On%20Cycle%20Billing%20Export% 20Statistics

2	MDM-On Cycle Residential Billing Reads	Report for on cycle residential billing reads for current cycle day- reads sent in billing response files	http://corpbidev/corpanalytics/report/CS- Customer%20Care/BPS/MDMBI/AWS%20MDM /FPLTest-On-Cycle%20Residential%20Billing% 20Reads	http://corpbi/corpanalytics/report/Customer% 20Service/BPS/Reports/AWS%20MDM/MDM- On%20Cycle%20Residential%20Billing% 20Reads
3	MDM-On Cycle Commercial Billing Reads	Report for on cycle commercial billing reads for current cycle day- reads sent in billing response files	http://corpbidev/corpanalytics/report/CS-Customer%20Care/BPS/MDMBI/AWS%20MDM /MDM-On%20Cycle%20Commercial%20Billing% 20Reads	http://corpbi/corpanalytics/report/Customer% 20Service/BPS/Reports/AWS%20MDM/MDM- On%20Cycle%20Commercial%20Billing% 20Reads
4	MDM- Contingency Billing Export Statistics	Report detailing contingency billing statistics for current cycle day	http://corpbidev/corpanalytics/report/CS- Customer%20Care/BPS/MDMBI/AWS%20MDM /MDM-Contingency%20Billing%20Export% 20Statistics	http://corpbi/corpanalytics/report/Customer% 20Service/BPS/Reports/AWS%20MDM/MDM-Contingency%20Billing%20Export%20Statistics
5	MDM- Contingency Residential Billing Reads	Report for contingency residential billing reads for current cycle day- reads sent in contingency response files	http://corpbidev/corpanalytics/report/CS- Customer%20Care/BPS/MDMBI/AWS%20MDM /MDM-Contingency%20Residential%20Billing% 20Reads	http://corpbi/corpanalytics/report/Customer% 20Service/BPS/Reports/AWS%20MDM/MDM- Contingency%20Residential%20Billing% 20Reads
6	MDM- Contingency Commercial Billing Reads	Report for contingency commercial billing reads for current cycle day- reads sent in contingency response files	http://corpbidev/corpanalytics/report/CS- Customer%20Care/BPS/MDMBI/AWS%20MDM /MDM-Contingency%20Commercial%20Billing% 20Reads	http://corpbi/corpanalytics/report/Customer% 20Service/BPS/Reports/AWS%20MDM/MDM- Contingency%20Commercial%20Billing% 20Reads
7	Previous Season Report	Report detailing list of TOD meters and reading details for 202/203/604/605 (previous season on peak and off peak demand) channels	http://corpbidev/corpanalytics/report/CS- Customer%20Care/BPS/MDMBI/AWS%20MDM /FPLTest-MDM%20-%20Previous%20Season% 20Report	http://corpbi/corpanalytics/report/Customer% 20Service/BPS/Reports/AWS%20MDM/MDM- Previous%20Season%20Report

APIGEE FireWalls

APIGEE Dev: https://apiuisbx.fpl.com/login

APIGEE Stage (TEST and QA): https://apiui-stage-aws.fpl.com/login

APIGEE Proxy Endpoints

Read Army - APIGEE proxies details

Portal links - Prod and Non Prod

Environment	Portal Link
PROD	https://mdm-fplprod.fpl.com/
QA	https://mdm-fplqa.fpl.com/
TEST	https://mdm-fpltest.fpl.com/
DEV	https://mdm-dev.fpl.com/

Access Requests

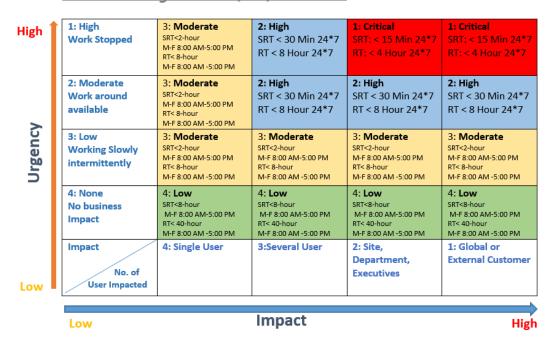
Access Type	Requested Via	Details
BMRA Online Application and/or BMRA Historical Database	Service Now Active Directory	http://eweb/bunit/cs/LDM/PowerBilling/PowerBillReplacement /RequestorRemoveAccessfromBMRA_Final.pdf
Developer access	Service Now Active Directory	AWS_FPL_MDM_DB AWS-FPLProd-FBRS-Developer

AWS Console Access Service Now Console		FPLNonProd-DevOps FPLTest-DevOps
		FPLQA-ViewOnly
		FPLProd-ViewOnly
BitBucket/GitHub	Service Now Active Directory	Github_Nee_Users
		Github_Fplu_Users
		Github_Fple_Users
Jenkins		
Power BI Report	Service Now Active Directory	BI_BPS_CONSUMERS
Business Access to MDM Database	EAMS	https://confluence.nexteraenergy.com/download/attachments/224103264/Job% 20aid_Access%20to%20MDM%20DB.doc?api=v2

SLA Tier

SLA Document

Service level agreements (SLA) - incidents



SRT: Service Response Time to customer

RT: Resolution Time

Application ranking (MC, BUI or Other)

Mission Critical

FPL IT Mission Critical Systems:

