

BUSINESS CHANGE DOCUMENT

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DOCUMENT CONTROL

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<i>Confidential and Restricted Circulation</i>		Template Version:	V.3.0

Functional	
Need No	Description
	<ul style="list-style-type: none"> - ลด PreloadData ไว้ก่อน เพื่อลดการ query ซ้ำซ้อน - ปรับ Array ไม่ใช่ new Array ไปใช้ clear แทน - ปรับ logic การแบ่ง SUBJOB จากเดิม loop row-by-row มาเป็นการคำนวณ min/max ของแต่ละ SUBJOB ก่อนเริ่มงาน ทำให้แบ่งงานได้เร็ว - เพิ่ม Prepare Data โดย query ตาราง CSMS25 และ RLMS73 ครั้งเดียวแล้วเก็บใน HashMap เพื่อ reuse ใน loop แทนการ query ซ้ำ <p>2. IS170RL / IS170RLS</p> <ul style="list-style-type: none"> - ปรับการ fetch ข้อมูลจากตาราง ISTARGET จากเดิม loop ทีละ record (ทำให้แตก job ซ้ำ) มาเป็นการ split งานตาม batch size โดยใช้ SQL หา min/max ของ Contract No. และ Branch เพื่อดึงข้อมูลเป็น chunk ใหญ่ทีละก้อน ลดจำนวนครั้งที่เปิด cursor <p>3. ISD208S</p> <ul style="list-style-type: none"> - เพิ่มการใช้ MemCache กับตารางที่ข้อมูลไม่เปลี่ยนแปลง เช่น PWTB60, ILTB60, RLTB60 เพื่อลดการ query database ซ้ำ - สร้างตัวแปร substringT60fil เพื่อใช้ใน condition ต่าง ๆ แทนการ substring ซ้ำใน loop <p>4. IS175</p> <ul style="list-style-type: none"> - เพิ่ม Prepare Data โดย query ตารางข้อมูลขนาดเล็กแต่ถูกเรียกใช้บ่อย (เช่น GNTB16, GNTS17) ครั้งเดียวแล้วเก็บใน HashMap หลายตัว (ทุก queryMap) เพื่อ lookup O(1) - เพิ่มเงื่อนไข filter เฉพาะข้อมูลที่จำเป็นจริงเมื่อดึงตาราง RLMS01 ลดปริมาณข้อมูลที่ไม่จำเป็น <p>5. IS182S / IS182</p> <ul style="list-style-type: none"> - ปรับการเตรียม Statement Generation โดยใช้ import statement ร่วมกับโปรแกรม GNP025 และ GNP023 เพื่อลดการสร้าง object และ string concatenation ซ้ำ ลด overhead ในส่วนการสร้างรายงาน <p>6. ISGPREFJOBRL / ISCPYF03 / ISCPYF02 (Daily Backup Data)</p> <ul style="list-style-type: none"> - ใช้ Java 8 Native Batch Processing รองรับ Re-run และ Idempotency (initial ค่าตั้งต้น, execution context, mapping value) - แยกการสร้าง SQL เป็น Builder เพื่อความอ่านง่ายและ reuse ได้ - บันทึกสถานะงานลงตาราง Monitoring เพื่อรองรับ Retry และป้องกัน duplicate - ใช้ Multi-Worker + Parallelism แบ่งงานตาม Schema+Table ลดเวลาโดยรวม - จัดการ Index โดย Disable Non-Clustered Index ก่อน Insert และ Rebuild หลังจบงาน - ใช้ Staging Table Workflow (RLMS01STG → RLMS01 → RLMS01H) พร้อมกรองข้อมูลซ้ำ ลดการ insert ซ้ำซ้อน <p>7. IS2271 / IS2271S</p> <ul style="list-style-type: none"> - เปลี่ยน logic การแบ่ง SUBJOB จาก loop row-by-row เป็นการคำนวณ min/max ของแต่ละ SUBJOB เหมือน IS2273 - เพิ่ม Prepare Data โดย query ตาราง CSMS25 และ RLMS19 ครั้งเดียวแล้วเก็บใน HashMap เพื่อ reuse ใน loop <p>8. IS302</p> <ul style="list-style-type: none"> - เปลี่ยนการ insert ตาราง ISMS32 และ ISMS32TM เป็น Bulk Insert เพื่อลดจำนวน transaction - ใช้ MemCache กับตาราง GNTB17 และ GNTB27 - ทำ Preprocessing Data ก่อนเข้าฟังก์ชัน business - ปรับการ query CSMS03 และ delete ISMS32 จากเดิมทำใน while loop มาเป็น query เก็บไว้ก่อนแล้ว process ทีละแถว ลด I/O และ memory heap <p>9. Submit Job Program</p> <ul style="list-style-type: none"> - ปรับการ fetch ข้อมูลจาก CSWKCSN จากเดิม loop ทีละ record (ทำให้แตก job ซ้ำ) มาเป็นการ split งานตาม batch size โดยใช้ SQL หา min/max ของ CSN เพื่อดึงข้อมูลเป็น chunk ใหญ่ทีละก้อน <p>10. ISG321RLS</p> <ul style="list-style-type: none"> - ปรับ ใช้ Memcache ใช้กับ ตาราง Rtb05, ischan, isappt, iscamp - ปรับใช้ Preload Data ใช้กับ ตาราง csms13, Rlms01, Rlms02

Functional	
Need No	Description
	<p>เพื่อลดการ query ซ้ำซ้อน</p> <ul style="list-style-type: none"> - ปรับคุณภาพของการทำงานในการทำงานในแต่ละรอบให้ดีขึ้น - ปรับการใช้ Batch Insert เพื่อลดจำนวน transaction <p>11. IS303RLS</p> <ul style="list-style-type: none"> - PrepareData เตรียมข้อมูลก่อนนำไปใช้เพื่อลด loop การทำงาน (RLTB05, RLTB01, RLMS40) - เปลี่ยน Statement Delete จาก Hisun เป็น Native Delete ลดการ Query ไม่จำเป็น <p>12. ISGM07</p> <ul style="list-style-type: none"> - ปรับการใช้ Batch Insert เพื่อลดจำนวน transaction <p>13. IS1701CS</p> <ul style="list-style-type: none"> - ปรับเรื่อง memcache (RLTB05) เพื่อลดการ connection db - ปรับการใช้ Batch Delete ISMS11TM เพื่อลด header ในการส่ง query

1.2 ACCEPTANCE CRITERIA

Functional No.	Acceptance No.	Description
User ตรวจสอบ		
F-0001	AC-1001	<p>ตรวจสอบข้อมูลของ Table ISMS34, ISMD34, ISMS201, ISMS11RL, IS321, IS325MM, ISMS22, ISMS206, ISMD236, ISMS231, ISMS33, ISMD33, ISMS31, ISMS32, IS325 ตรงกับข้อมูล production ตามเงื่อนไขวันที่เลือก</p> <p>ตาม statement record count ดังนี้</p> <pre> SELECT (SELECT COUNT(*) FROM ISOD0001.ISMS34 WITH (NOLOCK) WHERE I34ASDT = 20251207)B198, (SELECT COUNT(*) FROM ISOD0001.ISMD34 WITH (NOLOCK) WHERE D34ASDT = 20251207)B202, (SELECT COUNT(*) FROM ISOD0001.ISMS201 WITH (NOLOCK) WHERE IPERIOD = 25681207)B208 SELECT (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS11RL WITH (NOLOCK) WHERE ICDTE = 25681207) A0001, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.IS321 WITH (NOLOCK) WHERE A21DTE = '2025-12-07') A0005, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.IS325MM WITH (NOLOCK) WHERE A25DTE = '2025-12-07') A0006, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS22 WITH (NOLOCK) WHERE ICDTE = 25681207) A0021, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS206 WITH (NOLOCK) WHERE IPERIOD = 25681207) A0044, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMD236 WITH (NOLOCK) WHERE DASOF = 25681207) A0057, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS231 WITH (NOLOCK) WHERE IPERIOD = 25681207) A0064, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS33 WITH (NOLOCK) WHERE I33ASDT = 20251207) A0109, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMD33 WITH (NOLOCK) WHERE D33ASDT = 20251207) A0111,sssss WITH (NOLOCK) WHERE M31ASDT = 20251207) A0132, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS32 WITH (NOLOCK) WHERE M32ASDT = 20251207) A0133, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.IS325_12 WITH (NOLOCK) WHERE A25DTE = '2025-12-07') A0134 </pre>

