System Analysis Document

Data Transfer between Related Companies

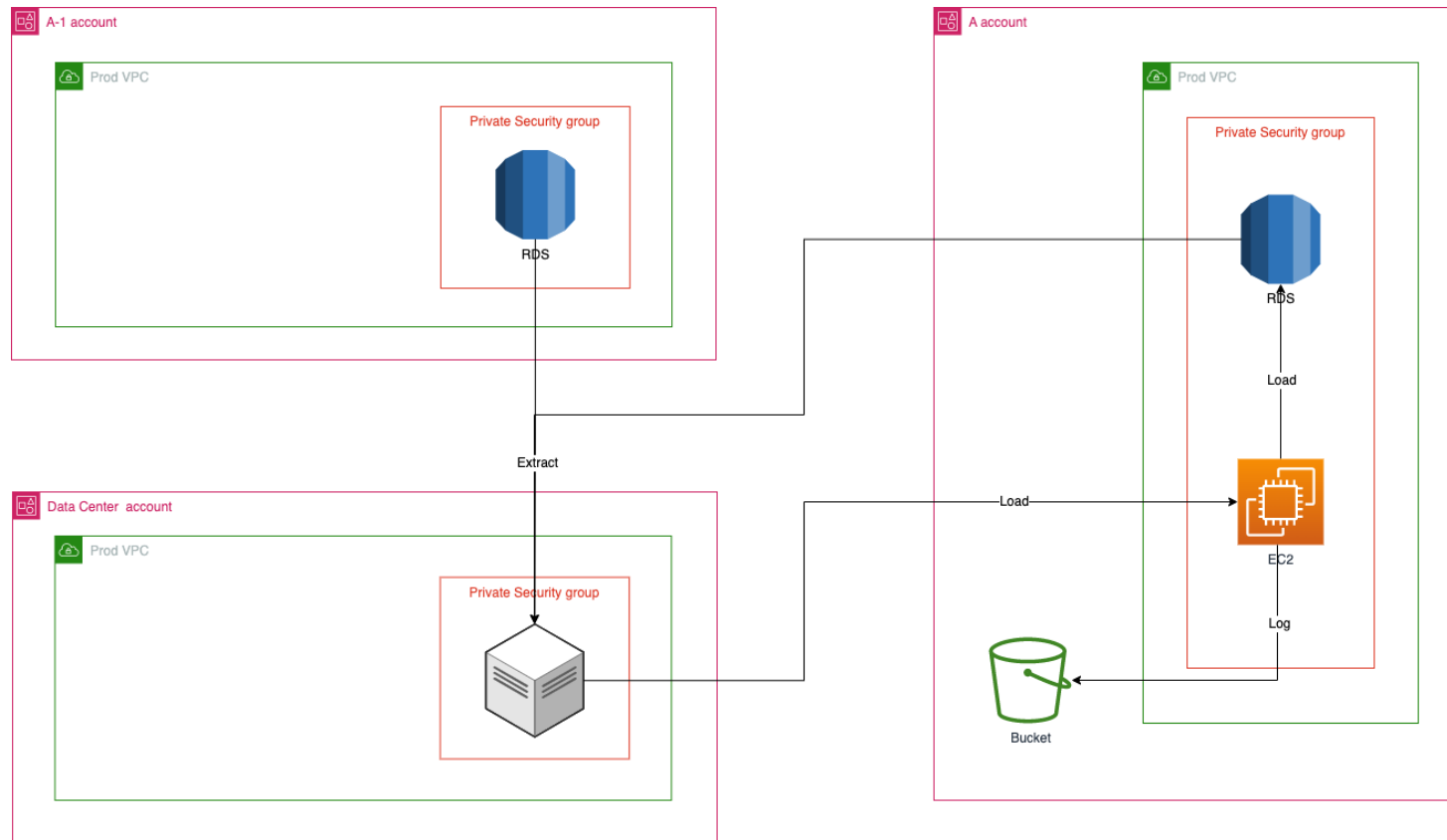| Version	Date	Description	Author
1.0	2022-10-19	Initial	SA
1.1	2022-10-31	Add use case, accounting reports, programming list, sequence diagram, discount logic	SA
1.2	2022-11-16	Update discount logic, programming list Add Workflow	SA
1.3	2022-11-22	Update discount logic, Workflow, Resource & Schedule	SA
1.4	2022-12-21	Update table schema, add error handling plan	SA