- First Tier Applications within Business Processes deemed essential to the Company to remain operational and, if unavailable, would result in severe financial loss, public embarrassment or the inability to meet corporate safety and/or regulatory requirements.
- •Recovery Plans reviewed and tested annually
- •Restoration Time Objective (RTO): 4-8 hours
- •Recovery Point Objective (RPO): 30 sec 10 mins

Vendor Contact Details

Not Applicable

SNOW Assignment Group

Support Group - L2_AMS_FPLS_COG
Approval Group - L3_DEV_FPLS_RM

Storm processes and procedures - Shubhanshu

Potential need to run Lambda's manually if readings are delayed

Manual monitoring required

Alert status checklist 1,2 and 3

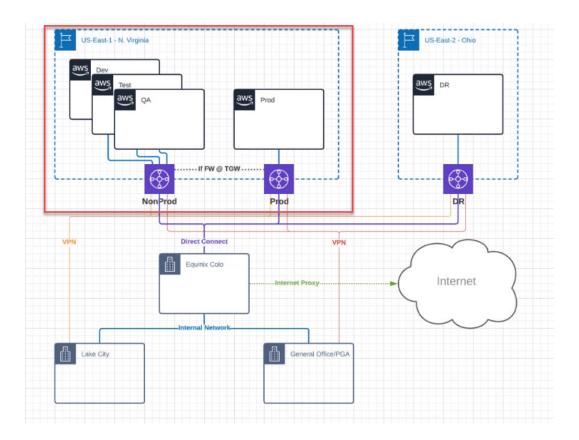
Alert 1/2/3 Checklist

Application coverage for storm

24 x 7

DR documentation for MC and BUI application

BMRA is setup as a multi-node application within the AWS Virginia region. Per diagram/discussion with cloud architect, this HA setup is equivalent to the FL region for on-premise servers between GO and LC. At this time, multi-region setup is not available for databases, therefore not an option.



DR testing checklists and results

- model after IEE checklists

Contact list

Name	Role/Organization
Luisa Santacoloma	CS Application Owner
Carlos Vieites	CS Application SME
Akhila Ranganathan	CS Project Product Owner
Nageswaramma Pamarthi	CS Project Business Analyst
Sunita Hawaldar	CS Project Product Manager
Rohit Ravindranath	IT Leader
Kristy Stockett	IT Scrum Master
Nicolas Zerrate	IT Architect/Tech Lead
Errol Gamory	IT MF Architect
Nilesh Ukirde	IT Business Analyst
Shubhanshu Bhargava	IT IEE SME
Nethra Mugala	IT Tech Lead
Thamson Antony	Mainframe Developer
Anand Avadutha	IT Cloud Infrastructure Developer
Rudra Patil	IT Lambda Developer

Andres Salinas	IT Lambda Developer
Gayathri Sekar	Portal Java Developer
Rick Saavedra	IT DBA Aurora PostgreSQL
Cecil Worley	IT CI/CD and Pipeline Services
Pratap Padhy	IT CI/CD and Pipeline Services
Yugandher Ravi	IT APIGEE Services
Meenatchi Sivasundari	IT APIGEE Services
Steve Sedlack	EDI/EAI Services
Haji Mohammed	EDI/EAI Services
Sathiyapriya Krishnachalam	EDI Services
Shuvrajyoti Maitra	EAI Services
David Clark	UIQ/RICI reading files
Karthik raja Paulraj	Demand reset/UIQ Update files

SOX documentation

SOX Certification Document

SOX Quarterly Narrative

Business Go-Live approval



Application Specific details

Monitoring recent code change - Contingency file - cycle 1 May next occurrence

Business Process - Daily Processes

Billing Calendar import - Pending completion of process development

SFTP - how to access/job descripts - Nethra

UIQ Reading Scheduled File Send Timings (fyi only, SGOB team responsibility)

UIQ Reading Off Schedule Manual File Send (FYI only, SGOB team responsibility)

How To's

How to rotate IAM Keys

How to adjust schedule for EST/DST for Daylight Savings Time Start/End

Update Chron job to renew vault token

Service Now Knowledge Articles

Steps to run processes manually if automated process fails or needs to be run again

KA Number	Description
KB0017033	SSNRESETReads File: Putting the jobs on hold and File Creation
KB0017034	SSNBillingReads File: Putting the jobs on hold and File Creation
KB0017035	BMRA - Demand Meter Fail Process
KB0017036	Request/Remove Access in BMRA
	Manual process to run lambda functions (AWS scheduler down)
	Process to resolve S3 to EC2 file send issues
	Handling alerts that not all reading files received
	Handling late demand reset files from SGOB
	Handling off schedule reading files from SGOB
	CI Reading Import Failures
	RES Reading Import Failures
	CI Billing Calculation Failures
	RES Billing Calculation Failures
	CI Billing Response Export Failures
	RES Billing Response Export Failures
	CI SFTP Failures
	RES SFTP Failures
	CI Cont Billing Calculation Failures
	RES Cont Billing Calculation Failures
	CI Cont Billing Response Export Failures
	RES Cont Billing Response Export Failures
	CI Cont SFTP Failures
	RES Cont SFTP Failures
	Demand Reset Request Failures
	Demand Reset Results Failures
	Demand Reset Compare Failures
	CDP Missing Data Notification Failures
	CDP Projected VS Actuals Failures
	CDP No Action Failures
	Meter Fail Identify Failures
	Meter Fail Update Failures
	SSN Billing Reads - Schedule A Failures

SSN Billing Reads - Schedule B Failures
UIQ Reconciliation Failures
UIQ Update Failures