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statement, Before ต้องเท่ากันกับ After</div> <div><table><tr><td colspan="10">Before</td></tr><tr><td colspan="10">04 Where Date</td></tr><tr><td>B198</td><td>B202</td><td>B208</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9539</td><td>0</td><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>A0001</td><td>A0005</td><td>A0006</td><td>A0021</td><td>A0044</td><td>A0057</td><td>A0064</td><td>A0109</td><td>A0111</td><td></td></tr><tr><td>323</td><td>2391558</td><td>0</td><td>4273</td><td>4676466</td><td>1038</td><td>426564</td><td>2382019</td><td>0</td><td></td></tr><tr><td colspan="10">04 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F-0001	AC-1002	<div>เช็คผลรวมข้อมูล (Sum) เพื่อตรวจสอบผลรวมของยอดต่าง ๆ หรือ -- B198 --</div> <div>SELECT SUM(I34PRIC) AS SUM_I34PRIC, SUM(I34TOAM) AS SUM_I34TOAM, SUM(I34PCAM) AS SUM_I34PCAM, SUM(I34UIDA) AS SUM_I34UIDA, SUM(I34INTR) AS SUM_I34INTR, SUM(I34CRUR) AS SUM_I34CRUR, SUM(I34DOWN) AS SUM_I34DOWN, SUM(I3412IN) AS SUM_I3412IN, SUM(I34NDUE) AS SUM_I34NDUE, SUM(I34OPR) AS SUM_I34OPR,</div>																																																																																																																																																																																																																																																																																																																																										

Functional No.	Acceptance No.	Description
		SUM(I34OIN) AS SUM_I34OIN, SUM(I34OUS) AS SUM_I34OUS, SUM(I34OCOL) AS SUM_I34OCOL, SUM(I34OOTH) AS SUM_I34OOTH, SUM(I34P1PCP) AS SUM_I34P1PCP, SUM(I34P1INT) AS SUM_I34P1INT, SUM(I34P1CRU) AS SUM_I34P1CRU, SUM(I34P1PNT) AS SUM_I34P1PNT, SUM(I34P1OTH) AS SUM_I34P1OTH, SUM(I34P1T01) AS SUM_I34P1T01, SUM(I34P1T02) AS SUM_I34P1T02, SUM(I34P1TPP) AS SUM_I34P1TPP, SUM(I34P1T21) AS SUM_I34P1T21, SUM(I34P1T99) AS SUM_I34P1T99, SUM(I34ODAM) AS SUM_I34ODAM, SUM(I34SOSA) AS SUM_I34SOSA FROM ISOD0001.ISMS34 WITH (NOLOCK) WHERE I34ASDT = 20251207 -- B198 -- -- B202 -- SELECT SUM(D34TOAM) AS SUM_D34TOAM, SUM(D34OPR) AS SUM_D34OPR, SUM(D34P1PCP) AS SUM_D34P1PCP, SUM(D34P1INT) AS SUM_D34P1INT, SUM(D34P1CRU) AS SUM_D34P1CRU, SUM(D34P1T01) AS SUM_D34P1T01, SUM(D34P1T02) AS SUM_D34P1T02, SUM(D34P1TPP) AS SUM_D34P1TPP, SUM(D34P1T21) AS SUM_D34P1T21, SUM(D34P1T99) AS SUM_D34P1T99, SUM(D34P23) AS SUM_D34P23 FROM ISOD0001.ISMD34 WHERE D34ASDT = 20251207; -- B202 -- -- B208 -- SELECT SUM(ITCALLAC) AS SUM_ITCALLAC, SUM(ITCALLCU) AS SUM_ITCALLCU, SUM(ITCALL0AC) AS SUM_ITCALL0AC, SUM(ITCALL0CU) AS SUM_ITCALL0CU, SUM(ITCALL1AC) AS SUM_ITCALL1AC, SUM(ITCALL1CU) AS SUM_ITCALL1CU, SUM(ITCALL2AC) AS SUM_ITCALL2AC, SUM(ITCALL2CU) AS SUM_ITCALL2CU, SUM(ITCALL3AC) AS SUM_ITCALL3AC, SUM(ITCALL3CU) AS SUM_ITCALL3CU, SUM(ITCALL4AC) AS SUM_ITCALL4AC, SUM(ITCALL4CU) AS SUM_ITCALL4CU, SUM(IPPCALLAC) AS SUM_IPPCALLAC, SUM(IPPCALLCU) AS SUM_IPPCALLCU, SUM(IPPCAL0AC) AS SUM_IPPCAL0AC, SUM(IPPCAL0CU) AS SUM_IPPCAL0CU, SUM(IPPCAL1AC) AS SUM_IPPCAL1AC, SUM(IPPCAL1CU) AS SUM_IPPCAL1CU,
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Functional No.	Acceptance No.	Description
		SUM(IPPCAL2AC) AS SUM_IPPCAL2AC, SUM(IPPCAL2CU) AS SUM_IPPCAL2CU, SUM(IPPCAL3AC) AS SUM_IPPCAL3AC, SUM(IPPCAL3CU) AS SUM_IPPCAL3CU, SUM(IPPCAL4AC) AS SUM_IPPCAL4AC, SUM(IPPCAL4CU) AS SUM_IPPCAL4CU, SUM(IPDCALLAC) AS SUM_IPDCALLAC, SUM(IPDCALLCU) AS SUM_IPDCALLCU, SUM(IPDCAL0AC) AS SUM_IPDCAL0AC, SUM(IPDCAL0CU) AS SUM_IPDCAL0CU, SUM(IPDCAL1AC) AS SUM_IPDCAL1AC, SUM(IPDCAL1CU) AS SUM_IPDCAL1CU, SUM(IPDCAL2AC) AS SUM_IPDCAL2AC, SUM(IPDCAL2CU) AS SUM_IPDCAL2CU, SUM(IPDCAL3AC) AS SUM_IPDCAL3AC, SUM(IPDCAL3CU) AS SUM_IPDCAL3CU, SUM(IPDCAL4AC) AS SUM_IPDCAL4AC, SUM(IPDCAL4CU) AS SUM_IPDCAL4CU, SUM(IRECCACCU) AS SUM_IRECCACCU, SUM(IRECCUST) AS SUM_IRECCUST, SUM(IRECAACCU) AS SUM_IRECAACCU, SUM(IRECACUST) AS SUM_IRECACUST, SUM(ICONC_DIR) AS SUM_ICONC_DIR, SUM(ICONO_PER) AS SUM_ICONO_PER, SUM(ICON_NA) AS SUM_ICON_NA, SUM(ICON_LM) AS SUM_ICON_LM, SUM(ICOMP_CA) AS SUM_ICOMP_CA FROM ISOD0001.ISMS201 WHERE IPERIOD = 25681207; -- B208 -- -- A0001 -- SELECT SUM(IRCL_11) AS SUM_IRCL_11, SUM(IRLAV) AS SUM_IRLAV FROM AS400DB01.ISOD0001.ISMS11RL WHERE ICDTE = 25681207; -- A0001 -- -- A0005 -- SELECT SUM(A21ARO) AS SUM_A21ARO, SUM(A21AME) AS SUM_A21AME, SUM(A21PRE) AS SUM_A21PRE, SUM(A21WOO) AS SUM_A21WOO, SUM(A21WOB) AS SUM_A21WOB, SUM(A21WCO) AS SUM_A21WCO, SUM(A21WPR) AS SUM_A21WPR FROM AS400DB01.ISOD0001.IS321 WHERE A21DTE = '2025-12-07' -- A0005 -- -- A0006 -- SELECT SUM(A25ARO) AS SUM_A25ARO, SUM(A25AME) AS SUM_A25AME, SUM(A25PRE) AS SUM_A25PRE, SUM(A25WOO) AS SUM_A25WOO,
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Functional No.	Acceptance No.	Description
		SUM(A25WOB) AS SUM_A25WOB, SUM(A25WCO) AS SUM_A25WCO, SUM(A25WPR) AS SUM_A25WPR FROM AS400DB01.ISOD0001.IS325MM WHERE A25DTE = '2025-12-07' -- A0006 -- -- A0021 -- SELECT SUM(IDAYS) AS SUM_IDAYS, SUM(ISALARY) AS SUM_ISALARY, SUM(IETIME1) AS SUM_IETIME1 FROM AS400DB01.ISOD0001.ISMS22 WHERE ICDTE = 25681207; -- A0021 --
F-0001	AC-1003	ลดเวลาของ process DayEnd IS (Refer production จาก 7 ชั่วโมง เหลือประมาณ 4 ชั่วโมง) ประมาณ 42.8%