Reference Doc/Link

Doc Name	Path

Contents

1. System Architecture

2. Requirements of Software/Hardware

Hardware:

EC2, ALB, RDS, S3, CodeCommit,

Software:

Mysql, Canner Software, php, python

3. Use Case

Use Case					
Sales	**AWS**	**Customer**	**A-1 Company**	**A Company**	**A Accounting**

Key-in Customer Profile → Receive usage data and profile

Generate usage data → Receive usage data and profile → Receive data

Receive usage data and profile → Send bill → Receive bill
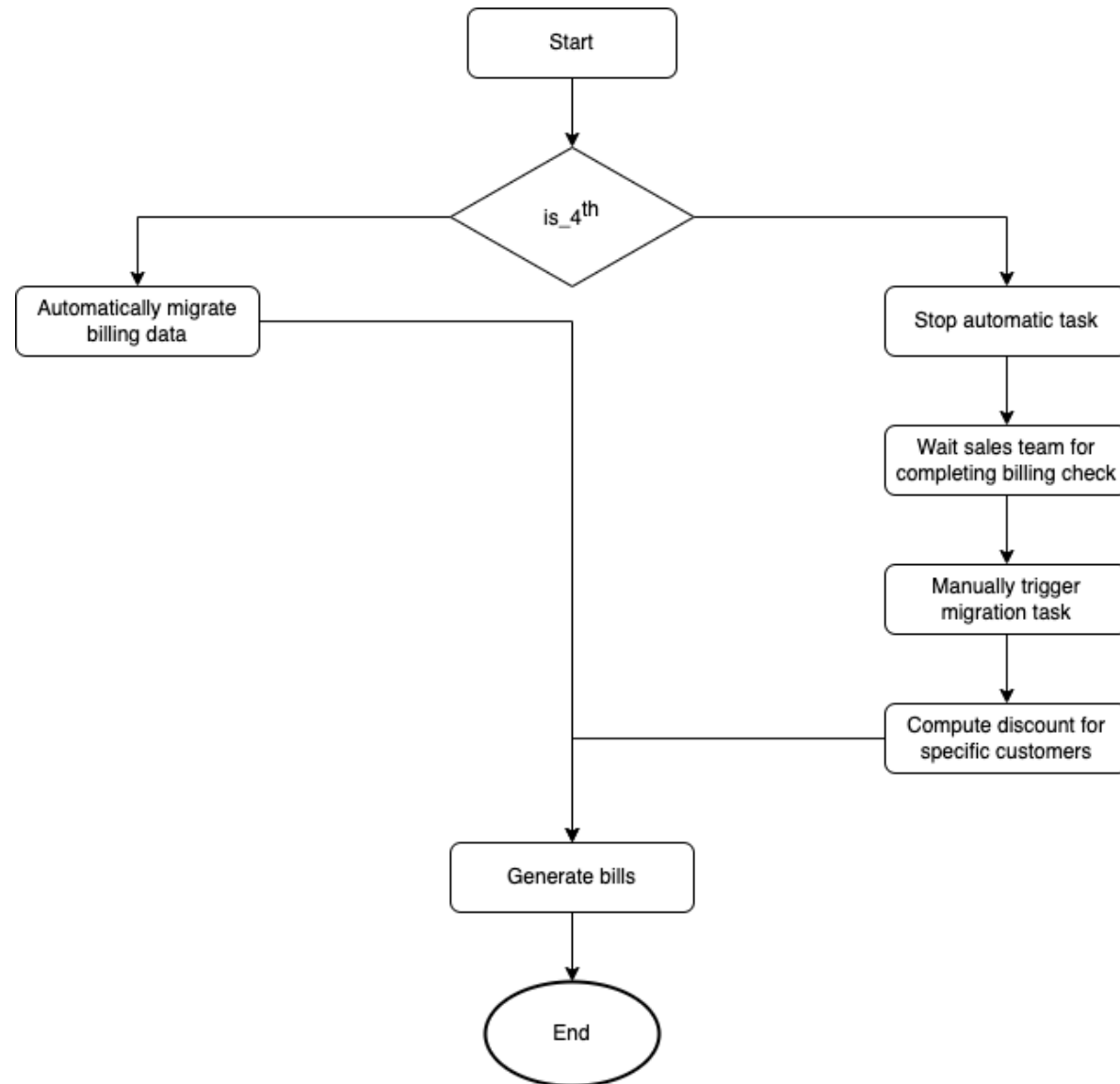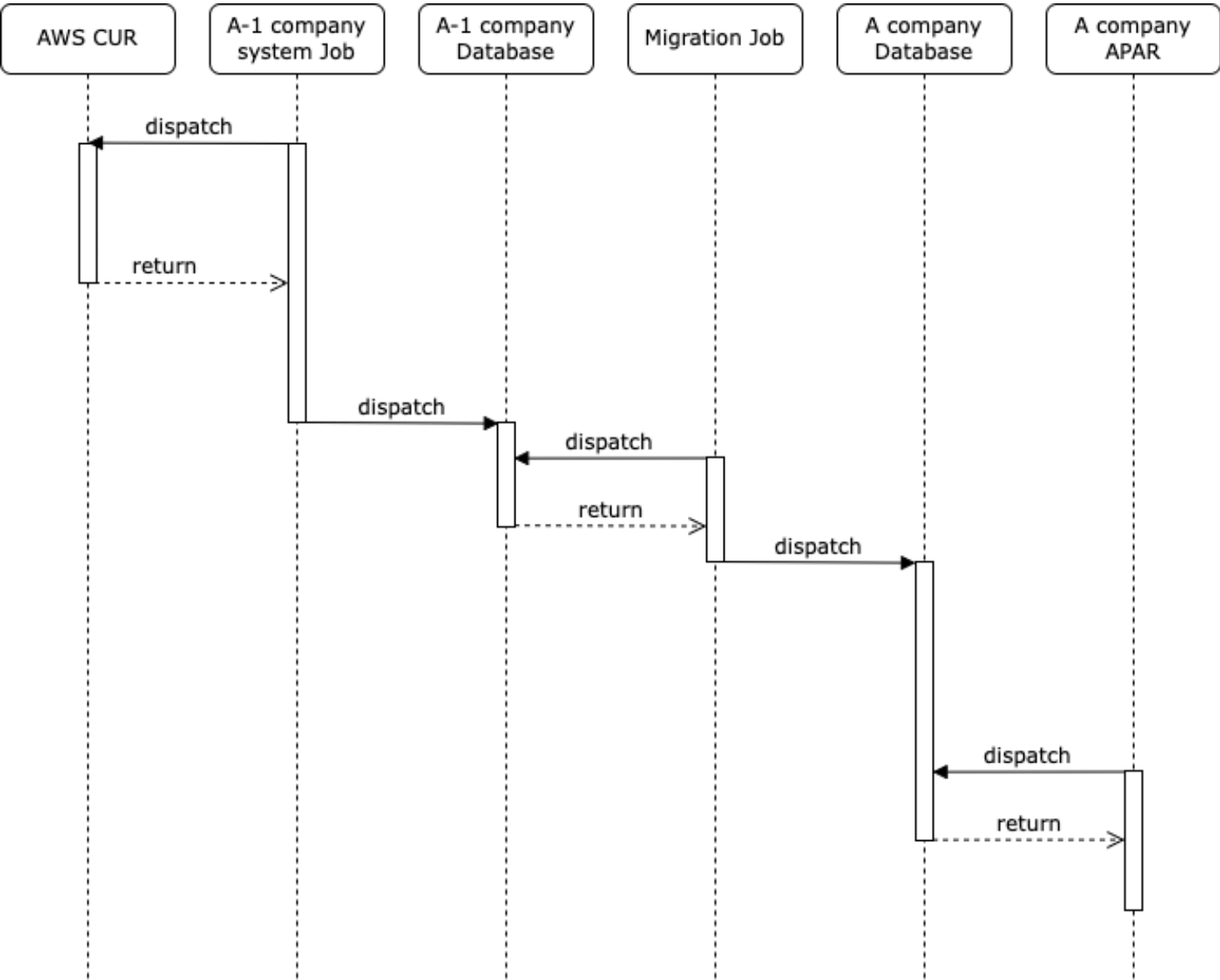
Receive data → Generate APAR → Receive APAR
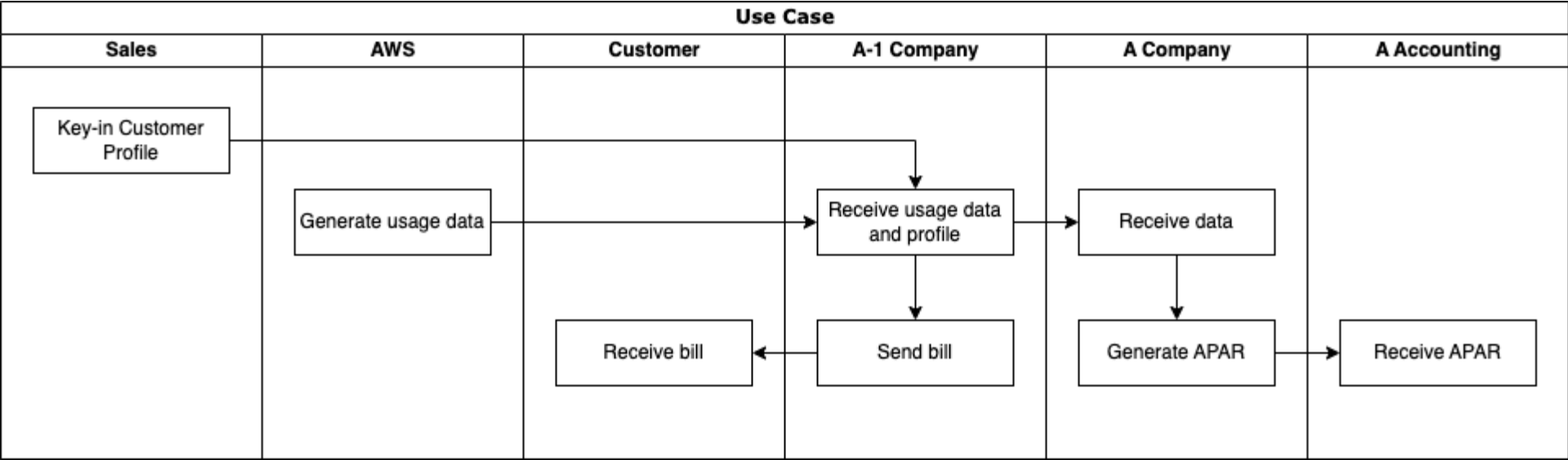
4. UI Layout(Optional)

