ABAP Developer Implementation Guide – CMX to SAP Calibration Interface

1. Purpose

This document provides a complete ABAP-side implementation guide for integrating CMX calibration results into SAP S/4HANA via CPI. It covers technical design, program logic, API calls, unit testing, and error handling.

2. System Architecture

CMX → CPI (Integration Suite) → SAP ABAP Program → Standard APIs (Maintenance Notification, Order Confirmation, Maintenance Order).

3. Main ABAP Responsibilities

• Receive payload from CPI (via HTTP endpoint or staging table).
• Parse JSON data.
• Validate and check for duplicates.
• Post Maintenance Notification Activities and Time Confirmations.
• Update system/user statuses.
• Log results and provide reprocessing tool.

4. Technical Design Overview

Function Module: ZIN_CMX_CALIB_RESULT
Custom Tables: ZCMX_RESULT (payload), ZCMX_RESULT_LOG (error log)
Main Program: ZIN_CMX_WORKORDER
Processing Frequency: every 5 minutes (scheduled job)

5. Processing Logic

1. Read incoming JSON payload from CPI or staging table.
2. Parse JSON → internal table.
3. Validate required fields (0001, 0002, A002, B002).
4. Duplicate check using calibration certificate number.
5. POST Maintenance Notification Activity using API_MAINTNOTIFICATION.
6. POST Maintenance Order Time Confirmation using API_MAINTORDERCONFIRMATION.
7. Set order to Main Work Completed using API_MAINTENANCEORDER_002.
8. Update statuses (CMXC, RLSD, OSNC) via BAPI.
9. Log result or error into ZCMX_RESULT_LOG.

6. Example API Payloads

a) Maintenance Notification Activity
{ 'MaintenanceNotification': '10000123', 'MaintNotifActivityCodeGroup': 'CMX-CONF',
'MaintNotificationActivityCode': '0001', 'MaintNotifActyTxt': 'true' }

b) Time Confirmation

{ 'MaintenanceOrder': '60000150', 'MaintenanceOrderOperation': '0010', 'IsFinalConfirmation': true, 'ActualWorkQuantity': 1.5, 'PersonnelNumber': '12345' }

c) Set Main Work Complete

{ 'MaintenanceOrder': '60000150', 'MainWorkCompletedDateTime': '2025-08-13T14:28:53', 'MainWrkCmpltdDateTimeIsUsed': true }

7. Error Handling & Logging

Create ZCMX_RESULT_LOG with fields: ORDERID, CERT_NO, ERR_CODE, ERR_TEXT, STATUS, PAYLOAD, TIMESTAMP.
Errors are logged for missing fields (06C), duplicates (05C), or failed API calls.
Report ZCMX_REPROCESS allows re-triggering failed entries.

8. Unit Testing

Test the interface using JSON payloads matching test cases from the FDS. Validate in IW23 (notification), CO13 (confirmation), IW33 (order status).

9. Key SAP Tables

AUFK – Order Header
AFVC – Operation
QMEL – Notification
QMMA – Notification Activities
EQUI – Equipment
IFLOT – Functional Location
JEST – Status
AFRU – Confirmations

10. Error Codes

05C – Duplicate calibration record
06C – Missing mandatory field
07C – Lock or open document
400 – Invalid payload
401 – Authentication failure

11. Reprocessing Steps

Report ZCMX_REPROCESS allows manual or bulk reprocessing of failed logs. Each retry reuses the saved payload.

12. ABAP Developer Tips

• Use CL_HTTP_CLIENT for REST API calls.
• Use transformation ID for JSON parsing.
• Validate mandatory fields before posting.
• Separate logic into forms or classes for clarity.

• Log all steps with timestamp for audit trail.