1.3 RiskZ

Risk Information		Risk Analyze	Risk Mitigation
Risk No.	Risk Descriptions	Priority Rating	Plan
1		High	
2		Low	
3		Medium	

1.4 ABBREVIATION / FORMULA

1.4.1 Abbreviation

Abbreviation/Term	Definition

1.4.2 Formula

define	Formula

2.0 REQUIREMENTS ANALYSIS

2.1 FUNCTIONAL REQUIREMENTS

Feature code	Feature Description
F-0001	1. IS2273, IS2273S เปลี่ยน updateAsofIsms2273RL() เป็น Batch Update โดยใช้ PreparedStatement.addBatch() และ executeBatch() เพื่ออัปเดตหลาย record ใน transaction เดียว

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```
private void queryAllCsm25() throws Exception{
    csm25CidList = new ArrayList<>();
    StringBuilder sql = new StringBuilder();
    sql.append("select M25CID from CS000001.CSM25 group by M25CID");

    Connection ds = getReadOnlyConnection(sql.toString());
    ResultSet rs = null;
    try{
        writeLog(sql.toString());
        writeTrc2(sql.toString(), "info: " + "0");
        rs = ds.createStatement().executeQuery(sql.toString());
        while(rs.next()){
            String cid = rs.getString("columnindex 1");
            csm25CidList.add(cid);
        }
    }catch(SQLException e){
```

[illegible]

Feature Description

```
String mbrId=BoxCoreServer.getMbrFromOverDb(transactionId, subName, "RLMS731/");
if(mbrId!=null){
    mbrId7="MUR:"+mbrId7+"";
    rms731L.addFilter(mbrId7);
}
rms731L.setLimit(true);
rms731L.CursorTuner = CursorTuningConnectDb(rms731P());
// rms731L.cursor=rms731L.openCursor();
rms731P.Cursor = rms731L.CursorTuner.openCursorTuning();
}
// if (rms731P.CursorTuner.readNext()) rms731L.setSqlCode(0);
// else rms731P.L.setSqlCode(100);

while(rms731L.CursorTuner.readNext()){
    stoMys731L.add(rms731P.L.getStoValue());
}
}
```

```
for(String stuData : stuRes73r1){
    res73r1.setToValue(stuData);
    boolean foundCid = cursu75CidList.stream().anyMatch(s32 -> {
        try {
            return s32.trim().equalsIgnoreCase(res73r1.getP73col().getDbValue().trim());
        } catch (Exception e) {
            log.error("Error ---> {} ", e.toString());
            return false;
        }
    });
}
//sss// 2P 2PFOUND(2397519) sss
if (foundCid){
    //sss// 2-ADD 8LP73086 2397519
    xsbrn.setValue(res73r1.getP73brn().getValue());
}
```

2. Is170rl,IS170rls RL

ปรับการ Fetch ข้อมูล ISTARGET จากเดิมทำด้วย loop ทำให้แตก job ข้าม เลยปรับเป็นการ split หา max min ของ Contract กับ Branch นั้น โดยการ select ข้อมูล ขึ้นอยู่กับ batchsize

3. ISD208S

ปรับใช้ memcache กับ table ที่สามารถใช้ได้ เช่น Pwtb60, Iltb60, Rltb60

[illegible][illegible]

Declare substringT60fil สำหรับ เรียกใช้ ใน Condition ต่างๆ