5. Diagram (Optional)

Workflow

Sequence Diagram:

6. Data Flow (Optional)
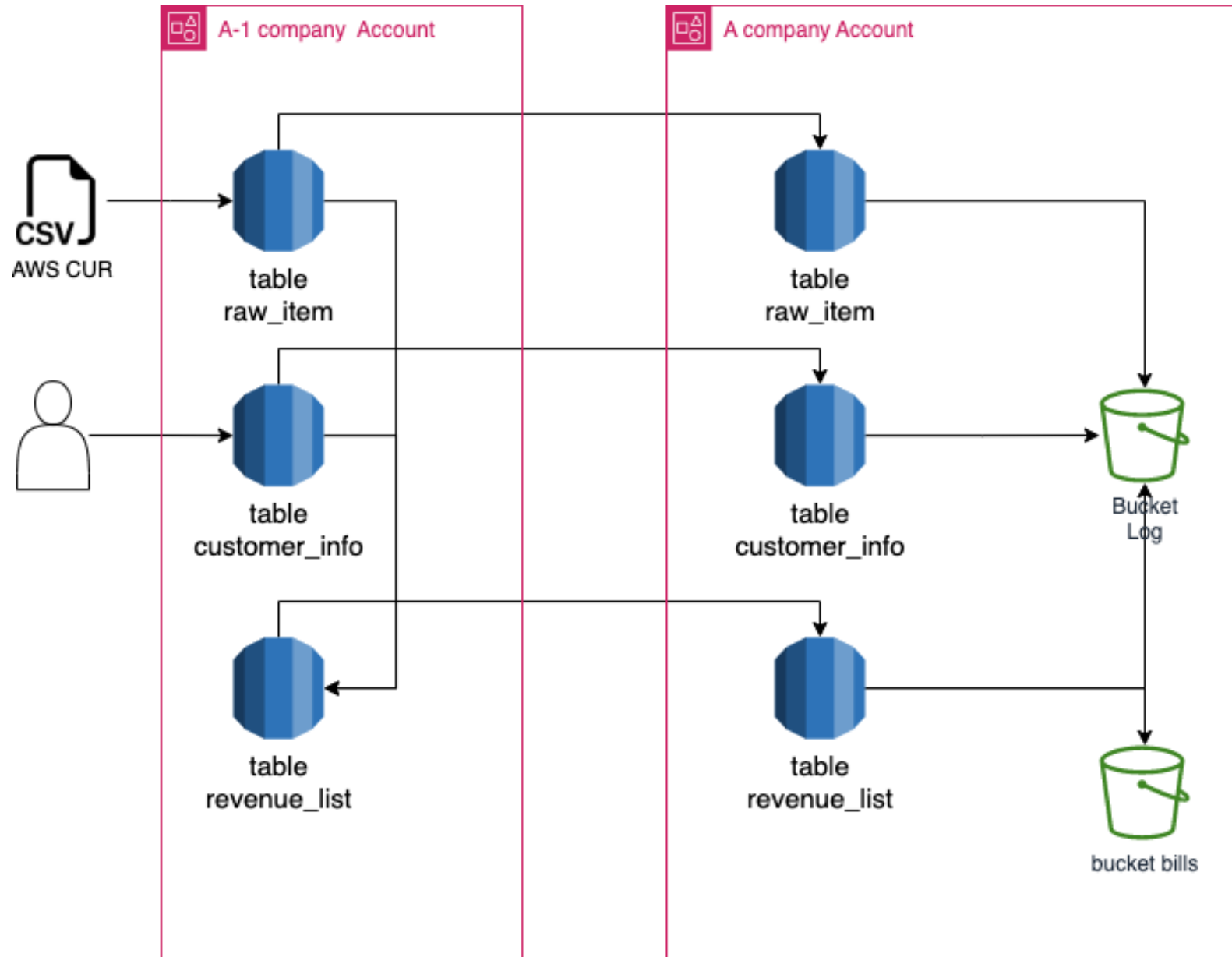
7. Discount Logic

Customer ID	Country	Discount rate	Memo
HK939	HK	1%	A company will remit the AWS usage fee on behalf of A-1 company. However, A company will charge a service fee to A-1 company by offering a discount from A-1 company to A company.
HK939	China	1%	
HK140	China	2%	

8. S3 Bucket Setup

- Bucket Name
  - bill-{env} -company-migration
  - bill-{env}-company-migration -a1
- Lifecycle
  - expire objects after 90 days
  - delete noncurrenct objects after 5 days
- Path
  - bucket/table/yyyy/mm/.parquet

