



IASI-NG LEVEL-1C LOCAL OPERATIONAL PROCESSOR

SOFTWARE USER MANUAL AND INSTALLATION PROCEDURES

For: **CNES**
Addressee: **Beatrice PETRUCCI**
Reference: **IASING-SUM-4200-126-TS**
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Thales Services Numériques SAS

290, Allée du lac
31670 LABEGE
France

Tel.: +33-562 88 75 00

Fax: +33-562 88 76 00

Web: <http://www.thalesgroup.com>

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Evolution sheet

Issue	Date	Evolution	Reasons for evolution
1.0	25/01/2024	Creation	L1CLOP V2.1 CDKP
1.1	27/05/2024	Update following IVV phase	L1CLOP V2.1 FAT TRR
1.2	14/06/2024	Update following FAT. RID L1CPOPT-446 taken into account §3.1.2 and §3.1.3	L1CLOP V2.1 OSAT TRR
2.0	13/09/2024	Update for L1CLOP V3 Added Global mission, updates to Local mission	L1CTOP V3
2.1	16/10/2024	Update following design review RIDs PG-02: §3.3.3	L1CTOP V3 CDKP
2.2	20/01/2025	Addition of legends to tables. Update following CNES TREX updates: §3.3.4.2 Update following pre-CDKP Technical review: - PG-01: §3.3.3 - CaM_09: §3.3.3 - AM-01: §3.3.2 Update following design CDKP: - RID 10: §3.2 - RID 14: §3.3.2 - RID 15: §3.3.5 §3.2, 3.3.2: Minor corrections §3.3.3: addition of notes about input sensing intervals §3.3.4: addition of exit code 129 §3.3.4: addition of whole dump vs. granule by granule executions. §3.2.7: addition of message following validation phase SPR: - IASING-FT-2379: §3.2.2.1 L1CPOPT-560 - IASING-FT-2394: §4.1 (L1CPOPT-562)	L1CTOP V3 OSAT

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Issue	Date	Evolution	Reasons for evolution
2.3	24/04/2025	Updates following development: 3.2.1, 3.2.2 Updates following DM: - AUX_LSM usage in L1CTOP (IASING-FT-2405, IASING-FT-2397) : §2.2, 3.2.2, 3.2.6 - EXTCAL mode processing (IASING-FT-2297, IASING-FT-2307, IASING-FT-2413, IASING-FT-2398): §3.2.1 SPR: - IASING-FT-2419: §3.1.1 - IASING-FT-2469: §4.1	L1CTOP V3.1 OSAT
2.4	23/05/2025	Update following FA: - IASING-FT-2539: add explanations about software version in logs (§3.3.3) and add warning message (§3.2.7) - IASING-FT-2534: correct product names (§3.1.3)	L1CTOP V3.1.1
2.5	14/01/2026	Update following new version delivery §3.2.2.2: L1CPOPT-679, document origin of pgs/pfs/atbd/ads versions in output products.	L1CTOP V3.2.0
2.6	06/03/2026	Update following new version delivery - IASING-FT-2851: §4.1 - Update configuration files content: §3.2 - L1CPOPT-760: §3.2.5 - Update run times: §3.3.1	L1CTOP V3.2.2
2.7	09/04/2026	Update following new version delivery IASING-FT-2881: Add Docker image generation info: §4.3	L1CTOP V3.3

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Approval sheet

Function	Name	Date	Signature
Written by	L1CLOP Team	09/04/2026	
Verified by	Thales Quality Team	09/04/2026	PO
For application by Project Manager	Arnaud FIROBEN	09/04/2026	PO

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Glossary

For the abbreviations and terms used in the delivered documentation, please refer to [L1CPOP-GLO] IASI-NG L1CPOP Glossary.

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1 INTRODUCTION

1.1 SCOPE OF THE DOCUMENT

As part of Thales Services Numériques Consortium work for CNES L1CLOP Project entitled "IASI-NG Level-1C Local Operational Processor", the present document is the Software User Manual and Installation Procedures and Installation Procedures, referred as [L1CLOP-SUM].

This document is intended to be updated and maintained during the whole project life.

1.2 DOCUMENT STRUCTURE

The present document is organised as follows:

- Section 1 is the current introduction and gives the applicable and reference documents;
- Section 2 presents the general overview of L1CLOP;
- Section 3 describes the user manual.

1.3 APPLICABLE AND REFERENCE DOCUMENTS

For the applicable and reference documents, please refer to project Documentation referential [L1CLOP-DR].

This referential is maintained during all the project duration including the current scope. Its updates are subject to acceptance by the CNES.

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2 L1CLOP GENERAL OVERVIEW

2.1 PROJECT OVERVIEW

2.1.1 IASI-NG instrument

The Infrared Atmospheric Sounding Interferometer (IASI-NG) instrument is a new generation of hyperspectral Fourier transformed spectrometer. Its objective is to get enhanced performances in comparison to IASI First Generation and to ensure the continuity of climatological data record. Its mission is almost the same as IASI. This new instrument provides hyper-spectral infrared soundings of temperature, water vapour, and trace gases with a spectral resolution of 0.25 cm⁻¹ within the spectral range from 645 cm⁻¹ to 2760 cm⁻¹ at an average spatial sampling distance of 25 km. Its spectral resolution performance is twice better than the one of the previous IASI instrument and the radiometric noise is reduced by a factor two.

The main objective of IASI-NG is to provide information on:

- Meteorology data: accurate vertical profiles (soundings) of temperature and of water vapour with higher vertical resolution close to the surface, cloud parameters;
- Air quality and atmospheric chemistry: aerosols, pollutants, volcanic ash;
- Climatology: trace and greenhouse gases (e.g. ozone, methane and carbon monoxide), including vertical profiles.

The instrument can be seen as composed of four main parts:

- The Spectrometer part: it provides spectrums, also called Science data;
- The Imager part: it provides images, also called Image data;
- The Metrology part: it provides calibration measurements of the spectrometer part, also called Metrology data;
- The Ancilliary measurements part: it provides diverse measurements of key parts of IASI-NG instrument, also called ADA_PROCESSING data.

Each of these parts produces telemetry data which is sent to on-ground processing center.

2.1.2 EPS-SG Context

The EUMETSAT Polar System (EPS) Program is a system based on the series of MetOp satellites, which currently provides operational meteorological observations from polar LEO (Low Earth Orbit). MetOp satellites accomodate the IASI instrument, predecessor of IASI-NG.

The EUMETSAT Polar System – Second Generation (**EPS-SG**) Program is the successor to the EPS Program and it continues to support and enhance the core services of operational meteorology and climate monitoring from the midmorning polar orbit.

EPS-SG is a system based on the series of **MetOp-SG** satellites, which consists of two series of satellites (called Satellites MetOp-SG/A and Satellites MetOp-SG/B). Three satellites are provided for each series to ensure a total operational life of 20 years. The MetOp-SG satellites provides continuity, with improved products performances, of the observations carried out since 2006 by the first generation of MetOp satellites.

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The instrument IASI-NG (Infrared Atmospheric Sounding Interferometer) is accommodated on the **MetOp-SG/A** satellite.

There are three different missions for this Metop-SG system:

- Global mission, where orbit or half-orbit data is downloaded to ground stations. In the frame of the global mission, the associated ground processing centers receive all satellite data. This is the “main” mission;
- Regional mission, where only a subset of satellite data is downloaded to ground stations. In the frame of the regional mission, the associated ground processing centers receive only a part of all satellite data. Regional processing centers also use calibration data generated by Global mission processing center;
- **Local mission**, where data is downloaded to ground stations on-the-fly using Direct Broadcast Readout mechanism. This allows for short-time predictions in a reduced geographic zone. Local processing centers also use calibration data generated by Global mission processing center.

2.1.3 Operational Processors

Level 1C Local Operational Processor (L1CLOP) is the level 1C processing chain in Local mission and is the subject of this document. It is integrated in the ATOVS and AVHRR Pre-processing Package (**AAPP**) system from Numerical Weather Prediction Satellite Application Facilities (NWP SAF), which is installed in local stations. It can also be used as a standalone data processor.

Level 1C Product Operational Processor (L1CPOP) is the level 1C processing chain in Global and Regional missions, integrated in Payload Data Acquisition and Processing (PDAP) system. L1CPOP is referred to in this document because it is a predecessor to L1CLOP and the two processing chains share their scientific algorithms.

Level 1C Temporary Operational Processor (L1CTOP) is a temporary replacement of L1CPOP during CAL/VAL activities. This processor is integrated in L1CLOP software.

2.1.4 L1CLOP

L1CLOP is in charge of processing the IASI-NG data downlinked from IASI-NG space segment in Local mission to provide local users with level 1C products i.e. spectra and images that are:

- Fully calibrated (radiometrically and spectrally)
- All channels have a unique Instrument Spectral Response Function (ISRF) for every spectrum
- Sounding pixels are geo-localized.

It is also in charge of processing Global mission data during CAL/VAL activities. This part of the software is sometimes referred to as "L1CLOP Global mission" and sometimes as "L1CTOP".

Additional information like processing flags, cloud fraction, sub-pixel scene classification are estimated in L1CLOP and added in the L1C products to help users exploit the spectra.

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2.2 INTERFACES

This chapter is an overview of L1CLOP external interfaces. See document [L1CLOP-ICD] for more details.

L1CLOP external interfaces are listed below:

➤ Inputs:

- The JobOrder (AAPP_JOB_ORDER), which lists all input data along with configuration parameters;
- The IASI-NG Level 0 product (PROD_IAS_00_SRC), which contains the Science data, i.e. the Observational Data and Additional Data assigned to Auxiliary need;
- The repeated IASI-NG Level 0 product (PROD_IAS_00_REP), in Local mission only, which contains a subset of IAS-00-SRC repeated after some delay by satellite during transmission;
- The NAVATT packets (PROD_NAV_00_SRC), which contains the orbit state vectors, attitude quaternions, platform status, etc., used for geolocation computations done by the OGP Image;
- The METImage L1B radiances (PROD_VII_1B_RAD), used by the OGP Image for geolocation purposes, via co-registration between IASI-NG IMA and METImage data;
- The NWC PPS Cloud Mask (PROD_PPS_CMA), in Local mission only, used by the OGP Image to provide cloud mask information derived from METImage instrument observations;
- The METImage L2 cloud mask (PROD_VII_02_CLD), in Global mission only, used by the OGP Image to provide cloud mask information derived from METImage instrument observations;
- Auxiliary data which corresponds to all the data/information required from the Ground Segment for the L1CLOP processing and not present in the product inputs:
 - ▣ IASI-NG L1CLOP Configuration Files (AUX_CNF) files, which contain the configuration parameters required to run the various L1CLOP algorithmic modules;
 - ▣ The Spectral Calibration Database (AUX_ODB), in Global mission only, used by the OGP ISRF-EM module;
 - ▣ The Spectral Calibration Coefficients (AUX_CAL), used by the OGP ISRF-EM module;
 - ▣ The Predicted Orbit File (AUX_POFD), used for geolocation purposes by the OGP Image in case of missing NAVATT data;
 - ▣ The Digital Elevation model (AUX_RD09), used by the OGP Image to compute precise geolocation;
 - ▣ The Land/Sea Mask (AUX_LSM), used by the OGP Image for surface classification in case of missing METImage L1B radiances or Cloud Mask product;
 - ▣ The IERS Bulletin A (AUX_IBA), used by EOCFI for time and reference frames conversions for geolocation purposes;
 - ▣ The Atmospheric Spectra Database (AUX_ATM), in Global mission only, used by the OGP ISRF-EM module;
 - ▣ The RAD product context data (AUX_RAD), in Global mission only, used to improve scientific product continuity between the previous dump and this one;
 - ▣ The COEFF algorithm context data (AUX_COEF), in Global mission only, used to improve scientific product continuity between the previous dump and this one;

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- The OFFSET algorithm context data (AUX_OFST), in Global mission only, used to improve scientific product continuity between the previous dump and this one;
- The SHCOL algorithm context data (AUX_SDB), in Global mission only, used to improve scientific product continuity between the previous dump and this one.