```
//###//          IF          %SUBST(ILT60FIL:6:1) = "0" ###
if ( CommonsUtils.Equals(SubstringT60fil,"0") ){
```

File Name:	BCD 68110270 TUNING PERFORMANCE IS PROCESS
------------	--

Feature code	Feature Description
	<p>4. IS175</p> <p>เตรียม Prepare Data สำหรับ Table ที่มีข้อมูลน้อยและถูก fetch บ่อย ๆ ด้วย HashMap สำหรับทุก queryMap (เช่น gntb16Map, gnts17Map)</p> <pre>private void AMS01L6() throws Exception{ writeTrc(str: "AMS01L6()",getLineNumber()); //query prepare Map<String,String> gntb262Map = queryGntb262(); Map<String,String> rltb31Map = queryRltb31(); Map<String,String> rltb01Map = queryRltb01(); queryGntb01(); queryGntb16(); queryGnts16(); queryGnts17(); //#### Z-ADD *ZERO PXCONT 16 0### pxcont.setValue(CommonUtils.getSameCharStr(len: 16, cc: '0'));</pre> <pre>String gntb262Sto = gntb262Map.get(rltb01.getGntb262Sto().getBValue()); //##### IF %FOUND(GNTB262STO) ### if (!StringUtils.isEmpty(gntb262Sto)){ gntb262.setStoValue(gntb262Sto); //##### MOVE(LF) %ZERO %FOUND### lms22.getIposdesc().setValue(lms22.getIposdesc().true, gntb262.getGntb262().getBValue()); //### ENDIF### } //##### ELSE### }else{</pre> <p>เพิ่มเงื่อนไขการดึงข้อมูล Table RLMS01 เอาเฉพาะข้อมูลที่ใช้</p> <pre>rlms01.setFilter("PIPLM2" < "A" and (PIPLM1) < " " and (PIPLM1) < " " + gntb262Sto.getBValue()); rlms01.setLimit(1000); rlms01.setCursor(rlms01.openCursor()); //##### PRGENT %FOUND %FOUND### if (rlms01Cursor.hasNext()) rlms01.setSqlcode(0); else rlms01.setSqlcode(100); if(rlms01.getSqlcode()==0) { if (Long.parseLong(pxcont.getBValue().trim().length()) > 0; pxcont.getBValue().trim().length() < Long.parseLong(rlms01.getPIPLM2().getSqlcode(100)); } //##### DO %FOUND(GNTB262STO)### while(!rlms01.getSqlcode()==100){ //##### IF PIPLM2 = "A" and PIPLM1 = " " and PIPLM1 = " " + gntb262Sto.getBValue() if (CommentUtils.Equals(rlms01.getPIPLM2().getIposdesc(), "A") && CommentUtils.IsSameCharStr(rlms01.getPIPLM1().getBValue(),</pre> <p>5. IS182S, IS182 – Statement Generation Preparation</p> <p>ปรับใช้ import statement กับ Program GNP025,GNP023</p> <pre>GNP025 GNP023 GNP024 GNP025 GNP026 GNP027 GNP028 GNP029 GNP030 GNP031 GNP032 GNP033 GNP034 GNP035 GNP036 GNP037 GNP038 GNP039 GNP040 GNP041 GNP042 GNP043 GNP044 GNP045 GNP046 GNP047 GNP048 GNP049 GNP050 GNP051 GNP052 GNP053 GNP054 GNP055 GNP056 GNP057 GNP058 GNP059 GNP060 GNP061 GNP062 GNP063 GNP064 GNP065 GNP066 GNP067 GNP068 GNP069 GNP070 GNP071 GNP072 GNP073 GNP074 GNP075 GNP076 GNP077 GNP078 GNP079 GNP080 GNP081 GNP082 GNP083 GNP084 GNP085 GNP086 GNP087 GNP088 GNP089 GNP090 GNP091 GNP092 GNP093 GNP094 GNP095 GNP096 GNP097 GNP098 GNP099 GNP100 GNP101 GNP102 GNP103 GNP104 GNP105 GNP106 GNP107 GNP108 GNP109 GNP110 GNP111 GNP112 GNP113 GNP114 GNP115 GNP116 GNP117 GNP118 GNP119 GNP120 GNP121 GNP122 GNP123 GNP124 GNP125 GNP126 GNP127 GNP128 GNP129 GNP130 GNP131 GNP132 GNP133 GNP134 GNP135 GNP136 GNP137 GNP138 GNP139 GNP140 GNP141 GNP142 GNP143 GNP144 GNP145 GNP146 GNP147 GNP148 GNP149 GNP150 GNP151 GNP152 GNP153 GNP154 GNP155 GNP156 GNP157 GNP158 GNP159 GNP160 GNP161 GNP162 GNP163 GNP164 GNP165 GNP166 GNP167 GNP168 GNP169 GNP170 GNP171 GNP172 GNP173 GNP174 GNP175 GNP176 GNP177 GNP178 GNP179 GNP180 GNP181 GNP182 GNP183 GNP184 GNP185 GNP186 GNP187 GNP188 GNP189 GNP190 GNP191 GNP192 GNP193 GNP194 GNP195 GNP196 GNP197 GNP198 GNP199 GNP200 GNP201 GNP202 GNP203 GNP204 GNP205 GNP206 GNP207 GNP208 GNP209 GNP210 GNP211 GNP212 GNP213 GNP214 GNP215 GNP216 GNP217 GNP218 GNP219 GNP220 GNP221 GNP222 GNP223 GNP224 GNP225 GNP226 GNP227 GNP228 GNP229 GNP230 GNP231 GNP232 GNP233 GNP234 GNP235 GNP236 GNP237 GNP238 GNP239 GNP240 GNP241 GNP242 GNP243 GNP244 GNP245 GNP246 GNP247 GNP248 GNP249 GNP250 GNP251 GNP252 GNP253 GNP254 GNP255 GNP256 GNP257 GNP258 GNP259 GNP260 GNP261 GNP262 GNP263 GNP264 GNP265 GNP266 GNP267 GNP268 GNP269 GNP270 GNP271 GNP272 GNP273 GNP274 GNP275 GNP276 GNP277 GNP278 GNP279 GNP280 GNP281 GNP282 GNP283 GNP284 GNP285 GNP286 GNP287 GNP288 GNP289 GNP290 GNP291 GNP292 GNP293 GNP294 GNP295 GNP296 GNP297 GNP298 GNP299 GNP300 GNP301 GNP302 GNP303 GNP304 GNP305 GNP306 GNP307 GNP308 GNP309 GNP310 GNP311 GNP312 GNP313 GNP314 GNP315 GNP316 GNP317 GNP318 GNP319 GNP320 GNP321 GNP322 GNP323 GNP324 GNP325 GNP326 GNP327 GNP328 GNP329 GNP330 GNP331 GNP332 GNP333 GNP334 GNP335 GNP336 GNP337 GNP338 GNP339 GNP340 GNP341 GNP342 GNP343 GNP344 GNP345 GNP346 GNP347 GNP348 GNP349 GNP350 GNP351 GNP352 GNP353 GNP354 GNP355 GNP356 GNP357 GNP358 GNP359 GNP360 GNP361 GNP362 GNP363 GNP364 GNP365 GNP366 GNP367 GNP368 GNP369 GNP370 GNP371 GNP372 GNP373 GNP374 GNP375 GNP376 GNP377 GNP378 GNP379 GNP380 GNP381 GNP382 GNP383 GNP384 GNP385 GNP386 GNP387 GNP388 GNP389 GNP390 GNP391 GNP392 GNP393 GNP394 GNP395 GNP396 GNP397 GNP398 GNP399 GNP400 GNP401 GNP402 GNP403 GNP404 GNP405 GNP406 GNP407 GNP408 GNP409 GNP410 GNP411 GNP412 GNP413 GNP414 GNP415 GNP416 GNP417 GNP418 GNP419 GNP420 GNP421 GNP422 GNP423 GNP424 GNP425 GNP426 GNP427 GNP428 GNP429 GNP430 GNP431 GNP432 GNP433 GNP434 GNP435 GNP436 GNP437 GNP438 GNP439 GNP440 GNP441 GNP442 GNP443 GNP444 GNP445 GNP446 GNP447 GNP448 GNP449 GNP450 GNP451 GNP452 GNP453 GNP454 GNP455 GNP456 GNP457 GNP458 GNP459 GNP460 GNP461 GNP462 GNP463 GNP464 GNP465 GNP466 GNP467 GNP468 GNP469 GNP470 GNP471 GNP472 GNP473 GNP474 GNP475 GNP476 GNP477 GNP478 GNP479 GNP480 GNP481 GNP482 GNP483 GNP484 GNP485 GNP486 GNP487 GNP488 GNP489 GNP490 GNP491 GNP492 GNP493 GNP494 GNP495 GNP496 GNP497 GNP498 GNP499 GNP500 GNP501 GNP502 GNP503 GNP504 GNP505 GNP506 GNP507 GNP508 GNP509 GNP510 GNP511 GNP512 GNP513 GNP514 GNP515 GNP516 GNP517 GNP518 GNP519 GNP520 GNP521 GNP522 GNP523 GNP524 GNP525 GNP526 GNP527 GNP528 GNP529 GNP530 GNP531 GNP532 GNP533 GNP534 GNP535 GNP536 GNP537 GNP538 GNP539 GNP540 GNP541 GNP542 GNP543 GNP544 GNP545 GNP546 GNP547 GNP548 GNP549 GNP550 GNP551 GNP552 GNP553 GNP554 GNP555 GNP556 GNP557 GNP558 GNP559 GN</pre>