9. Error Handling

- Scenario 1: Wrong data from database
1. Wait for data correction
2. Re-run migration job manually
3. Re-run revenue generation job manually
- Scenario 2: Infra error in data centre
1. Contact system admin
2. Re-run migration job manually
3. Re-run revenue generation job manually

10. Accounting reports

There are hard-coded scripts in the following reports that need to be removed from sql scripts.
- AP / AR reports
- Report No4 ~ No7

11. Project List

There are hard-coded scripts in the following projects that need to be removed.
- /bill-apar -job
  - /src/main_close.py
- /bill-portal
  - /bill_admin/bill_cost_report_by_no.php
- /bill-apar -cronjob
  - /Services/GroupIdService.cs

12. DB Schema (Optional)

(You can put DB schema or ER Diagram here)

- **Add new tables**

TABLE_NAME	COLUMN_NAME	IS_NULLABLE	DATA_TYPE	column_type	column_key
department_mapping	id	NO	int	int(11)	PRI
	add_time	NO	varchar	varchar(10)	
	add_master	NO	int	int(11)	
	change_time	NO	varchar	varchar(10)	
	change_master	NO	int	int(11)	
	_0_dept_id	YES	varchar	varchar(30)	
	_1_dept_id	YES	varchar	varchar(30)	
	discount_num	NO	int	int(11)	
	hide	NO	char	char(1)	

Sample data

id	add_time	add_master	change_time	change_master	_0_dept_id	_1_dept_id	discount_num	hide
99	1673859075	0	1673859075	0	1130500	88CI9999	1	n

TABLE_NAME	COLUMN_NAME	IS_NULLABLE	DATA_TYPE	column_type	column_key
discount_mapping	add_time	NO	varchar	varchar(10)	
	add_master	NO	int	int(11)	
	change_time	NO	varchar	varchar(10)	
	change_master	NO	int	int(11)	
	discount_num	NO	int	int(11)	PRI
	_0_customer_id	NO	varchar	varchar(10)	
	discount_rate	YES	decimal	decimal(8,4)	

Sample data

add_time	add_master	change_time	change_master	discount_num	_0_customer_id	discount_rate
1673859075	0	1673859075	0	1	HK939	-0.01

TABLE_NAME	COLUMN_NAME	IS_NULLABLE	DATA_TYPE	column_type	column_key
sales_mapping	id	NO	int	int(11)	PRI
	add_time	NO	varchar	varchar(10)	
	add_master	NO	int	int(11)	
	change_time	NO	varchar	varchar(10)	
	change_master	NO	int	int(11)	
	_1_sap_prn_no	YES	varchar	varchar(11)	
	_1_name_id	NO	int	int(11)	
	_1_name	YES	varchar	varchar(100)	
	_0_sap_prn_no	YES	varchar	varchar(11)	
	_0_name_id	NO	int	int(11)	
	_0_name	YES	varchar	varchar(100)	
	hide	NO	char	char(1)	

Sample data

Id	add_time	add_master	change_time	change_master	_1_sap_prn_no	_1_name_id	_1_name	_0_sap_prn_no	_0_name_id	_0_name	hide
99	1673859075	0	1673859075	0	YK085	548	HK001	S0939	939	Angel Lousi	n

13. Resource & Schedule

Phase	Task	Output	Owner	Due Date
Requirement Discuss	Discuss requirements	URD	Team lead, PM	TBD
SA/SD	Analyze billing process	SA	SA	TBD
	Analyze billing raw data			
	Plan a new architecture of data pipeline			
	Plan a workflow of discount			
	Integration of data flow			
Implement	API for data centre	ST Report	Data engineer	TBD
	SQL for data extract			TBD
	Transform data in Python			TBD
	Optimize loading performance			TBD
UAT	APAR data validation	UAT	BD Team, QA, SA	TBD
	Accounting report validation			
	Bills and invoices validation			
Production	Release	Release Note Config Change Application Form	Team Lead, DevOps	TBD

R&D Dep. Supervisor _____