🔗 **Outputs:**

- The IASI-NG L1C calibrated (spectrally and radiometrically) and geolocated spectra (IAS-1C-RAD), as well as calibrated IASI-NG images, which come along with quality flags;
- The IASI-NG L1C Engineering product (IAS-1C-ENG), which contains sub-products of the various algorithms of the processing, some L1C samples, and are dedicated to IASI-NG experts for a posteriori investigation of L1CLOP processing;
- The Spectral Calibration Coefficients (AUX_CAL), in Global mission only, used to improve ISRF-EM;
- The Spectrum database (AUX_SCHB), in Global mission only, used for expertise;
- The RAD product context data (AUX_RAD), in Global mission only, used to improve scientific product continuity between this dump and the next one;
- The COEFF algorithm context data (AUX_COEF), in Global mission only, used to improve scientific product continuity this dump and the next one;
- The OFFSET algorithm context data (AUX_OFST), in Global mission only, used to improve scientific product continuity this dump and the next one;
- The SHCOL algorithm context data (AUX_SDB), in Global mission only, used to improve scientific product continuity between this dump and the next one.
- Processing Monitoring Data which contain all Log messages (AAPP_LOG) and exit code (AAPP_EXITCODE), required to monitor L1CLOP processing.

3 USER MANUAL

3.1 INSTALLATION

3.1.1 Minimum system requirements for installation

Required pre-existing system dependencies are:

- x86-64 architecture server;
- 900 MB of free disk space for installation;
- Red-Hat compatible Linux distribution, at least version 7.9;
- Bash, at least version 4.2;
- xmllint, at least version 2.9.1;
- List of required 64-bits system packages:

Table 1: list of required 64 bits system packages

Required library	Required ABI version inside library	Minimum RedHat package version
libc.so.6	GLIBC_2.17	glibc-2.17-326.el7_9.x86_64
libcurl.so.4	N/A	libcurl-7.29.0-59.el7_9.1.x86_64
libdl.so.2	GLIBC_2.3.3	glibc-2.17-326.el7_9.x86_64
libfreetype.so.6	N/A	freetype-2.8-14.el7_9.1.x86_64
libgcc_s.so.1	GCC_4.2.0	libgcc-4.8.5-44.el7.x86_64
libgomp.so.1	GOMP_1.0 and OMP_1.0	libgomp-4.8.5-44.el7.x86_64
libm.so.6	GLIBC_2.15	glibc-2.17-326.el7_9.x86_64
libpcre.so.1	N/A	pcre-8.32-17.el7.x86_64
libpthread.so.0	GLIBC_2.3.2	glibc-2.17-326.el7_9.x86_64
librt.so.1	GLIBC_2.2.5	glibc-2.17-326.el7_9.x86_64
libstdc++.so.6	CXXABI_1.3.1	libstdc++-4.8.5-44.el7.x86_64
libstdc++.so.6	GLIBCXX_3.4.15	libstdc++-4.8.5-44.el7.x86_64
libszo.so.2	N/A	libaio-1.0.2-1.el7.x86_64
libX11.so.6	N/A	libX11-1.6.7-4.el7_9.x86_64
libXext.so.6	N/A	libXext-1.3.3-3.el7.x86_64
libXi.so.6	N/A	libXi-1.7.9-1.el7.x86_64
libXrender.so.1	N/A	libXrender-0.9.10-1.el7.x86_64
libXtst.so.6	N/A	libXtst-1.2.3-1.el7.x86_64
libz.so.1	ZLIB_1.2.2	zlib-1.2.7-20.el7_9.x86_64

3.1.2 Installation procedure

Installation package is in the form of three .tgz archives:

- **L1CLOP-bin_<version>.tgz** that contains program binaries
- **L1CLOP-bintest_<version>.tgz** that contains data and configuration to test the installation

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- **L1CLOP-docker_<version>.tgz** : contains L1CLOP Docker image and Dockerfile. See § 3.3.4.3 for L1CLOP usage with Docker.

To install L1CLOP, extract the **L1CLOP-bin_<version>.tgz** archive into an installation directory of your choice. **This directory must be empty.** In the remaining of this document the installation directory is referred to as **\$INSTALL_DIR**.

On the Linux console, use the following commands to define the `INSTALL_DIR` variable and create the installation directory:

```
INSTALL_DIR=<absolute path to a non-existing directory>
mkdir $INSTALL_DIR
```

Copy the installation archive into the installation directory and expand the archive:

```
cp <DELIVERY>/bin-kit/L1CLOP-bin_<version>.tgz $INSTALL_DIR
cd $INSTALL_DIR
tar xzf L1CLOP-bin_<version>.tgz
```

(<DELIVERY> is the folder containing the L1CLOP delivery to be installed)

The installation directory now contains the following directory tree:

```
├── conf/
├── java/
├── L1clopLocalLauncher.sh
├── L1clopGlobalLauncher.sh
├── lib/
├── licences/
└── version.txt
```

- Files **L1clopLocalLauncher.sh** and **L1clopGlobalLauncher.sh** are the main L1CLOP entry points.
- File `version.txt` contains L1CLOP version, for example “2.1”
- Directory `conf/` contains L1CLOP configuration files
- Directories `java/` and `lib/` contain L1CLOP software binaries and dependencies.
- Directory `licences/` contains software licences.

Multiple versions of L1CLOP can cohabit on the same server, as long as they are installed in different directories.

3.1.3 Installation test

This installation test needs at least 7 CPU cores, 24GB of memory and 5GB of free disk space to be performed.

To test the installation, extract the archive `L1CLOP-bintest_<version>.tgz` to the directory of your choice:

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```
INSTALL_TEST_DIR=<absolute path to a non-existing directory>
mkdir $INSTALL_TEST_DIR
```

```
cp <DELIVERY>/bin-kit/L1CLOP-bintest_<version>.tgz $INSTALL_TEST_DIR
cd $INSTALL_TEST_DIR
tar xzf L1CLOP-bintest_<version>.tgz
```

(<DELIVERY> is the folder containing the L1CLOP delivery to be installed)

Then update the test data location in the configuration using command:

```
sed -i "s|L1CLOP_INSTALL_TEST_DIR|$INSTALL_TEST_DIR|g"
$INSTALL_TEST_DIR/joborder.xml
```

Finally execute L1CLOP:

```
$INSTALL_DIR/L1clopLocalLauncher.sh $INSTALL_TEST_DIR/joborder.xml
```

The console stays busy until the end of the execution. Once it is free, check that output have been generated:

```
ls -l $INSTALL_TEST_DIR/output/
```

The directory should contain the following products:

```
W_XX-EUMETSAT-Darmstadt,SAT,SGA1-IAS-1C-
ENG_C_EUMT_20240417082237_L_D_20070912084645_20070912084700_t_N____.nc
```

```
W_XX-EUMETSAT-Darmstadt,SAT,SGA1-IAS-1C-
RAD_C_EUMT_20240417082236_L_D_20070912084645_20070912084700_t_N____.nc
```

Generation date in filenames of course corresponds to the time of execution.

3.2 CONFIGURATION

L1CLOP configuration comes from different sources:

- **L1CLOP internal algorithms default configuration file (CONF_DEF_ALGO)**, which contains default values for general parameters affecting L1CLOP algorithms behaviour.
- **L1CLOP internal default configuration file (CONF_DEF_L1CLOP)**, which contains default values for parameters affecting specifically the behaviour of L1CLOP software;
- **L1CLOP mission default configuration files (CONF_DEF_MISSION)**, which contains mission-specific overriding default values for parameters from either CONF_DEF_ALGO or CONF_DEF_L1CLOP, along with mission-specific parameters affecting specifically the behaviour of L1CLOP software. There are two CONF_DEF_MISSION files: one for Local and one for Global mission and only the one related to the current mission is loaded during L1CLOP execution;

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- **L1CLOP dynamic configuration file (CONF_DYN)**, provided through the JobOrder and which contains overriding values for parameters from either CONF_DEF_ALGO, CONF_DEF_L1CLOP or CONF_DEF_MISSION files;
- **L1CLOP internal schema files (CONF_SCHEMA)**, providing schema files for XML and NetCDF files;
- **L1CLOP messages file (CONF_MSG)**, which contains all messages L1CLOP can emit.

3.2.1 CONF_DEF_ALGO

This file is located in **\$INSTALL_DIR/conf/confDefAlgo.properties**

The format is properties file (a list of key=value lines). As algorithms have been developed in the frame of the L1CPOP project, this file has legacy format and keys use the "l1cpop" prefix.

It contains **default values** for algorithm-specific configuration parameters. These values can be overridden using CONF_DYN configuration.

Description of available configuration parameters:

```
# L1CPOP/L1CLOP algorithmic module properties

##### GENERAL CONFIG
# Number of steps: 19
l1cpop.algo.nbSteps=19
# Number of FOV per step: 16
l1cpop.algo.nbFovs=16
# Number of BAND per FOV: 4
l1cpop.algo.nbBands=4
# Number of IMA detectors: 2
l1cpop.algo.nbDetectors=2
# Number of MET lasers: 5
l1cpop.algo.nbLasers=5
# STEP duration in seconds. This number is an approximation.
l1cpop.algo.approxStepDuration=0.819
# Number of lines in one half-image: 150
l1cpop.algo.imaHalfimageLines=150
# Number of columns in one half-image: 75
l1cpop.algo.imaHalfimageCols=75
# Number of directions: 2
l1cpop.algo.nbDirections=2

##### ALGO SPECIFIC CONFIG

# EOCFI
# set to true to delete working directories
l1cpop.algo.eocfi.isClean=true
# Pool sizes. Min value is one.
# DEM pool size max memory usage is 2Go * pool size. The other pools do not have a significant impact on memory.
l1cpop.algo.eocfi.cachepool.dem=1
l1cpop.algo.eocfi.cachepool.iba=1
l1cpop.algo.eocfi.cachepool.pofd=1