Feature code	Feature Description
	<p>6. ISGPREFJOBRL, ISCPYF03, ISCPYF02 – Daily Backup Data</p> <p>1. Java 8 Native Batch Processing</p> <ul style="list-style-type: none"> - ออกแบบโครงสร้าง Job ให้รองรับการ Re-run และ Idempotency เช่น การ Initial ค่าตั้งต้น, การเตรียม Execution Context, และการ Mapping Value ที่จำเป็นก่อนเริ่มทำงาน - แยกขั้นตอนการสร้าง SQL Statement ออกเป็น Builder ชัดเจน เพื่อเพิ่มความอ่านง่าย ลดการซ้ำซ้อน และใช้ซ้ำได้ในการ Execute หลายรอบ - กำหนดมาตรฐานในการบันทึกสถานะงาน (Success/Fail) ลงตาราง Monitoring เพื่อรองรับ Retry และป้องกันการทำงานซ้ำโดยไม่ตั้งใจ (duplicate execution) <p>2. Multi-Worker Processing และ Parallelism</p> <p>ออกแบบระบบเป็น Worker หลายตัวเพื่อรองรับงานแบบ Parallel ลด Time-to-Completion โดยแบ่งข้อมูลเป็นชุด (Partition) ตามปริมาณงานของ Schema+Table มีการจัดการ Exception ที่เป็นมาตรฐานในทุก Worker เพื่อให้การ Re-run ทำได้ถูกต้องโดยไม่กระทบข้อมูลหลัก</p> <p>3. Index Management (DISABLE / REBUILD สำหรับ NONCLUSTERED Indexes)</p> <ul style="list-style-type: none"> - ปิด (DISABLE) NONCLUSTERED Indexes ก่อนเริ่ม Batch Insert เพื่อเพิ่ม Performance และลด Fragmentation - ทำการ REBUILD Index หลังงานจบ เพื่อคืนประสิทธิภาพการค้นหาและป้องกันปัญหาซ้ำจาก Index เสียรูป (fragmented) - ใช้เฉพาะ Index ที่จำเป็นต่อ Query จริง ๆ เพื่อลด Overhead ของการ Maintain Index ในระหว่างโหลดข้อมูล <p>4. Staging Table Workflow</p> <ul style="list-style-type: none"> - ออกแบบ Data Flow ให้ชัดเจนระหว่าง Staging (RLMS01STG) → Master (RLMS01) → History (RLMS01H) เช่น Insert ข้อมูลเข้า Staging (RLMS01STG), Delete ข้อมูล Staging ตามเงื่อนไข, Insert ข้อมูลเข้า Table หลัก RLMS01, Insert ลง Table History (RLMS01H) <p><u>รูปแบบการทำงานของ Staging table:</u></p> <p>File03: Insert-BIOD0001.RLMS01 → BIOD0001.RLMS01H (ผ่านขั้นตอนกรองข้อมูลเข้ามาแล้ว)</p> <p>File03: Insert-BIOD0001.RLMS01STG → BIOD0001.RLMS01H (ผ่านขั้นตอนกรองข้อมูลเข้ามาแล้ว)</p> <p>File02: Insert-RL0D0001.RLMS01 → BIOD0001.RLMS01STG</p> <p>File02: Delete-BIOD0001.RLMS01STG เฉพาะข้อมูลที่ซ้ำออก</p> <p>File02: Insert Distinct-RL0D0001.RLMS01 → BIOD0001.RLMS01 (นำเข้าเฉพาะข้อมูลที่เข้ามากรอง)</p>

Feature code	Feature Description
	<p>7. IS2271, IS2271S</p> <p>เปลี่ยน Logic การแบ่ง SUBJOB จากเดิม loop row by row เปลี่ยนเป็นการหา min/max ของการ SUBJOB แต่ละตัว</p> <pre> private void fetchData(int batchSize) throws Exception{ String sqlTemplate = "with offset as (" + "select top(%s) [P19CSN] from #LSD0001.RLMS19 as " + "where [P19CSN] > %s " + "AND [P19PJG] >= '%s' " + "group by [P19CSN] order by [P19CSN] " + ")select ISNULL(CAST(min(P19CSN) AS varchar),''),ISNULL(CAST(max(P19CSN) AS varchar),'') from offset"; String sql = String.format(sqlTemplate,batchSize,ecsn.getDbValue(),pxdate#8.getDbValue()); Connection ds = getReadOnlyConnection(sql); ResultSet rs = null; try{ writeLog(sql); writeTrc2(sql, "RLMS19"); rs = ds.createStatement().executeQuery(sql); while(rs.next()){ sconTunning = rs.getString(columnIndex 1); econTunning = rs.getString(columnIndex 2); } }catch(SQLException e){ </pre> <pre> private void ARI() throws Exception{ writeTrc("ARI", "ARI").getLineNumber(); //***// *LOVAL *SETTL RLMS19 FILTER([P19PJG] >= :PXDATE#8) COLUMN(P19CSN P19PJG)*** int batchSize = Integer.parseInt(jtrnrl.getValue()); while(true){ fetchData(batchSize); if(StringUtils.isNotBlank(sconTunning) && StringUtils.isNotBlank(econTunning)){ job.setValue(String.valueOf(Long.parseLong(job.getValue().trim().length())+0? "0":job.getValue().trim()+1)); ecosn.setValue(sconTunning); econsn.setValue(econTunning); ASBJB(); }else{ break; } } } </pre> <p>- เพิ่มการ Prepare Data สำหรับข้อมูลจาก CSMS25, RLMS19 ด้วย HashMap (query ครั้งเดียวแล้ว reuse ใน loops)</p>

Feature code	Feature Description
	<pre> private List<String> queryAllCsms25() throws Exception{ StringBuilder sql = new StringBuilder(); sql.append("select M25CID from CS000001.CSMS25 with(noLock) group by M25CID"); Connection ds = getReadOnlyConnection(sql.toString()); ResultSet rs = null; List<String> csms25CidList = new ArrayList<>(); try{ writeLog(sql.toString()); writeTrc2(sql.toString(), lineNo: "0"); rs = ds.createStatement().executeQuery(sql.toString()); while(rs.next()){ String cid = rs.getString(columnIndex: 1); csms25CidList.add(cid); } }catch(SQLException e){ </pre> <pre> String mbr151=WboxCoreServer.getMbrFromOverDbf(transactionId, mbrName: "RMS19"); if(mbr151!=null){ mbr151="MBR="+mbr151+""; rms19rrl.addFilter(mbr151); } rms19rrl.setLimit(true); rms19rrl.Cursor=rms19rrl.openCursor(); } List<String> stoRms19List = new ArrayList<>(); while (rms19rrl.Cursor.readNext()) { stoRms19List.add(rms19rrl.getStoValue()); } return stoRms19List; } </pre> <pre> //***// MBR W/IN OF (ELMS19)*** for(String stoRms19 : stoRms19List){ rms19rrl.setStoValue(stoRms19); //***// MOVE(P) W/BLANKS FWD C/D 1*** fndcid.initializeValue(); //***// 1 DU K J 1 DESS boolean isFoundCid = csms25CidList.stream().anyMatch(cid -> { try { return cid.trim().equalsIgnoreCase(rms19rrl.getP19pou().getDbValue().trim()); } catch (Exception e) { throw new RuntimeException(e); } }); //***// IF R/P19POU = C/CID(J) *** if (isFoundCid){ //***// MOVE(P) "Y" FWD C/D*** fndcid.setValue(W/Blank: true, W/Pad: true, W/ue: "Y"); </pre>


Feature code	Feature Description
8. IS302	<p>ทำการ Bulk insert ข้อมูล table isms32,isms32tm เพื่อ insert ข้อมูล</p> <pre data-bbox="657 376 1222 566">String jwt = thirdPartyUtility.getJwtToken(); connectionBulkInsert = thirdPartyUtility.getConnection(jwt, Str2: "CENTER"); CommonTunning.BulkInsert(connectionBulkInsert, isms32listData, isms32, batchSize: 1000); CommonTunning.BulkInsert(connectionBulkInsert, isms32tmListData, isms32tm, batchSize: 1000); connectionBulkInsert.close();</pre> <p>ทำ MemCache ข้อมูล table Gntb17,Gntb27</p> <pre data-bbox="657 582 1222 934">log.info("setKeyGntb17: {}",common.getM60sat().getDbValue()); gntb17.initializeValue(); String keyI7 = StringUtils.isEmpty(common.getM60sat().getDbValue()) ? "emptyGntb17" : common.getM60sat().getDbValue(); String stoGntb17 = CacheUtil.getOrRead(memName: "GNTB17",keyI7, String::new->{ String keyValue = ""; try{ if(!keyI7.equals("emptyGntb17")){ keyValue=keyI7; } gntb17.setFilter(""); gntb17.addFilter("[GN17ED] = " + keyValue + " [NTH= (MOLUCH)"; //Filter was added String[] orderFields33 = new String[1]; orderFields33[0] = "[GN17CU]";</pre> <p>ทำ Preprocessing data ก่อนเข้า function business</p> <p>ทำ Preprocessing data ก่อนเข้า function business ในส่วนของการ Query ข้อมูล Csms03 กับ Delete ข้อมูล Isms32 จากเดิมที่ทำใน While loop ก็ปรับมา Query เก็บไว้ก่อนแล้วนำมา process เพื่อ ลด IO database และ memory heap</p> <pre data-bbox="657 949 1222 1077">csms03MapData = csms03_Query(); delete_Isms32Query(batchSize: 3000);</pre>
9. Submit job program	<p>ปรับการ Fetch ข้อมูล CSWKCSN จากเดิมทำด้วย loop ทำให้แตก job ข้าง เลยปรับเป็นการ split หา max min ของ csn นั้นโดยการ select ข้อมูล ขึ้นอยู่กับ batchsize</p> <pre data-bbox="657 1305 1222 1798">private void fetchData_CSWKCSN(Long batchSize) throws Exception { StringBuilder sql = new StringBuilder(); sql.append("WITH error AS (select top ("batchSize") *from ["+getTableName()+"] where ["+getColumnName()+"] < 0)"); sql.append("where ["+getColumnName()+"] > " + minCsn + ") "); sql.append("order by ["+getColumnName()+"]"); sql.append("\n"); sql.append("SELECT TOP ("batchSize") *FROM ["+getTableName()+"] WHERE ["+getColumnName()+"] IN (select * from error)"); Connection db = getReadOnlyConnection(sql.toString()); ResultSet rs = null; try { writeLog(sql.toString()); writeTr2(Log,sql.toString(), "Batch:" + batchSize); rs = db.createStatement().executeQuery(sql.toString()); while(rs.next()){ LongIdMin = rs.getLong(getColumnName()); LongIdMax = rs.getLong(getColumnName()); } }</pre> <pre data-bbox="657 1814 1222 1986">writeInfo() { fetchData_CSWKCSN(Long.parseLong(log.getProperty("batchSize")),Long.parseLong(log.getProperty("minCsn")),Long.parseLong(log.getProperty("maxCsn"))); } for (int i = 0; i < batchCount; i++) { LongIdMin = rs.getLong(getColumnName()); LongIdMax = rs.getLong(getColumnName()); }</pre>

Feature code	Feature Description
	<p>10. ISG321RLS</p> <p>- ปรับ ใช้ Memcache ใช้กับ ตาราง ischan, isappt, iscamp</p> <pre> //user 045010027appt +1 private String query_ISCAMP(String wxbust,String wxcamp) throws Exception{ //##### KXCAMP CHAIN ISCAMP### iscamp.setFilter(""); iscamp.addFilter("[CAMK01] = '" + wxbust + "'"); iscamp.addFilter("[CAMK02] = '" + wxcamp + "' WITH (NOLOCK)"); //filter was added String[] orderFields43 = new String[2]; orderFields43[0] = "[CAMK01]"; orderFields43[1] = "[CAMK02]"; iscamp.setOrderFields(orderFields43); if (iscampCursor != null && iscampCursor.isOpened()) iscampCursor.close(); iscamp.setIndexName("-1"); String tableName44 = HboxCoreServer.getTabNameFromOverDbf(transactionId, tableName: "ISCAMP"); if (tableName44 != null) { if (tableName44.startsWith("QTEMP.")) tableName44 = tableName44.replace(target: "QTEMP.", replace: iscamp.setTableName(tableName44); } String mbr45 = HboxCoreServer.getMbrFromOverDbf(transactionId, tableName: "ISCAMP"); if (mbr45 != null) { mbr45 = "MBR=" + mbr45 + " "; iscamp.addFilter(mbr45); } iscamp.setLimit(false); iscamp.setStrictMode(true); iscampCursor = iscamp.openCursor(); if (iscampCursor.readNext()) iscamp.setSqlcode(0); else iscamp.setSqlcode(100); return iscamp.getStoValue(); } </pre> <p>- ปรับใช้ Preload Data ใช้กับ ตาราง csms13, Rlms01, Rlms02</p> <pre> //user 045010027appt +1 private void queryRlms02() { try{ //##### RLMS02 SETLL RLMS02 FILTER([P2BRN] = ' ' AND [P2CNT] = 0 AND [P2CNT] <= [DATE] AND ([P2BRN] rlms02.setFilter(""); rlms02.addFilter("[P2BRN] = '" + wlsbrn.getDbValue() + "'"); rlms02.addFilter("[P2CNT] = '" + wlsent.getDbValue() + "'"); rlms02.addFilter("[P2BRN] = '" + wlsbrn.getDbValue() + "'"); rlms02.addFilter("[P2CNT] = '" + wlsent.getDbValue() + "'"); rlms02.addFilter("[P2DEL] = ' ' AND [P2CNT] = 0 AND [P2CNT] <= '" + mdate.getDbValue() + "' WITH (NOLOCK)"); //filter was added String[] orderFields25 = new String[3]; orderFields25[0] = "[P2BRN]"; orderFields25[1] = "[P2CNT]"; rlms02.setOrderFields(orderFields25); if (rlms02Cursor != null && rlms02Cursor.isOpened()) rlms02Cursor.close(); rlms02.setIndexName("-1"); String tableName26 = HboxCoreServer.getTabNameFromOverDbf(transactionId, tableName: "RLMS02"); if (tableName26 != null) { if (tableName26.startsWith("QTEMP.")) tableName26 = tableName26.replace(target: "QTEMP.", replace: "K"); rlms02.setTableName(tableName26); } String mbr27 = HboxCoreServer.getMbrFromOverDbf(transactionId, tableName: "RLMS02"); if (mbr27 != null) { mbr27 = "MBR=" + mbr27 + " "; rlms02.addFilter(mbr27); } //begin setSelectFields { String[] fields = new String[13]; </pre>

Feature code	Feature Description