### ANATM IAS
# APID Constants
l1cpop.algo.anatm.apid.apidAdaProcessing=0x3ED
```

```

11cpop.algo.anatm.apid.apidOdi=0x3E2
11cpop.algo.anatm.apid.apidOds=0x3E1
11cpop.algo.anatm.apid.apidAdaMetOpd=0x3E4
11cpop.algo.anatm.apid.apidAdaMetRaw=0x3E6
11cpop.algo.anatm.apid.apidAdaProcessingRepeat=0x3EC
11cpop.algo.anatm.apid.apidOdiRepeat=0x3EB
11cpop.algo.anatm.apid.apidOdsRepeat=0x3E7
11cpop.algo.anatm.apid.apidAdaMetOpdRepeat=0x3EF
11cpop.algo.anatm.apid.apidAdaMetRawRepeat=0x3E8
# Instrument modes
11cpop.algo.anatm.instrumentModeOper=0x0A
11cpop.algo.anatm.instrumentModeOperExtCal=0x0B
# Instrument mode, can be one of the following: OPER_ONLY | EXTCAL_ONLY | BOTH
# - OPER_ONLY: EXTCAL packets are discarded; only OPER data is processed
# - EXTCAL_ONLY: OPER packets are discarded; only EXTCAL data is processed
# - BOTH: OPER and EXTCAL data are processed
11cpop.algo.anatm.instrumentModeConfig=BOTH
# Whether to check PEC checksum in incoming TM packets
11cpop.algo.anatm.checkPecChecksum=true
# Whether to boost trace levels debug to info and finest to debug
11cpop.algo.anatm.boostTraceLevel=false
# Number of seconds of CAL packets awaited before/after the sensing start/end
11cpop.algo.anatm.calEmissionMargin=200
# Missing data detection threshold in seconds. If two consecutive BRC are further apart than
this duration, ANATM will emit a MISSING data tuple.
11cpop.algo.anatm.missingDataThreshold=0.1
# When some TM packets are missing for a BRC, ANATM waits until it receives data from sensing
time BRC sensing time + brcFullReceptionMargin before
# assuming that no more TM packets pertaining to this BRC will be received. Duration in seconds
(sensing time).
11cpop.algo.anatm.brcFullReceptionMargin=30
# MVU_OVERFLOW flags mapping table
# this table provides for a given fov/band couple the corresponding VB/CH couple designating a
field in TM packet
# syntax is 11cpop.algo.anatm.mvuOverflowMapping.fov${FOV}.band${BAND}=${VB},${CH}
# with FOV, BAND, VB and CH starting at 1 (as in MAD)
11cpop.algo.anatm.mvuOverflowMapping.fov1.band1=3,1
11cpop.algo.anatm.mvuOverflowMapping.fov2.band1=2,1
11cpop.algo.anatm.mvuOverflowMapping.fov3.band1=3,2
11cpop.algo.anatm.mvuOverflowMapping.fov4.band1=2,2
11cpop.algo.anatm.mvuOverflowMapping.fov5.band1=4,1
11cpop.algo.anatm.mvuOverflowMapping.fov6.band1=1,1
11cpop.algo.anatm.mvuOverflowMapping.fov7.band1=4,2
11cpop.algo.anatm.mvuOverflowMapping.fov8.band1=1,2
11cpop.algo.anatm.mvuOverflowMapping.fov9.band1=3,3
11cpop.algo.anatm.mvuOverflowMapping.fov10.band1=2,3
11cpop.algo.anatm.mvuOverflowMapping.fov11.band1=3,4
11cpop.algo.anatm.mvuOverflowMapping.fov12.band1=2,4
11cpop.algo.anatm.mvuOverflowMapping.fov13.band1=4,3
11cpop.algo.anatm.mvuOverflowMapping.fov14.band1=1,3
11cpop.algo.anatm.mvuOverflowMapping.fov15.band1=4,4
11cpop.algo.anatm.mvuOverflowMapping.fov16.band1=1,4
# band 2
11cpop.algo.anatm.mvuOverflowMapping.fov1.band2=3,5
11cpop.algo.anatm.mvuOverflowMapping.fov2.band2=2,5
11cpop.algo.anatm.mvuOverflowMapping.fov3.band2=3,6
11cpop.algo.anatm.mvuOverflowMapping.fov4.band2=2,6
11cpop.algo.anatm.mvuOverflowMapping.fov5.band2=4,5
11cpop.algo.anatm.mvuOverflowMapping.fov6.band2=1,5
11cpop.algo.anatm.mvuOverflowMapping.fov7.band2=4,6
11cpop.algo.anatm.mvuOverflowMapping.fov8.band2=1,6
11cpop.algo.anatm.mvuOverflowMapping.fov9.band2=3,7

```

```

l1cpop.algo.anatm.mvuOverflowMapping.fov10.band2=2,7
l1cpop.algo.anatm.mvuOverflowMapping.fov11.band2=3,8
l1cpop.algo.anatm.mvuOverflowMapping.fov12.band2=2,8
l1cpop.algo.anatm.mvuOverflowMapping.fov13.band2=4,7
l1cpop.algo.anatm.mvuOverflowMapping.fov14.band2=1,7
l1cpop.algo.anatm.mvuOverflowMapping.fov15.band2=4,8
l1cpop.algo.anatm.mvuOverflowMapping.fov16.band2=1,8
# band 3
l1cpop.algo.anatm.mvuOverflowMapping.fov1.band3=3,9
l1cpop.algo.anatm.mvuOverflowMapping.fov2.band3=2,9
l1cpop.algo.anatm.mvuOverflowMapping.fov3.band3=3,10
l1cpop.algo.anatm.mvuOverflowMapping.fov4.band3=2,10
l1cpop.algo.anatm.mvuOverflowMapping.fov5.band3=4,9
l1cpop.algo.anatm.mvuOverflowMapping.fov6.band3=1,9
l1cpop.algo.anatm.mvuOverflowMapping.fov7.band3=4,10
l1cpop.algo.anatm.mvuOverflowMapping.fov8.band3=1,10
l1cpop.algo.anatm.mvuOverflowMapping.fov9.band3=3,11
l1cpop.algo.anatm.mvuOverflowMapping.fov10.band3=2,11
l1cpop.algo.anatm.mvuOverflowMapping.fov11.band3=3,12
l1cpop.algo.anatm.mvuOverflowMapping.fov12.band3=2,12
l1cpop.algo.anatm.mvuOverflowMapping.fov13.band3=4,11
l1cpop.algo.anatm.mvuOverflowMapping.fov14.band3=1,11
l1cpop.algo.anatm.mvuOverflowMapping.fov15.band3=4,12
l1cpop.algo.anatm.mvuOverflowMapping.fov16.band3=1,12
# band 4
l1cpop.algo.anatm.mvuOverflowMapping.fov1.band4=3,13
l1cpop.algo.anatm.mvuOverflowMapping.fov2.band4=2,13
l1cpop.algo.anatm.mvuOverflowMapping.fov3.band4=3,14
l1cpop.algo.anatm.mvuOverflowMapping.fov4.band4=2,14
l1cpop.algo.anatm.mvuOverflowMapping.fov5.band4=4,13
l1cpop.algo.anatm.mvuOverflowMapping.fov6.band4=1,13
l1cpop.algo.anatm.mvuOverflowMapping.fov7.band4=4,14
l1cpop.algo.anatm.mvuOverflowMapping.fov8.band4=1,14
l1cpop.algo.anatm.mvuOverflowMapping.fov9.band4=3,15
l1cpop.algo.anatm.mvuOverflowMapping.fov10.band4=2,15
l1cpop.algo.anatm.mvuOverflowMapping.fov11.band4=3,16
l1cpop.algo.anatm.mvuOverflowMapping.fov12.band4=2,16
l1cpop.algo.anatm.mvuOverflowMapping.fov13.band4=4,15
l1cpop.algo.anatm.mvuOverflowMapping.fov14.band4=1,15
l1cpop.algo.anatm.mvuOverflowMapping.fov15.band4=4,16
l1cpop.algo.anatm.mvuOverflowMapping.fov16.band4=1,16
# Comma-separated list of OPER-EXTCAL scan profiles for which the instrument should
# be considered as in OPER mode.
# Available scan profiles: IDLE, START, NOMINAL, STOP, PROFILE_04, PROFILE_05, PROFILE_06,
# PROFILE_07, PROFILE_08, PROFILE_09, PROFILE_10, PROFILE_11, PROFILE_12, PROFILE_13,
# PROFILE_14, PROFILE_15, PROFILE_16, PROFILE_17, PROFILE_18, PROFILE_19, PROFILE_20,
# PROFILE_21, PROFILE_22, PROFILE_23, PROFILE_24, PROFILE_25, PROFILE_26, PROFILE_27, NONE
l1cpop.algo.anatm.extCalProfilesToConsiderAsOper=NOMINAL, PROFILE_04

### ANATM NAV
# Packet duration in seconds
l1cpop.algo.anatm_nav.packet.duration=0.125
# threshold for inter-packets gap detection
l1cpop.algo.anatm_nav.missing.detection.threshold=0.1

### OGPS_BMERG
# Tolerance for wn equality test; in floating-point values
l1cpop.algo.bmerg.precisionWnEquality=5

### OGPM_METFM

```

```

# Threshold for (t_SST - t_LARE)*f_MCK under which an ambiguity is detected
llcpop.algo.metfm.precisionTimeEquality=0.99

### OGPM_SASFE
# SASFE interpolation method. LINEAR or SPLINE
llcpop.algo.sasfe.interpolation=SPLINE

### OGPM_SHCOL
# minimum (included) clear fraction accepted for a spectrum
llcpop.algo.shcol.minClearFraction=1.0
# minimum (included) sea fraction accepted for a spectrum
llcpop.algo.shcol.minSeaFraction=1.0
# minimum (not included) abs(sun zenith) fraction accepted for a spectrum
llcpop.algo.shcol.minAbsSunZenith=90.0

### OGPM_SHEV
# Factor for number of Levenberg-Marquardt evaluations. Default value is 200.
llcpop.algo.shev.lmNbEvalFactor=200
# Factor for number of Simplex evaluations and iterations. Default value is 200.
llcpop.algo.shev.simplexNbEvalIterFactor=200

### OGPI CHAIN ACTIVATION
# Scan positions that will trigger the activation of the complete OGPI chain, comma separated.
# Available scan positions: UNKNOWN, ST1_SVC, ST2_SVC, ST3_SVC, ST4_SVC, ST5_SVC, ST6_SVC,
# ST7_SVC, ST8_SVC, ST9_SVC, ST10_SVC, ST11_SVC, ST12_SVC, ST13_SVC, ST14_SVC, NADIR, CS1,
# CS2, BB, WFS1, WFS2, WFS3, WFS4, SC1, SC2, SC3, SC4, BACK, SPARE1, SPARE2, TRANSITION
llcpop.algo.ogpi.completeChain.scanPositions=ST1_SVC,ST2_SVC,ST3_SVC,ST4_SVC,ST5_SVC, \
ST6_SVC,ST7_SVC,ST8_SVC,ST9_SVC,ST10_SVC,ST11_SVC,ST12_SVC,ST13_SVC,ST14_SVC,NADIR