	<p>11. IS303RLS - ปรับใช้ PrepareData เตรียมไว้</p> <pre> private void queryRLms40() throws Exception { rLms40Map = new HashMap<>(); rLms40.setFilter(""); rLms40.addFilter("[P40CNT] >= '"+wiscnt.getDbValue()+"'"); rLms40.addFilter("[P40CNT] <= '"+wiecnt.getDbValue()+"'"); rLms40.addFilter("[P40FLG] = 'C'"); rLms40.addFilter("[P40DDT] = '"+wxasdte.getDbValue()+"' WITH (NOLOCK)"); //filter was added String[] orderFields46 = new String[2]; orderFields46[0]="[P40CNT]"; orderFields46[1]="[P40DDT]"; rLms40.setOrderFields(orderFields46); if(rLms40Cursor!=null &&rLms40Cursor.isOpened()) rLms40Cursor.close(); rLms40.setIndexName("-1"); String tableName47=HboxCoreServer.getTabNameFromOverDbf(transactionId, fileName: "RLMS40L9"); if(tableName47!=null){...} String mbr48=HboxCoreServer.getMbrFromOverDbf(transactionId, fileName: "RLMS40L9"); if(mbr48!=null){...} rLms40.setLimit(true); rLms40Cursor=rLms40.openCursor(); //###// KXMS40 READE RLMS40L9### while (rLms40Cursor.readNext()) { String contract = rLms40.getP40cnt().getDbValue(); rLms40Map.computeIfAbsent(contract, k -> new ArrayList<>()) .add(rLms40.getStoValue()); } List<String> rLms40List = new ArrayList<>(); String p2Cont = rLms02.getP2cont().getDbValue(); if(rLms40Map.get(p2Cont) != null){ rLms40List.addAll(rLms40Map.get(p2Cont)); } //###// DOW NOT%EOF(RLMS40L9)### for(String rLms40Sto : rLms40List){ rLms40.setStoValue(rLms40Sto); //###// ADD P40AMT I33WDAMT### isms33.getI33wdamt().setValue(isms33.getI33wdamt().getValue().add(rLms40.getP40amt().getValue())); //###// ADD 1 I33WDTIM### isms33.getI33wdtim().setValue(isms33.getI33wdtim().getValue().add(new BigDecimal(val: 1))); //###// ENDD0### } </pre>

Feature code	Feature Description
	<p>- ปรับใช้ Native Delete แทนการใช้ Hisun query</p> <pre> private final static String DELETE_STATEMENT = "" + "delete from ISOD0001.ISMS33 where " + "[I33ASDT] = '%s' " + "and [I33APP] = '%s' " + "and [I33BRN] = '%s' " + "and [I33CONT] = '%s' "; private void deleteIsms33() throws Exception { String asOf = kxasdt.getDbValue(); String app = wxapp.getDbValue(); String brn = r1ms02.getP2brn().getDbValue(); String cont = r1ms02.getP2cont().getDbValue(); String deleteStatement = String.format(DELETE_STATEMENT,asOf,app,brn,cont); writeTrc2(str: "Delete table ISOD0001.ISMS33 : " + deleteStatement, lineNo: "0"); int count = 0; log.info("Delete table by statement : {}",deleteStatement); try{ Statement statement = connection.createStatement(); count = statement.executeUpdate(deleteStatement); connection.commit(); statement.close(); wxdud.setvalue('2'); String rltb05Sto = rltb05Map.get(r1ms02.getP2cutd().getDbValue()); /*##### IF %FOUND(RLTB05L1) ### if (!StringUtil.isEmpty(rltb05Sto)){ rltb05.setStoValue(rltb05Sto); }##### Z-ADD T05DDA WXDUE0### wxdud.setValue(rltb05.getT05dda().getValue()); ##### ENDF##### */ } } </pre>

Feature code	Feature Description
	<pre> 1 usage ± SIAMAC10450/002 * private Map<String,String> queryRltb05Map() throws Exception { Map<String,String> rltb05Map = new HashMap<>(); rltb05.setFilter(""); rltb05.addFilter("[T05DEL] = ' '"); //filter was added String[] orderFields25 = new String[1]; orderFields25[0]="[T05CDA]"; rltb05.setOrderFields(orderFields25); if(rltb05Cursor!=null &&rltb05Cursor.isOpened()) rltb05Cursor.close(); rltb05.setIndexName("-1"); String tableName26=HboxCoreServer.getTabNameFromOverDbf(transactionId, fileName: "RLTB05L1"); if(tableName26!=null){...} String mbr27=HboxCoreServer.getMbrFromOverDbf(transactionId, fileName: "RLTB05L1"); if(mbr27!=null){...} rltb05.setLimit(false); {...} rltb05.setStrictMode(true); rltb05Cursor=rltb05.openCursor(); while (rltb05Cursor.readNext()) { rltb05Map.putIfAbsent(rltb05.getT05cda().getDbValue(),rltb05.getStoValue()); } } </pre> <pre> String rltb01Sto = rltb01Map.get(rlms02.getP2brn().getDbValue()); //###// IF %FOUND(rltb01L1) ## if (!StringUtil.isEmpty(rltb01Sto)){ rltb01.setStoValue(rltb01Sto); //###// EVAL I33AREA = %SUBST(TIAREA:1:2) ## isns33.getI33area().setValue(%aligned true, %pad true, (rltb01.getTiarea().getStoValue()).substring(0,2)); //###// ENDIF## } //###// Z-ADD %XDOED I33QUE## isns33.getI33due().setValue(%xdoed.getValue()); </pre>

Feature code	Feature Description
	 <pre> usage = STAMAC104507002 private void queryRltb01() throws Exception { rltb01Map = new HashMap<>(); rltb01.setFilter(""); rltb01.addFilter("([T1CMCD] = 1 OR [T1SYST] = '02' OR [T1DEL] = ' ')"); //filter was added String[] orderFields34 = new String[1]; orderFields34[0]="[T1BRN]"; rltb01.setOrderFields(orderFields34); if(rltb01Cursor!=null &&rltb01Cursor.isOpened()) rltb01Cursor.close(); rltb01.setIndexName("-1"); String tableName35=HboxCoreServer.getTabNameFromOverDbf(transactionId, fileName: "RLTB01L1"); if(tableName35!=null){...} String mbr36=HboxCoreServer.getMbrFromOverDbf(transactionId, fileName: "RLTB01L1"); if(mbr36!=null){...} rltb01.setLimit(false); rltb01.setStrictMode(true); rltb01Cursor=rltb01.openCursor(); while (rltb01Cursor.readNext()){ rltb01Map.putIfAbsent(rltb01.getT1brn().getDbValue(),rltb01.getStoValue()); } } </pre>
12. ISGM07 - ปรับการใช้ Batch Insert เพื่อลดจำนวน transaction	 <pre> try {Statement st = connection.createStatement(); { int count = st.executeUpdate(" INSERT INTO IS000001.CSMS07TM (" +getColumnStr2(cswwkr)+") " + "SELECT "+getColumnStr2(cswwkr)+" FROM "+csms07.getTableNames()); log.info("Insert : {} count {}","CSMS07TM",count); } } </pre>
13. IS1701CS - ปรับเรื่อง memcache (RLTB05) เพื่อลดการ connection db	 <pre> // ... (code is too small to transcribe accurately) ... </pre>

12. ISGM07