### RESAMPLING TOOL
# complete path to libgeo starting tool
llcpop.algo.resampling.libgeo.path=libgeo/llcpop_run_libgeo.sh
# command line for libgeo tool
# available variables are:
# ${cs} : replaced by the chosen coordinate system, taken from OGPI AUX_CNF
# ${imaHeaderFile} : replaced by complete path to IASI IMA grid header file
# ${viiHeaderFile} : replaced by complete path to VII grid header file
# ${imaCols} : replaced by number of columns of the IASI IMA image
# ${imaLines} : replaced by number of lines of the IASI IMA image
# ${workPath} : replaced by complete path to working dir
llcpop.algo.resampling.libgeo.cmdLine=co_location_grid \
-c core.inverse_location.noError=true \
-c core.estimator_referential="${cs}" \
--inputProduct1 "${imaHeaderFile}" \
--inputProduct2 "${viiHeaderFile}" \
--origins 0.5 0.5 --dimensions ${imaCols} ${imaLines} --resolutions 1 1 \
--gridName coloc --gridFormat BSQ --alts 0.0 \
--outputDirectory "${workPath}"
# libgeo tool timeout in milliseconds
llcpop.algo.resampling.libgeo.timeout.ms=10000
# set to true to also trace successful executions
llcpop.algo.resampling.isTrace=false
# set to true to delete working directories
llcpop.algo.resampling.isClean=true

```

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3.2.2 CONF_DEF_L1CLOP

This file is located **\$INSTALL_DIR/conf/confDefL1clop.xml**

The format is XML properties file (a list of <entry key="key">value</entry>" tags).

It contains **default values** for L1CLOP-specific configuration parameters.

Description of available configuration parameters:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
<properties>
  <comment>L1CLOP configuration file</comment>

  <!-- Set to the absolute path to a directory in which expertise files will be written -->
  <entry key="l1clop.expertise.dir">/tmp</entry>

  <!-- Set to the absolute path to a directory in which temporary files will be written -->
  <entry key="l1clop.tmp.dir">/tmp</entry>

  <!-- Set to true to have L1CLOP generate IAS-1C-ENG product; false otherwise.
  Boolean value of true or false. -->
  <entry key="l1clop.product.eng.generate">true</entry>

  <!-- Set to the deflate compression level.
  Integer value between 0 and 9 inclusive. -->
  <entry key="l1clop.product.compress">0</entry>

  <!-- Back margin to ensure whole BRC at start of dump, in seconds.
  Positive Floating-point value. -->
  <entry key="l1clop.iasBackMargin">20</entry>

  <!-- Parallelization level of RADLoadingTask.
  Positive non zero integer value. -->
  <entry key="l1clop.radLoadingTask.instances">6</entry>

  <!-- Progress monitoring interval, in seconds.
  Positive floating point value. -->
  <entry key="l1clop.progressMonitor.interval">10</entry>

  <!-- OGPS_RDCOE calibration window extent in the past, i.e. how far back data is used for a
  particular BRC.
  Negative integer value. -->
  <entry key="l1clop.calibrationWindow.min">-9</entry>

  <!-- OGPS_RDCOE calibration window extent in the future, i.e. how far in the future data is
  used for a particular BRC.
  Positive integer value.-->
  <entry key="l1clop.calibrationWindow.max">9</entry>

  <!-- Duration of NAV packet in seconds.
  Positive floating-point value. -->
  <entry key="l1clop.nav.approxPacketDuration">0.125</entry>

  <!-- Selection margin for Nav data: how far around a IASI data the NAV data are needed, in
  seconds.
  Positive floating point value. -->
  <entry key="l1clop.nav.margin">2</entry>
```

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```

<!-- Factor applied to approximative duration of elements to compute NAV gap detection
threshold.
If two consecutive NAV elements are apart from more than this threshold, it is considered
that a gap exists between them.
This parameter is used when synchronizing data from different instruments.
Positive non-zero floating point value, usually in ]0.0; 1.0[ -->
<entry key="11clop.nav.gapDetectionFactor">0.1</entry>

<!-- Duration of VII scan in seconds.
Positive floating point value. -->
<entry key="11clop.vii.approxScanDuration">1.729</entry>

<!-- Selection margin for VII (VII-1B-RAD, VII-02-CLD and L2-PPS-CMA) data: how far around
a IASI data the VII data are needed, in seconds.
Positive floating point value. -->
<entry key="11clop.vii.margin">15</entry>

<!-- Factor applied to approximative duration of elements to compute VII gap detection
threshold.
If two consecutive VII elements are apart from more than this threshold, it is considered
that a gap exists between them.
This parameter is used when synchronizing data from different instruments.
Positive non-zero floating point value, usually in ]0.0; 1.0[ -->
<entry key="11clop.vii.gapDetectionFactor">0.75</entry>

<!-- Set to true to check IASI files against NCML schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.iasSchemaCheck">true</entry>

<!-- Set to true to check NAV files against NCML schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.navSchemaCheck">true</entry>

<!-- Set to true to check VII 1B RAD files against NCML schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.radSchemaCheck">true</entry>

<!-- Set to true to check PPS CMA files against NCML schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.cmaSchemaCheck">true</entry>

<!-- Set to true to check VII CLD files against NCML schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.cldSchemaCheck">true</entry>

<!-- Set to true to check AUX CNF files against schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.auxCnfSchemaCheck">true</entry>

<!-- Set to true to check AUX CAL files against schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.auxCalSchemaCheck">true</entry>

<!-- Set to true to check AUX ODB files against schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.auxOdbSchemaCheck">true</entry>

<!-- Set to true to check AUX POFD files against schema; false otherwise.
Boolean value of true or false. -->
<entry key="11clop.auxPofdSchemaCheck">true</entry>

```

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```

<!-- Set to true to check AUX LSM files against schema; false otherwise.
Boolean value of true or false. -->
<entry key="llclop.auxLsmSchemaCheck">true</entry>

<!-- Set to true to check SIP manifests against schema; false otherwise.
Boolean value of true or false. -->
<entry key="llclop.sipCheck">true</entry>

<!-- Regex identifying last granule of dump. When at least one IASI SRC filename matches
this regex,
the last products (last RAD and last ENG) will be flagged as last granules of dump.
Regex syntax reference:
https://docs.oracle.com/javase/8/docs/api/java/util/regex/Pattern.html
String value. -->
<entry key="llclop.ias.lastGranuleOfDumpRegex">^.*[a-z].{6}.nc$</entry>

<!-- Attributes of the subgroup 'status/processing' -->
<!-- Set the processing mode.
String equals to "NRT" or "Reprocessing". -->
<entry key="llclop.product.processing.mode">NRT</entry>

<!-- Global attributes of the GPFS -->
<!-- Set the instrument or product identifier.
String equals to "IAS". -->
<entry key="llclop.product.instrument">IAS</entry>

<!-- Set the product processing level.
String equals to "1C". -->
<entry key="llclop.product.level">1C</entry>

<!-- Set the environment.
String equals to "Operational" or "Validation" or "Development" or "Integration and
Verification"
or "Engineering". -->
<entry key="llclop.product.environment">Development</entry>

<!-- Set the disposition mode.
String equals to "Test" or "Commissioning" or "Operational" or "Validation". -->
<entry key="llclop.product.disposition.mode">Test</entry>

<!-- Set the global attribute of the GPFS 'Conventions'.
String equals to "CF-1.6". -->
<entry key="llclop.product.conventions">CF-1.6</entry>

<!-- Set the global attribute of the GPFS 'metadata_convention'.
String equals to "Unidata Dataset Discovery v1.0". -->
<entry key="llclop.product.metadata.convention">Unidata Dataset Discovery v1.0</entry>

<!-- Template of the product name and also product filename without extension.
String. Variables that will be replaced are:
${spacecraft} : replaced by the spacecraft. e.g. SGA1
${instrument} : replaced by value of llclop.product.instrument parameter
${productLevel} : replaced by value of llclop.product.level parameter
${productType} : replaced by RAD or ENG
${generationDate} : replaced by generation date with format YYYYMMDDhhmmss
${missionTypeInitial} : replaced by first letter of llclop.product.mission.type parameter,
in upper case
${environmentInitial} : replaced by first letter of llclop.product.environment, in upper
case
${sensingStart} : replaced by product sensing start date with format YYYYMMDDhhmmss
${sensingEnd} : replaced by product sensing end date with format YYYYMMDDhhmmss

```

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```

    ${dispositionModeInitial} : replaced by first letter of llclop.product.disposition.mode,
in upper case or lower case
    ${processingModeInitial} : replaced by first letter of llclop.product.processing.mode, in
upper case
-->
<entry key="llclop.product.name">W_XX-EUMETSAT-Darmstadt,SAT,${spacecraft}-${instrument}-
${productLevel}-
${productType}_C_EUMT_${generationDate}_${missionTypeInitial}_${environmentInitial}_${sensing
Start}_${sensingEnd}_${dispositionModeInitial}_${processingModeInitial}____</entry>

<!-- Set the global attribute of the GPFS 'title' for ENG product.
String. -->
<entry key="llclop.product.eng.title">IAS Level 1C ENG</entry>

<!-- Set the global attribute of the GPFS 'summary' for ENG product.
String. -->
<entry key="llclop.product.eng.summary">IASI-NG L1 engineering data product</entry>

<!-- Set the global attribute of the GPFS 'doi' for ENG product.
When empty, the DOI attribute is not present in the product.
String. -->
<entry key="llclop.product.eng.doi"></entry>

<!-- Set the global attribute of the GPFS 'keywords' for ENG product.
String. -->
<entry key="llclop.product.eng.keywords">As defined in the relevant product format
specification</entry>

<!-- Set the global attribute of the GPFS 'title' for RAD product.
String. -->
<entry key="llclop.product.rad.title">IAS Level 1C RAD</entry>

<!-- Set the global attribute of the GPFS 'summary' for RAD product.
String. -->
<entry key="llclop.product.rad.summary">IASI-NG L1C calibrated and geolocalised
spectra</entry>

<!-- Set the global attribute of the GPFS 'doi' for RAD product.
When empty, the DOI attribute is not present in the product.
String. -->
<entry key="llclop.product.rad.doi"></entry>

<!-- Set the global attribute of the GPFS 'keywords' for RAD product.
String. -->
<entry key="llclop.product.rad.keywords">As defined in the relevant product format
specification</entry>

<!-- Set the global attribute of the GPFS 'history' (original generated product |
aggregated product |
sub-setted product).
String. -->
<entry key="llclop.product.history">original generated product</entry>

<!-- Set the global attribute of the GPFS 'institution'.
String. -->
<entry key="llclop.product.institution">EUMETSAT</entry>

<!-- Set the global attribute of the GPFS 'references'.
String. -->
<entry key="llclop.product.references">www.eumetsat.int</entry>