```
try (Statement st = connection.createStatement()) {
    int count = st.executeUpdate( "INSERT INTO I5009801.CSMS07TH (" + getColumnNameStr2(csname) + ") " +
        "SELECT " + getColumnNameStr2(csname) + " FROM " + csns07.getTableNames());
    log.info("Insert : {} count {} ", "CSMS07TH", count);
}
```

13. IS1701CS

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Feature code	Feature Description
	<p>- ปรับการใช้ Batch Delete ISMS11TM เพื่อลด header ในการส่ง query</p> <pre> package com.bcd.util; import java.sql.*; import java.util.*; import java.util.concurrent.*; private void delete_ISMS11TM(long batchSize) throws Exception { log.info("Delete ISMS11TM : {} ", batchSize); Connection conn = null; String jwt = ThirdPartyUtility.getJwtToken(); conn = ThirdPartyUtility.getConnection(jwt, "HHL 'CENTER'"); StringBuilder sql = new StringBuilder(); sql.append("with offset as (select top "+batchSize+" * from ISMS0001.ISMS11TM WITH (NOLOCK)\n"); sql.append("where ICDE = '"+update.getDbValue()+"' and ((ISNO) between '"+scan.getDbValue()+"' and '"+scan.getDbValue()+"')) "); sql.append("\n"); sql.append("delete from offset"); int delete = 0; conn.setAutoCommit(false); try (Statement st = conn.createStatement()) { do { delete = st.executeUpdate(sql.toString()); log.info("Delete ISMS11TM : {} ", delete); } while (delete > 0); conn.commit(); } catch (SQLException e) { writeLog(e.toString()); writeTrz2(e.toString(), "HHL '0'"); writeException(e); conn.rollback(); } } </pre>

2.2 NON-FUNCTIONAL REQUIREMENTS

Non-Functional	
Need Code	Description

2.3 INTERFACE REQUIREMENT

No	Description	System	Link Ref.

2.4 TESTING SCENARIO

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Acceptance No.	Test case No.	Test Scenarios
		After Run Process Batch IS ทำการตรวจสอบจำนวน Data เปรียบเทียบกับจำนวน Data Production ที่มีวันที่ตรงกัน ของแต่ละ Table ดังนี้
AC-1001	TS-1001	ตรวจสอบข้อมูลของ Table ISMS34, ISMD34, ISMS201, ISMS11RL, IS321, IS325MM, ISMS22, ISMS206, ISMD236 , ISMS231, ISMS33, ISMD33, ISMS31, ISMS32, IS325 ตาม statement record count ดังนี้ <pre> SELECT (SELECT COUNT(*) FROM ISOD0001.ISMS34 WITH (NOLOCK) WHERE I34ASDT = 20251207)B198, (SELECT COUNT(*) FROM ISOD0001.ISMD34 WITH (NOLOCK) WHERE D34ASDT = 20251207)B202, (SELECT COUNT(*) FROM ISOD0001.ISMS201 WITH (NOLOCK) WHERE IPERIOD = 25681207)B208 SELECT (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS11RL WITH (NOLOCK) WHERE ICDTE = 25681207) A0001, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.IS321 WITH (NOLOCK) WHERE A21DTE = '2025-12-07') A0005, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.IS325MM WITH (NOLOCK) WHERE A25DTE = '2025-12-07') A0006, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS22 WITH (NOLOCK) WHERE ICDTE = 25681207) A0021, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS206 WITH (NOLOCK) WHERE IPERIOD = 25681207) A0044, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMD236 WITH (NOLOCK) WHERE DASOF = 25681207) A0057, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS231 WITH (NOLOCK) WHERE IPERIOD = 25681207) A0064, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS33 WITH (NOLOCK) WHERE I33ASDT = 20251207) A0109, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMD33 WITH (NOLOCK) WHERE D33ASDT = 20251207) A0111,sssss WITH (NOLOCK) WHERE M31ASDT = 20251207) A0132, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS32 WITH (NOLOCK) WHERE M32ASDT = 20251207) A0133, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.IS325_12 WITH (NOLOCK) WHERE A25DTE = '2025-12-07') A0134 SELECT (SELECT COUNT(*) FROM ISOD0001.ISMS34 WITH (NOLOCK))B198, (SELECT COUNT(*) FROM ISOD0001.ISMD34 WITH (NOLOCK))B202, (SELECT COUNT(*) FROM ISOD0001.ISMS201 WITH (NOLOCK))B208 SELECT (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS11RL WITH (NOLOCK))A0001, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.IS321 WITH (NOLOCK))A0005, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.IS325MM WITH (NOLOCK))A0006, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS22 WITH (NOLOCK))A0021, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS206 WITH (NOLOCK))A0044, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMD236 WITH (NOLOCK))A0057, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS231 WITH (NOLOCK))A0064, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS33 WITH (NOLOCK))A0109, </pre>
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		(SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMD33 WITH (NOLOCK))A0111, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS31 WITH (NOLOCK))A0132, (SELECT COUNT(*) FROM AS400DB01.ISOD0001.ISMS32 WITH (NOLOCK))A0133, Remark : วันที่ ที่เป็นสีแดง จะเปลี่ยนแปลงตามวันที่ที่ต้องการตรวจสอบ
AC-1002	TS-1002	เช็คผลรวมข้อมูล (Sum) เพื่อตรวจสอบผลรวมของยอดต่าง ๆ หรือ -- B198 -- SELECT SUM(I34PRIC) AS SUM_I34PRIC, SUM(I34TOAM) AS SUM_I34TOAM, SUM(I34PCAM) AS SUM_I34PCAM, SUM(I34UIDA) AS SUM_I34UIDA, SUM(I34INTR) AS SUM_I34INTR, SUM(I34CRUR) AS SUM_I34CRUR, SUM(I34DOWN) AS SUM_I34DOWN, SUM(I3412IN) AS SUM_I3412IN, SUM(I34NDUE) AS SUM_I34NDUE, SUM(I34OPR) AS SUM_I34OPR, SUM(I34OIN) AS SUM_I34OIN, SUM(I34OUS) AS SUM_I34OUS, SUM(I34OCOL) AS SUM_I34OCOL, SUM(I34OOTH) AS SUM_I34OOTH, SUM(I34P1PCP) AS SUM_I34P1PCP, SUM(I34P1INT) AS SUM_I34P1INT, SUM(I34P1CRU) AS SUM_I34P1CRU, SUM(I34P1PNT) AS SUM_I34P1PNT, SUM(I34P1OTH) AS SUM_I34P1OTH, SUM(I34P1T01) AS SUM_I34P1T01, SUM(I34P1T02) AS SUM_I34P1T02, SUM(I34P1TPP) AS SUM_I34P1TPP, SUM(I34P1T21) AS SUM_I34P1T21, SUM(I34P1T99) AS SUM_I34P1T99, SUM(I34ODAM) AS SUM_I34ODAM, SUM(I34SOSA) AS SUM_I34SOSA FROM ISOD0001.ISMS34 WITH (NOLOCK) WHERE I34ASDT = 20251207 -- B198 -- -- B202 -- SELECT SUM(D34TOAM) AS SUM_D34TOAM, SUM(D34OPR) AS SUM_D34OPR, SUM(D34P1PCP) AS SUM_D34P1PCP, SUM(D34P1INT) AS SUM_D34P1INT, SUM(D34P1CRU) AS SUM_D34P1CRU, SUM(D34P1T01) AS SUM_D34P1T01, SUM(D34P1T02) AS SUM_D34P1T02, SUM(D34P1TPP) AS SUM_D34P1TPP, SUM(D34P1T21) AS SUM_D34P1T21, SUM(D34P1T99) AS SUM_D34P1T99, SUM(D34P23) AS SUM_D34P23 FROM ISOD0001.ISMD34 WHERE D34ASDT = 20251207; -- B202 -- -- B208 -- SELECT

		<pre>SUM(ITCALLAC) AS SUM_ITCALLAC, SUM(ITCALLCU) AS SUM_ITCALLCU, SUM(ITCALL0AC) AS SUM_ITCALL0AC, SUM(ITCALL0CU) AS SUM_ITCALL0CU, SUM(ITCALL1AC) AS SUM_ITCALL1AC, SUM(ITCALL1CU) AS SUM_ITCALL1CU, SUM(ITCALL2AC) AS SUM_ITCALL2AC, SUM(ITCALL2CU) AS SUM_ITCALL2CU, SUM(ITCALL3AC) AS SUM_ITCALL3AC, SUM(ITCALL3CU) AS SUM_ITCALL3CU, SUM(ITCALL4AC) AS SUM_ITCALL4AC, SUM(ITCALL4CU) AS SUM_ITCALL4CU, SUM(IPPCALLAC) AS SUM_IPPCALLAC, SUM(IPPCALLCU) AS SUM_IPPCALLCU, SUM(IPPCAL0AC) AS SUM_IPPCAL0AC, SUM(IPPCAL0CU) AS SUM_IPPCAL0CU, SUM(IPPCAL1AC) AS SUM_IPPCAL1AC, SUM(IPPCAL1CU) AS SUM_IPPCAL1CU, SUM(IPPCAL2AC) AS SUM_IPPCAL2AC, SUM(IPPCAL2CU) AS SUM_IPPCAL2CU, SUM(IPPCAL3AC) AS SUM_IPPCAL3AC, SUM(IPPCAL3CU) AS SUM_IPPCAL3CU, SUM(IPPCAL4AC) AS SUM_IPPCAL4AC, SUM(IPPCAL4CU) AS SUM_IPPCAL4CU, SUM(IPDCALLAC) AS SUM_IPDCALLAC, SUM(IPDCALLCU) AS SUM_IPDCALLCU, SUM(IPDCAL0AC) AS SUM_IPDCAL0AC, SUM(IPDCAL0CU) AS SUM_IPDCAL0CU, SUM(IPDCAL1AC) AS SUM_IPDCAL1AC, SUM(IPDCAL1CU) AS SUM_IPDCAL1CU, SUM(IPDCAL2AC) AS SUM_IPDCAL2AC, SUM(IPDCAL2CU) AS SUM_IPDCAL2CU, SUM(IPDCAL3AC) AS SUM_IPDCAL3AC, SUM(IPDCAL3CU) AS SUM_IPDCAL3CU, SUM(IPDCAL4AC) AS SUM_IPDCAL4AC, SUM(IPDCAL4CU) AS SUM_IPDCAL4CU, SUM(IRECCACCU) AS SUM_IRECCACCU, SUM(IRECCUST) AS SUM_IRECCUST, SUM(IRECAACCU) AS SUM_IRECAACCU, SUM(IRECACUST) AS SUM_IRECACUST, SUM(ICONC_DIR) AS SUM_ICONC_DIR, SUM(ICONO_PER) AS SUM_ICONO_PER, SUM(ICON_NA) AS SUM_ICON_NA, SUM(ICON_LM) AS SUM_ICON_LM, SUM(ICOMP_CA) AS SUM_ICOMP_CA FROM ISOD0001.ISMS201 WHERE IPERIOD = 25681207; -- B208 -- -- A0001 -- SELECT SUM(IRCL_11) AS SUM_IRCL_11, SUM(IRLAV) AS SUM_IRLAV FROM AS400DB01.ISOD0001.ISMS11RL WHERE ICDTE = 25681207; -- A0001 -- -- A0005 -- SELECT</pre>	
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		SUM(A21ARO) AS SUM_A21ARO, SUM(A21AME) AS SUM_A21AME, SUM(A21PRE) AS SUM_A21PRE, SUM(A21WOO) AS SUM_A21WOO, SUM(A21WOB) AS SUM_A21WOB, SUM(A21WCO) AS SUM_A21WCO, SUM(A21WPR) AS SUM_A21WPR FROM AS400DB01.ISOD0001.IS321 WHERE A21DTE = '2025-12-07' -- A0005 -- -- A0006 -- SELECT SUM(A25ARO) AS SUM_A25ARO, SUM(A25AME) AS SUM_A25AME, SUM(A25PRE) AS SUM_A25PRE, SUM(A25WOO) AS SUM_A25WOO, SUM(A25WOB) AS SUM_A25WOB, SUM(A25WCO) AS SUM_A25WCO, SUM(A25WPR) AS SUM_A25WPR FROM AS400DB01.ISOD0001.IS325MM WHERE A25DTE = '2025-12-07' -- A0006 -- -- A0021 -- SELECT SUM(IDAYS) AS SUM_IDAYS, SUM(ISALARY) AS SUM_ISALARY, SUM(IETIME1) AS SUM_IETIME1 FROM AS400DB01.ISOD0001.ISMS22 WHERE ICDTE = 25681207; -- A0021 -- Remark : วันที่ ที่เป็นสีแดง จะเปลี่ยนแปลงตามวันที่ที่ต้องการตรวจสอบ
AC-1003	TS-1003	ตรวจสอบเวลาในการ Run process Day End IS จะต้องลดลงประมาณ 42.8% Refer : production จาก 7 ชั่วโมง เหลือประมาณ 4 ชั่วโมง

3.0 SCHEDULE

No	Events	Start	Finish	Duration (Days)
1	Requirement	10/11/2025	14/11/2025	5
2	Design & Develop	17/11/2025	12/12/2025	18
3	SIT			
4	UAT	23/12/2025	25/12/2025	5
5	Go-live	26/12/2025		1