<!-- Output product config -->

```

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```

<!-- Set the product processor name.
String. -->
<entry key="llclop.product.processor.name">IAS_L1C</entry>

<!-- Set the product processor version. ('v' is automatically added as prefix)
String. XX.YY.ZZ to be replaced by current version -->
<entry key="llclop.product.processor.version">XX.YY.ZZ</entry>

<!-- Set the product format version.
String. X.Y to be replaced by current version -->
<entry key="llclop.product.format.version">X.Y</entry>

<!-- Set the product reference and version of the PFS.
String. X.Y to be replaced by current version -->
<entry key="llclop.product.pfs.reference.and.version">IASING-SP-4200-0272-CNES vX.Y</entry>

<!-- Set the product reference and version of the ATBD.
String. X.Y to be replaced by current version -->
<entry key="llclop.product.atbd.reference.and.version">IASING-NT-2000-0190-CNES vX.Y</entry>

<!-- Set the climate data record collection version in reprocessed data (optional).
String. -->
<entry key="llclop.product.baseline">N/A</entry>

<!-- Set the init graph timeout duration, in the units from llclop.initTimeout.unit.
Positive integer value. -->
<entry key="llclop.initTimeout.value">10</entry>

<!-- Set the init graph timeout unit.
String. One of SECONDS, MINUTES, HOURS or DAYS -->
<entry key="llclop.initTimeout.unit">DAYS</entry>

<!-- Set the processing graph timeout duration, in the units from
llclop.processingTimeout.unit.
Positive integer value. -->
<entry key="llclop.processingTimeout.value">10</entry>

<!-- Set the processing graph timeout unit.
String. One of SECONDS, MINUTES, HOURS or DAYS -->
<entry key="llclop.processingTimeout.unit">DAYS</entry>
</properties>

```

3.2.2.1 Set the field <FreeText> in CONF_DEF_L1CLOP

In the file *confDefL1clop.xml*, the last 4 characters highlighted in blue in the following line correspond to the <FreeText> field mentioned in the L1C PFS:

```

<entry key="llclop.product.name">W_XX-EUMETSAT-Darmstadt,SAT,{spacecraft}-
${instrument}-${productLevel}-
${productType}_C_EUMT_${generationDate}_${missionTypeInitial}_${environmentInitial}
${sensingStart}_${sensingEnd}_${dispositionModeInitial}_${processingModeInitial}
</entry>

```

There are therefore 2 solutions to configure this free text:

- Either you modify this line to configure the desired value for all the products generated by L1CLOP
- Or you modify each joborder referencing a file *nondefault_config.xml* created like it follows:

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```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
<properties>
  <entry key="l1clop.product.name">W_XX-EUMETSAT-Darmstadt,SAT,{spacecraft}-
  ${instrument}-${productLevel}-
  ${productType}_C_EUMT_${generationDate}_${missionTypeInitial}_${environmentInitial}
  ${sensingStart}_${sensingEnd}_${dispositionModeInitial}_${processingModeInitial}ab
  cd</entry>
</properties>
```

L1CLOP will generate the products:

- W_XX-EUMETSAT-Darmstadt,SAT,SGA1-IAS-1C-ENG_C_EUMT_20241205134452_L_D_20241003090619_20241003090721_T_Nabcd.nc
- W_XX-EUMETSAT-Darmstadt,SAT,SGA1-IAS-1C-ENG_C_EUMT_20241205134541_L_D_20241003090721_20241003090748_T_Nabcd.nc
- W_XX-EUMETSAT-Darmstadt,SAT,SGA1-IAS-1C-RAD_C_EUMT_20241205134450_L_D_20241003090619_20241003090721_T_Nabcd.nc
- W_XX-EUMETSAT-Darmstadt,SAT,SGA1-IAS-1C-RAD_C_EUMT_20241205134541_L_D_20241003090721_20241003090748_T_Nabcd.nc

This way each run can be configured independently from the others

3.2.2.2 Configure baseline attributes in products

The attribute **format_version** in output products is filled with the value of the configuration parameter **l1clop.product.format.version**. See \$CONF_DEF_L1CLOP and \$CONF_DYN for configuring this.

The attribute **pgs_reference_and_version** in output products is filled with the value from the NCML schema. See \$CONF_SCHEMA for configuring this.

The attribute **pfs_reference_and_version** in output products is filled with the value of the configuration parameter **l1clop.product.pfs.reference.and.version**. See \$CONF_DEF_L1CLOP and \$CONF_DYN for configuring this.

The attribute **atbd_reference_and_version** in output products is filled with the value of the configuration parameter **l1clop.product.atbd.reference.and.version**. See \$CONF_DEF_L1CLOP and \$CONF_DYN for configuring this.

The attribute **documentReference** in AUX output products is filled with the value of the configuration parameter **l1clop.product.ads.reference.and.version**. See \$CONF_DEF_MISSION for Global mission and \$CONF_DYN for configuring this.

3.2.3 CONF_DEF_MISSION for Local mission

This file is located **\$INSTALL_DIR/conf/confDefMissionLocal.xml**

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The format is XML properties file (a list of <entry key="key">value</entry>" tags).

It contains **default values** for L1CLOP-specific configuration parameters.

Description of available configuration parameters:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
<properties>
  <comment>L1CLOP configuration file for Local mission</comment>

  <!-- Set the mission type.
  String equals to "Global" or "Regional" or "Local". -->
  <entry key="l1clop.product.mission.type">Local</entry>

  <!-- Margin for VII-1B-RAD to L2-PPS-CMA files sensing start/end correspondence, in seconds.
  Positive floating point value. -->
  <entry key="l1clop.viiCmaCorrespondanceMargin">0.6</entry>

</properties>
```

3.2.4 CONF_DEF_MISSION for Global mission

This file is located **\$INSTALL_DIR/conf/confDefMissionGlobal.xml**

The format is XML properties file (a list of <entry key="key">value</entry>" tags).

It contains **default values** for L1CLOP-specific configuration parameters.

Description of available configuration parameters:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
<properties>
  <comment>L1CLOP configuration file for Global mission</comment>

  <!-- Set the mission type.
  String equals to "Global" or "Local". -->
  <entry key="l1clop.product.mission.type">Global</entry>

  <!-- Checks if is aux atm schema should be checked.
  Boolean value of true or false. -->
  <entry key="l1clop.auxAtmSchemaCheck">true</entry>

  <!-- Ads reference and version.
  String. X.Y to be replaced by current version -->
  <entry key="l1clop.ads.reference.and.version">IASING-SP-4200-0273-CNES vX.Y</entry>

  <!-- Checks if AUX_RAD generation is activated.
  Boolean value of true or false. -->
  <entry key="l1clop.aux.rad.generate">true</entry>

  <!-- Checks if AUX_COEF generation is activated.
  Boolean value of true or false. -->
  <entry key="l1clop.aux.coef.generate">true</entry>
```

```

<!-- Checks if AUX_OFST generation is activated.
Boolean value of true or false. -->
<entry key="11clop.aux.ofst.generate">true</entry>

<!-- Checks if AUX_SDB generation is activated.
Boolean value of true or false. -->
<entry key="11clop.aux.sdb.generate">true</entry>

<!-- Checks if AUX_SCHB generation is activated.
Boolean value of true or false. -->
<entry key="11clop.aux.schb.generate">true</entry>

<!-- Checks if AUX_CAL generation is activated.
Boolean value of true or false. -->
<entry key="11clop.aux.cal.generate">true</entry>

<!-- Template of the SIP names.
String. Variables that will be replaced are:
${spacecraft} : replaced by the spacecraft. e.g. SGAl
${instrument} : replaced by value of 11clop.product.instrument parameter
${processingLevel} : replaced by value of 11clop.product.level parameter
${adfType} : replaced by the corresponding adf type (AUX_CAL_, AUX_SCHB, AUX_COEF,
AUX_OFST, AUX_RAD_, AUX_SDB_)
${gr} : replaced by value of 11clop.aux.xxx.sip.gr parameter
${validityStartDateTime} : replaced by validity start date with format YYYYMMDDhhmmss
${validityEndDateTime} : replaced by validity end date with format YYYYMMDDhhmmss
(XXXXXXXXXXXXXXXXX for infinite end)
${generationDate} : replaced by generation date with format YYYYMMDDhhmmss
${source} : replaced by value of 11clop.aux.xxx.sip.source parameter
${environment} : replaced by value of 11clop.aux.xxx.sip.environment parameter
${class} : replaced by value of 11clop.aux.xxx.sip.class parameter
${freeText} : replaced by value of 11clop.aux.xxx.sip.freeText parameter, automatically
preceded by "_" if set
-->
<entry
key="11clop.sip.nameTemplate">${spacecraft}_${instrument}_${processingLevel}_${adfType}_${gr}
_${validityStartDateTime}_E${validityEndDateTime}_G${generationDate}_${source}_${environ
ment}_${class}${freeText}.SIP</entry>

<!-- Template of the AUX_RAD files names.
String. Variables that will be replaced are:
${spacecraft} : replaced by the spacecraft. e.g. SGAl
${instrument} : replaced by value of 11clop.product.instrument parameter
${processingLevel} : replaced by value of 11clop.product.level parameter
${adfType} : replaced by the corresponding adf type (AUX_RAD_)
${gr} : replaced by value of 11clop.aux.rad.sip.gr parameter
${validityStartDateTime} : replaced by validity start date with format YYYYMMDDhhmmss
${validityEndDateTime} : replaced by validity end date with format YYYYMMDDhhmmss
(XXXXXXXXXXXXXXXXX for infinite end)
${generationDate} : replaced by generation date with format YYYYMMDDhhmmss
-->
<entry
key="11clop.aux.rad.sip.filenameTemplate">${spacecraft}_${instrument}_${processingLevel}_${ad
fType}_${gr}_${validityStartDateTime}_E${validityEndDateTime}_G${generationDateTime}.json.gz
</entry>

<!-- The "Mission" section of the AUX_RAD according to its definition in [ADS].
String. -->
<entry key="11clop.aux.rad.sip.gr">G</entry>

<!-- The "Source" section of the AUX_RAD according to its definition in [ADS].
String. -->

```

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```

<entry key="l1clop.aux.rad.sip.source">PDP_</entry>

<!-- The "Environment" section of the AUX_RAD according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.rad.sip.environment">OPE</entry>

<!-- The "Class" section of the AUX_RAD according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.rad.sip.class">OPER</entry>

<!-- The "Free Text" section of the AUX_RAD SIP name according to its definition in
[ADS].
String. -->
<entry key="l1clop.aux.rad.sip.freeText">T_</entry>

<!-- The "Name" section of the AUX_RAD according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.rad.sip.name">IASI-NG products generation context data</entry>

<!-- The "description" section of the AUX_RAD according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.rad.sip.description">Provides information on the last complete
line generated
    in the L1C products to allow L1C products continuity</entry>

<!-- Template of the AUX_COEF files names.
String. Variables that will be replaced are:
${spacecraft} : replaced by the spacecraft. e.g. SGA1
${instrument} : replaced by value of l1clop.product.instrument parameter
${processingLevel} : replaced by value of l1clop.product.level parameter
${adfType} : replaced by the corresponding adf type (AUX_COEF)
${gr} : replaced by value of l1clop.aux.coef.sip.gr parameter
${validityStartDateTime} : replaced by validity start date with format YYYYMMDDhhmmss
${validityEndDateTime} : replaced by validity end date with format YYYYMMDDhhmmss
(XXXXXXXXXXXXXXXX for infinite end)
${generationDate} : replaced by generation date with format YYYYMMDDhhmmss
-->
<entry
key="l1clop.aux.coef.sip.filenameTemplate">${spacecraft}_${instrument}_${processingLevel}_${a
dfType}_${gr}_S${validityStartDateTime}_E${validityEndDateTime}_G${generationDateTime}.json.g
z</entry>

<!-- The "Mission" section of the AUX_COEF according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.coef.sip.gr">G</entry>

<!-- The "Source" section of the AUX_COEF according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.coef.sip.source">PDP_</entry>

<!-- The "Environment" section of the AUX_COEF according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.coef.sip.environment">OPE</entry>

<!-- The "Class" section of the AUX_COEF according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.coef.sip.class">OPER</entry>

<!-- The "Free Text" section of the AUX_COEF SIP name according to its definition in
[ADS].
String. -->
<entry key="l1clop.aux.coef.sip.freeText">T_</entry>

```

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```

<!-- The "Name" section of the AUX_COEF according to its definition in [ADS].
String. -->
<entry key="llclop.aux.coef.sip.name">IASI-NG OGPI_COEFF algorithm context data</entry>

<!-- The "description" section of the AUX_COEF according to its definition in [ADS].
String. -->
<entry key="llclop.aux.coef.sip.description">Provides a warm start information for
radiometric
    calibration</entry>

<!-- Template of the AUX_OFST files names.
String. Variables that will be replaced are:
${spacecraft} : replaced by the spacecraft. e.g. SGA1
${instrument} : replaced by value of llclop.product.instrument parameter
${processingLevel} : replaced by value of llclop.product.level parameter
${adfType} : replaced by the corresponding adf type (AUX_OFST)
${gr} : replaced by value of llclop.aux.ofst.sip.gr parameter
${validityStartDateTime} : replaced by validity start date with format YYYYMMDDhhmmss
${validityEndDateTime} : replaced by validity end date with format YYYYMMDDhhmmss
(XXXXXXXXXXXXXXXX for infinite end)
${generationDate} : replaced by generation date with format YYYYMMDDhhmmss
-->
<entry
key="llclop.aux.ofst.sip.filenameTemplate">${spacecraft}_${instrument}_${processingLevel}_${a
dfType}_${gr}_S${validityStartDateTime}_E${validityEndDateTime}_G${generationDate}.json.g
z</entry>

<!-- The "Mission" section of the AUX_OFST according to its definition in [ADS].
String. -->
<entry key="llclop.aux.ofst.sip.gr">G</entry>

<!-- The "Source" section of the AUX_OFST according to its definition in [ADS].
String. -->
<entry key="llclop.aux.ofst.sip.source">PDP_</entry>

<!-- The "Environment" section of the AUX_OFST according to its definition in [ADS].
String. -->
<entry key="llclop.aux.ofst.sip.environment">OPE</entry>

<!-- The "Class" section of the AUX_OFST according to its definition in [ADS].
String. -->
<entry key="llclop.aux.ofst.sip.class">OPER</entry>

<!-- The "Free Text" section of the AUX_OFST SIP name according to its definition in
[ADS].
String. -->
<entry key="llclop.aux.ofst.sip.freeText">T__</entry>

<!-- The "Name" section of the AUX_OFST according to its definition in [ADS].
String. -->
<entry key="llclop.aux.ofst.sip.name">IASI-NG OGPI_OFFST algorithm context data</entry>

<!-- The "description" section of the AUX_OFST according to its definition in [ADS].
String. -->
<entry key="llclop.aux.ofst.sip.description">Provides a warm start information for
coregistration with VII</entry>

<!-- Template of the AUX_SDB files names.
String. Variables that will be replaced are:
${spacecraft} : replaced by the spacecraft. e.g. SGA1
${instrument} : replaced by value of llclop.product.instrument parameter

```

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```

${processingLevel} : replaced by value of llclop.product.level parameter
${adfType} : replaced by the corresponding adf type (AUX_SDB_)
${gr} : replaced by value of llclop.aux.sdb.sip.gr parameter
${validityStartDateTime} : replaced by validity start date with format YYYYMMDDhhmmss
${validityEndDateTime} : replaced by validity end date with format YYYYMMDDhhmmss
(XXXXXXXXXXXXXXXXX for infinite end)
${generationDate} : replaced by generation date with format YYYYMMDDhhmmss
-->
<entry
key="llclop.aux.sdb.sip.filenameTemplate">${spacecraft}_${instrument}_${processingLevel}_${adfType}_${gr}_${validityStartDateTime}_E${validityEndDateTime}_G${generationDate}.json.gz
</entry>

<!-- The "Mission" section of the AUX_SDB according to its definition in [ADS].
String. -->
<entry key="llclop.aux.sdb.sip.gr">G</entry>

<!-- The "Source" section of the AUX_SDB according to its definition in [ADS].
String. -->
<entry key="llclop.aux.sdb.sip.source">PDP</entry>

<!-- The "Environment" section of the AUX_SDB according to its definition in [ADS].
String. -->
<entry key="llclop.aux.sdb.sip.environment">OPE</entry>

<!-- The "Class" section of the AUX_SDB according to its definition in [ADS].
String. -->
<entry key="llclop.aux.sdb.sip.class">OPER</entry>

<!-- The "Free Text" section of the AUX_SDB SIP name according to its definition in
[ADS].
String. -->
<entry key="llclop.aux.sdb.sip.freeText">T</entry>

<!-- The "Name" section of the AUX_SDB according to its definition in [ADS].
String. -->
<entry key="llclop.aux.sdb.sip.name">IASI-NG SHIFTCOL algorithm context data</entry>

<!-- The "description" section of the AUX_SDB according to its definition in [ADS].
String. -->
<entry key="llclop.aux.sdb.sip.description">Provides a warm start information for
AUX_SCHB/AUX_CAL update in
spectral asynchronous calibration</entry>

<!-- Template of the AUX_SCHB files names.
String. Variables that will be replaced are:
${spacecraft} : replaced by the spacecraft. e.g. SGAl
${instrument} : replaced by value of llclop.product.instrument parameter
${processingLevel} : replaced by value of llclop.product.level parameter
${adfType} : replaced by the corresponding adf type (AUX_CAL_, AUX_SCHB, AUX_COEF,
AUX_OFST, AUX_RAD_, AUX_SDB_)
${gr} : replaced by value of llclop.aux.xxx.sip.gr parameter
${validityStartDateTime} : replaced by validity start date with format YYYYMMDDhhmmss
${validityEndDateTime} : replaced by validity end date with format YYYYMMDDhhmmss
(XXXXXXXXXXXXXXXXX for infinite end)
${generationDate} : replaced by generation date with format YYYYMMDDhhmmss
${environment} : replaced by value of llclop.aux.xxx.sip.environment parameter
${class} : replaced by value of llclop.aux.xxx.sip.class parameter
-->
<entry
key="llclop.aux.schb.sip.filenameTemplate">${spacecraft} ${instrument} ${processingLevel} ${a

```

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```
dfType}_${gr}_S${validityStartDateTime}_E${validityEndDateTime}_G${generationDateTime}_L1CPOP_
_${environment}_${class}.nc</entry>

<!-- The "Mission" section of the AUX_SCHB according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.schb.sip.gr">_</entry>

<!-- The "Source" section of the AUX_SCHB according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.schb.sip.source">PDP_</entry>

<!-- The "Environment" section of the AUX_SCHB according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.schb.sip.environment">OPE</entry>

<!-- The "Class" section of the AUX_SCHB according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.schb.sip.class">OPER</entry>

<!-- The "Free Text" section of the AUX_SCHB SIP name according to its definition in
[ADS].
String. -->
<entry key="l1clop.aux.schb.sip.freeText">T_</entry>

<!-- The "Name" section of the AUX_SCHB according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.schb.sip.name">IASI-NG spectral calibration historical
background</entry>

<!-- The "description" section of the AUX_SCHB according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.schb.sip.description">Provides the spectra database used in the
estimation of the
spectral calibration in global mission</entry>

<!-- Template of the AUX_CAL files names.
String. Variables that will be replaced are:
${spacecraft} : replaced by the spacecraft. e.g. SGA1
${instrument} : replaced by value of l1clop.product.instrument parameter
${processingLevel} : replaced by value of l1clop.product.level parameter
${adfType} : replaced by the corresponding adf type (AUX_CAL_, AUX_SCHB, AUX_COEF,
AUX_OFST, AUX_RAD_, AUX_SDB_)
${gr} : replaced by value of l1clop.aux.xxx.sip.gr parameter
${validityStartDateTime} : replaced by validity start date with format YYYYMMDDhhmmss
${validityEndDateTime} : replaced by validity end date with format YYYYMMDDhhmmss
(XXXXXXXXXXXXXXXXX for infinite end)
${generationDate} : replaced by generation date with format YYYYMMDDhhmmss
${environment} : replaced by value of l1clop.aux.xxx.sip.environment parameter
${class} : replaced by value of l1clop.aux.xxx.sip.class parameter
${fov} : replaced by the fov being written
-->
<entry
key="l1clop.aux.cal.sip.filenameTemplate">${spacecraft}_${instrument}_${processingLevel}_${ad
fType}_${gr}_S${validityStartDateTime}_E${validityEndDateTime}_G${generationDateTime}_L1CPOP_
_${environment}_${class}_${fov}.nc</entry>

<!-- The "Mission" section of the AUX_CAL according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.cal.sip.gr">_</entry>

<!-- The "Source" section of the AUX_CAL according to its definition in [ADS].
String. -->
```

```

<entry key="l1clop.aux.cal.sip.source">PDP_</entry>

<!-- The "Environment" section of the AUX_CAL according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.cal.sip.environment">OPE</entry>

<!-- The "Class" section of the AUX_CAL according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.cal.sip.class">OPER</entry>

<!-- The "Free Text" section of the AUX_CAL SIP name according to its definition in
[ADS].
String. -->
<entry key="l1clop.aux.cal.sip.freeText">T_</entry>

<!-- The "Name" section of the AUX_CAL according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.cal.sip.name">IASI-NG operational spectral calibration
coefficients</entry>

<!-- The "description" section of the AUX_CAL according to its definition in [ADS].
String. -->
<entry key="l1clop.aux.cal.sip.description">Provides the dynamic parameters for spectral
calibration</entry>

<!-- Validity margin of the AUX_RAD before last BRC sensing end, in seconds.
Validity start is computed as lastBRCsensingEnd - marginBefore.
Floating point value. -->
<entry key="l1clop.aux.rad.sip.validity.marginBefore">0</entry>

<!-- Validity margin of the AUX_RAD after last BRC sensing end, in seconds.
Validity end is computed as lastBRCsensingEnd + marginAfter.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.rad.sip.validity.marginAfter">15.561</entry>

<!-- Validity margin of the AUX_COEF before last BRC sensing end, in seconds.
Validity start is computed as lastBRCsensingEnd - marginBefore.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.coef.sip.validity.marginBefore">0</entry>

<!-- Validity margin of the AUX_COEF after last BRC sensing end, in seconds.
Validity end is computed as lastBRCsensingEnd + marginAfter.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.coef.sip.validity.marginAfter">15.561</entry>

<!-- Validity margin of the AUX_OFST before last BRC sensing end, in seconds.
Validity start is computed as lastBRCsensingEnd - marginBefore.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.ofst.sip.validity.marginBefore">0</entry>

<!-- Validity margin of the AUX_OFST after last BRC sensing end, in seconds.
Validity end is computed as lastBRCsensingEnd + marginAfter.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.ofst.sip.validity.marginAfter">15.561</entry>

<!-- Validity margin of the AUX_SDB before last BRC sensing end, in seconds.
Validity start is computed as lastBRCsensingEnd - marginBefore.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.sdb.sip.validity.marginBefore">0</entry>

<!-- Validity margin of the AUX_SDB after last BRC sensing end, in seconds.
Validity end is computed as lastBRCsensingEnd + marginAfter.

```

```

Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.sdb.sip.validity.marginAfter">15.561</entry>

<!-- Validity margin of the AUX_SCHB before last BRC sensing end, in seconds.
Validity start is computed as lastBRCSensingEnd - marginBefore.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.schb.sip.validity.marginBefore">1560</entry>

<!-- Validity margin of the AUX_SCHB after last BRC sensing end, in seconds.
Validity end is computed as lastBRCSensingEnd + marginAfter.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.schb.sip.validity.marginAfter">INF</entry>

<!-- Validity margin of the AUX_CAL before last BRC sensing end, in seconds.
Validity start is computed as lastBRCSensingEnd - marginBefore.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.cal.sip.validity.marginBefore">1560</entry>

<!-- Validity margin of the AUX_CAL after last BRC sensing end, in seconds.
Validity end is computed as lastBRCSensingEnd + marginAfter.
Floating point value, or the string INF to indicate infinite validity date end. -->
<entry key="l1clop.aux.cal.sip.validity.marginAfter">INF</entry>

</properties>

```

3.2.5 CONF_DYN

It is possible to pass in L1CLOP JobOrder a CONF_DYN configuration file. It is optional.

The format of this file is XML properties file (a list of <entry key="key">value</entry> tags), just like CONF_DEF_L1CLOP.

This file contains **overridden values** for any parameter from **CONF_DEF_ALGO**, **CONF_DEF_L1CLOP**, or **CONF_DEF_MISSION**.

It is also a convenient place to put expertise output configuration (see annex 4.1), in which case overriding parameter `l1clop.expertise.dir` allows to choose where expertise files are created.

In addition, it is possible to override CONF_MSG messages type and channel:

Syntax:

```

<entry key="l1clop.message.[message_id]>.type">[new_type]</entry>
<entry key="l1clop.message.[message_id]>.channel">[new_channel]</entry>

```

Where:

```

[message_id] corresponds to the target message 'id' attribute in CONF_MSG
[new_type] corresponds to target value of 'type' attribute in CONF_MSG
_ for disabled message
D for DEBUG message
I for INFO message
P for PROGRESS message
W for WARNING message

```

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E for ERROR message
 [new_channel] corresponds to target value of 'channel' attribute in CONF_MSG
 0 for standard output
 E for error output

Note that this only applies to messages emitted after dynamic configuration load.

Sample of CONF_DYN content:

```

<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE properties SYSTEM "http://java.sun.com/dtd/properties.dtd">
<properties>
  <comment>LlCLOP dynamic configuration sample file</comment>

  <!-- Override CONF_DEF_LlCPOP parameter -->
  <entry key="llclop.expertise.dir"/>some/custom/expertise/dir</entry>

  <!-- Override CONF_DEF_ALGO parameter -->
  <entry key="llclop.algo.resampling.isClean">false</entry>

  <!-- Set expertise output configuration -->
  <entry key="llclop.algo.ogps_ftdir.expertise.enable">all</entry>
  <entry key="llclop.algo.ogps_ftdir.expertise.filter">step:EV1;EV2,fov:[4..7]</entry>

  <!-- Activate trace messages of DEBUG level by setting T_DEBUG log message level to D -->
  <entry key="llclop.message.T_DEBUG.type">D</entry>
</properties>

```

3.2.6 CONF_SCHEMA

This directory is located **\$INSTALL_DIR/conf/schema**

The directory contains multiple files, including XML schemas (XSD files), NetCDF schemas (NCML files) and TM properties file.

3.2.6.1 Schema files

These are schema files used to check and initialize file input and output formats. They are located in a **schema/** subfolder and its subfolders.

schema/

- **NETCDF_IAS_00_SRC*.xml**: NCML schema for PROD_IAS_00_SRC and PROD_IAS_00_REP files;
- **NETCDF_NAV_00_SRC*.xml**: NCML schema for PROD_NAV_00_SRC files;
- **NETCDF_VII_1B_RAD*.xml**: NCML schema for PROD_VII_1B_RAD files;
- **NETCDF_PPS_CMA*.xml**: NCML schema for PROD_PPS_CMA files;
- **NETCDF_VII_02_CLD*.xml**: NCML schema for PROD_VII_02_CLD files;
- **NETCDF_IAS_1C_RAD*.xml**: NCML schema for PROD_IAS_1C_RAD files;
- **NETCDF_IAS_1C_ENG*.xml**: NCML schema for PROD_IAS_1C_ENG files;

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- **joborderLocal.xsd**: contains XSD schema for JobOrder file in Local mission;
- **joborderGlobal.xsd**: contains XSD schema for JobOrder file in Global mission;
- **messages.dtd**: contains DTD schema for CONF_MSG file;
- **sip_manifest.xsd**: contains XSD schema for SIP manifest files;
- **AUX_CNF**: contains XSD schemas for AUX_CNF XML files;
- **AUX_ODB**: contains NCML schemas for AUX_ODB NetCDF files;
- **AUX_CAL**: contains NCML schemas for AUX_CAL NetCDF files;
- **AUX_POFD**: contains XSD schemas for AUX_POFD file;
- **AUX_LSM**: contains NCML schemas for AUX_LSM NetCDF files,;
- **AUX_RD09**: contains XSD schemas for AUX_RD09 XML files;
- **AUX_ATM**: contains XSD schemas for AUX_ATM XML files;
- **AUX_SCHB**: contains XSD schemas for AUX_SCHB XML files.

3.2.6.2 TM Properties files

These files named TMProperties_<datatype>.json contain decommutation range information for reading LO input files.

Commented content sample:

```
{
  "TMProperties" : {
    "commonFields" : {          // fields common to all TM packets
      "VERSION" : {
        "path" : "PACKET_HEADER.VERSION",
        "range" : {
          "type" : "integer",
          "value" : "0"          // one accepted value value
        }
      },
      "APID" : {
        "path" : "PACKET_HEADER.APID",
        "range" : {
          "type" : "integer",
          "value" : "[993..1023]" // range of accepted values
        }
      },
      "SID" : {
        "path" : "ANC_COMMON.SID",
        "range" : {
          "type" : "integer",
          "value" : "16;32;65;67;208" // multiple accepted values
        }
      },
      (...),
    },
    (...),
  }
}
```

3.2.7 CONF_MSG

This file is located **\$INSTALL_DIR/conf/confMsg.xml**

This file contains log messages description. For each message, defined by a message id, the following parameters are present:

- Message id;
- Message text;
- Type (Debug, Information, Progress, Warning, Error);
- Channel (stdout or stderr).

This file format is XML and organized as follows:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE properties SYSTEM "messages.dtd">
<messages>
  <comment>L1CLOP messages file</comment>

  <!-- message id is M001 -->
  <message id="M001" type="I" channel="O">
    Start: version $version is starting with job order $joborder
  </message>
</messages>
```

Message parameters are prefixed by '\$'. They are provided by L1CLOP when emitting the message.

Description of available messages:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<!DOCTYPE messages SYSTEM "schema/messages.dtd">
<messages>
  <comment>L1CLOP messages file</comment>

  <!--
Syntax:
  # id must be unique
  # type can be:
    _ for disabled message
    D for DEBUG message
    I for INFO message
    P for PROGRESS message
    W for WARNING message
    E for ERROR message
  # channel can be:
    O for standard output
    E for error output
  # message text can contain variables: ${variableName}, which will be replaced by runtime
  values.
  -->
```

```

<message id="M001" type="I" channel="O">
  Start: version ${version} is starting with job order ${joborder}
</message>

<message id="M002" type="I" channel="O">
  Input files: IAS-00-SRC: ${ias00src}; IAS-00-REP: ${ias00rep}; NAV-00-SRC: ${nav00src};
  VII-1B-RAD: ${vii1brad}; VII-02-CMA: ${l2ppscma}; AUX_POFD: ${auxpofd};
  AUX_IBA: ${auxiba}; AUX_RD09: ${auxrd09}; AUX_LSM: ${auxlsm};
  IAS_1C_AUX_CAL: ${auxcal}; IAS_1C_AUX_CNF: ${auxcnf}
</message>

<message id="M002G" type="I" channel="O">
  Input files: IAS-00-SRC: ${ias00src}; NAV-00-SRC: ${nav00src}; VII-1B-RAD: ${vii1brad};
  VII-02-CLD: ${vii02cld}; AUX_POFD: ${auxpofd}; AUX_IBA: ${auxiba}; AUX_RD09: ${auxrd09};
  AUX_LSM: ${auxlsm}; IAS_1C_AUX_ODB: ${auxodb}; IAS_1C_AUX_CAL: ${auxcal}; IAS_1C_AUX_CNF:
  ${auxcnf}; IAS_1C_AUX_ATM: ${auxatm}; IAS_1C_AUX_RAD: ${auxrad}; IAS_1C_AUX_COEF:
  ${auxcoef}; IAS_1C_AUX_OFST: ${auxofst}; IAS_1C_AUX_SDB: ${auxsdb};
</message>

<message id="M003" type="I" channel="O">
  Output files: IAS-1C-RAD: ${ias1crad}; IAS-1C-ENG: ${ias1ceng}
</message>

<message id="M003G" type="I" channel="O">
  Output files: IAS-1C-RAD: ${ias1crad}; IAS-1C-ENG: ${ias1ceng}; IAS_1C_AUX_CAL: ${auxcal};
  IAS_1C_AUX_SCHB: ${auxschb}; IAS_1C_AUX_RAD: ${auxrad}; IAS_1C_AUX_COEF: ${auxcoef};
  IAS_1C_AUX_OFST: ${auxofst}; IAS_1C_AUX_SDB: ${auxsdb};
</message>

<message id="M004" type="I" channel="O">
  Stop: exit code ${code} (${description})
</message>

<!-- First 5% is dedicated to the initialization graph, the other 95% to the processing
graph.
Advance is based on number of executed tasks vs. total number of tasks. -->
<message id="M005" type="P" channel="E">
  Progress: ${percent} %
</message>

<message id="M006" type="I" channel="O">
  Processing elapsed time: user: ${user}; system: ${system}
</message>

<message id="M007" type="W" channel="O">
  Default: value ${value} for parameter ${name}
</message>

<message id="M008" type="W" channel="O">
  Incomplete input product: expected ${expected} seconds but actual length is ${actual}
seconds in file ${input}
</message>

<message id="M009" type="W" channel="O">
  No input: file ${path} of optional type ${type} cannot be read: ${exceptionClass} /
${exceptionMessage}
</message>

<message id="M010" type="W" channel="O">
  Missing input: no file of optional type ${type} is provided
</message>

```

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```

<!-- Used when CONF_DYN file cannot be read. -->
<message id="M011" type="W" channel="O">
  No configuration: configuration file ${path} cannot be read: ${exceptionClass} /
  ${exceptionMessage}. Using default files ${default}
</message>

<!-- Used when CONF_DEF_L1CLOP file cannot be read. -->
<message id="M012" type="E" channel="E">
  No PGF config: configuration file ${path} cannot be read: ${exceptionClass} /
  ${exceptionMessage}
</message>

<!-- Used when CONF_SCHEMA files cannot be read. -->
<message id="M013" type="E" channel="E">
  No proc config: special configuration file ${path} cannot be read: ${exceptionClass} /
  ${exceptionMessage}
</message>

<!-- Used when CONF_DEF_ALGO file cannot be read. -->
<message id="M014" type="E" channel="E">
  No configuration: configuration file ${path} cannot be read: ${exceptionClass} /
  ${exceptionMessage}
</message>

<message id="M015" type="E" channel="E">
  XML parse: error while parsing file ${path}: ${exceptionClass} / ${exceptionMessage}
</message>

<message id="M016" type="E" channel="E">
  No input: file ${path} of type ${type} cannot be read: ${exceptionClass} /
  ${exceptionMessage}
</message>

<message id="M017" type="E" channel="E">
  No output: file ${path} of type ${type} cannot be written: ${exceptionClass} /
  ${exceptionMessage}
</message>

<!-- Used for CONF_DEF_MISSION file. -->
<message id="M018" type="E" channel="E">
  No MISSION-specific config: configuration file ${path} cannot be read: ${exceptionClass} /
  ${exceptionMessage}
</message>

<!-- Newlines in stack trace are replaced by "|". -->
<message id="M501" type="E" channel="E">
  Error: ${exceptionMessage} / ${exceptionClass} / ${exceptionStack}
</message>

<!-- Similar to M007, but for overridden values -->
<message id="M502" type="I" channel="O">
  Not default: value ${value} for parameter ${name}
</message>

<message id="M503" type="W" channel="O">
  Empty product: product ${type} between ${start} and ${end} is empty. No file produced.
</message>

<!-- One message per algorithm. Time is sum of all executions of this algorithm. -->
<message id="M504" type="I" channel="O">
  Performed algorithm: ${algo} during ${time} seconds
</message>

```

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```

<!-- One message per execution when in Test mode (defined in JobOrder) -->
<message id="M505" type="I" channel="O">
  Test mode : all products will have disposition mode set to Test
</message>

<!-- One message per execution when there is no products to create after init -->
<message id="M506" type="W" channel="O">
  No complete product to generate.
</message>

<!-- One message per execution when processor version in JobOrder does not match installed
full version -->
<message id="M507" type="W" channel="O">
  Processor version ${jobVersion}(.x) in JobOrder differs from installed version
${realVersion}.
</message>

<!-- Messages from Algorithmic library -->

<message id="M900" type="I" channel="O">
  IASI level-0 source input data is missing crucial packets.
</message>

<message id="M901" type="I" channel="O">
  IASI level-0 source input data is missing secondary packets.
</message>

<message id="M902" type="E" channel="E">
  OGPM_SASFE: Detected SAS extrapolation for BRC ${brc}, step ${step}, fov ${fov}, band
${band}
</message>

<!-- Traces -->

<message id="T_FINEST" type="_" channel="O">
  ${class}:${method} FINEST ${text}
</message>

<message id="T_DEBUG" type="_" channel="O">
  ${class}:${method} DEBUG ${text}
</message>

<message id="T_INFO" type="D" channel="O">
  ${class}:${method} INFO ${text}
</message>

<message id="T_ENTER" type="_" channel="O">
  ${class}:${method} ENTER
</message>

<message id="T_PARAMS" type="_" channel="O">
  ${class}:${method} PARAMS ${text}
</message>

<message id="T_EXIT_OK" type="_" channel="O">
  ${class}:${method} EXIT OK ${text}
</message>

```

```

<message id="T_EXIT_ERROR" type="D" channel="O">
  ${class}:${method} EXIT ERROR ${text}
</message>

<message id="T_PERFO" type="D" channel="O">
  ${class}:${method} PERFO ${text}
</message>

<message id="T_DIRECT_OUT" type="D" channel="O">
  STDOUT DIRECT ${text}
</message>

<message id="T_DIRECT_ERR" type="D" channel="O">
  STDERR DIRECT ${text}
</message>

</messages>

```

3.3 EXECUTION

3.3.1 Minimum system requirements for execution

Memory required

Number of cores allocated to L1CLOP processor directly impact required memory.

Processing time hereafter is given for reference only, as performances differ from server to server depending on their hardware configurations.

Table 2: Local mode execution minimum system requirements

Sensing duration process (min)	to Allocated cores	Required memory (GB)	Global Processing time (min) AMD EPYC 7713 2.0 GHz mission
12	32	128	18.1
12	96	768	10.7

Table 3: Global mode execution minimum system requirements

Sensing duration process (min)	to Allocated cores	Required memory (GB)	Global Processing time (min) AMD EPYC 7713 2.0 GHz mission
50	96	768	35.6

Disk space required

Table 4: Required disk space

Sensing duration to process (min)	Local and Global - Temporary space (MB)	Local and Global - RAD output product space (MB)	Local and Global - ENG output product space (MB)	Global mode specific outputs (MB)
12	200	900	1548	1500
97	200	6700	12000	1500

Temporary space location is set by `l1clop.tmporary.dir` parameter.

Output products locations are set by JobOrder's List_of_Outputs directories.

3.3.2 Input data

L1CLOP input data is listed in the table below:

Table 5: Input data

Type	Local mission	Global mission
IAS-00-SRC	Yes; mandatory	Yes; mandatory
IAS-00-REP	Yes, optional	No
NAV-00-SRC	Yes; optional	Yes; optional
VII-1B-RAD	Yes; optional	Yes; optional
VII-02-CMA	Yes; optional	No
VII-02-CLD	No	Yes; optional
IAS_1C_AUX_CNF_	Yes; mandatory	Yes; mandatory
_____AUX_IBA_	Yes; mandatory	Yes; mandatory
IAS_1C_AUX_ODB_	No	Yes; mandatory
_____AUX_RD09	Yes; optional	Yes; optional
IAS_1C_AUX_CAL_	Yes; mandatory	Yes; mandatory
_____AUX_POFD	Yes; optional	Yes; optional
_____AUX_LSM_	Yes; optional	Yes; optional
IAS_1C_AUX_ATM_	No	Yes; mandatory
IAS_1C_AUX_RAD_	No	Yes; optional
IAS_1C_AUX_COEF	No	Yes; optional
IAS_1C_AUX_OFST	No	Yes; optional
IAS_1C_AUX_SDB_	No	Yes; optional

Task table included in Annex 4.2 gives information on margins on inputs needed for a correct processing of IAS-00-SRC products and the criteria to select the good aux data for the processing.

3.3.3 JobOrder

Below is a description of JobOrder parameters:

Table 6: Job order

Parameter	Description
Processor_Name	Used in log messages
Processor_Version	Used in log messages Format: nn.nn, with n a number 0..9
Stdout_Log_Level	Messages to stdout with level below this level is not written Format: DEBUG, INFO, PROGRESS, WARNING or ERROR
Stderr_Log_Level	Messages to stderr with level below this level is not written Format: DEBUG, INFO, PROGRESS, WARNING or ERROR
Test	When true, Disposition mode in output products is set to Test, regardless of parameter <code>l1clop.product.disposition.mode</code> value. Format: true or false
Breakpoint_Enable	Not used by L1CLOP/TOP Format: true or false Note that the breakpoint feature is implemented in L1CLOP/TOP using the Expertise Output (§ 3.2.5).
Acquisition_Station	Not used by L1CLOP/TOP Format: string of characters
Processing_Station	Not used by L1CLOP/TOP Format: string of characters
List_of_Config_Files	At most one Config_File can be provided. When provided, parameters in this file override default parameter values. This is where the optional CONF_DYN file can be passed to L1CLOP/TOP.
Sensing_Time/Start	Only for Local mission. Target sensing start time to process. All BRC whose end date is in [Start; Stop] are processed to products. Format: <code>yyyymmdd_hhmmssuuuuuu</code>
Sensing_Time/Stop	Only for Local mission. Target sensing stop time to process. All BRC whose end date is in [Start; Stop] are processed to products. Format: <code>yyyymmdd_hhmmssuuuuuu</code>
Dyn_Processing_Parameter Name=CORES	Number of cores to use for processing. Format: number
Dyn_Processing_Parameter Name=MEMORY_GB	Maximum quantity of memory to use. Format: number, in Giga Bytes
Dyn_Processing_Parameter Name=OUTPUT_DURATION_S	Target output product duration. Local mission: L1CLOP generates the first product starting from the target sensing start and up to this duration, then another product of this duration, ... The last product goes up to the target sensing stop and can therefore be shorter than this duration. Global mission: L1CLOP generates products aligned on fixed daily windows. In this case, OUTPUT_DURATION_S must be a divisor of the day. Format: number, in seconds
Task_Name	Not used by L1CLOP/TOP Format: string of characters
Task_Version	Not used by L1CLOP/TOP Format: string of characters

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L1CLOP does not check JobOrder's « count » attribute values for correctness and does not use these attributes.

Note about Local mode sensing time intervals:

When processing a local dump using multiple L1CLOP executions, user-provided jobOrders' sensingTime intervals must start where the previous ended. There shall be no gaps between provided intervals. Example of complying intervals:

- first execution from Sensing_Time/Start=12h00:00 to Sensing_Time/Stop 12h01:00
- second execution from Sensing_Time/Start=12h01:00 to Sensing_Time/Stop 12h02:00
- third execution from Sensing_Time/Start=12h02:00 to Sensing_Time/Stop=12h03:00

Note about relative paths:

Dynamic Config file path, input files and directories paths and output directories paths within the JobOrder file can either be absolute or relative. Absolute paths start with a '/', while relative paths do not. All relative paths are understood relative to the directory containing the JobOrder file.

JobOrder file path provided on command line shall always be absolute.

Note about software version:

JobOrder contains a processor version, limited to **nn.nn** format (major.minor). This version is used in output Logs header and in the processor start Log message.

The actual processor version is in the **nn.nn.nn** format (major.minor.patch), providing additional patch version information. This version is used in output products.

The actual processor version is present in the output Logs in the message indicating configuration parameter `l1clp.product.processor.version` value:

Default: value `03.01.01` for parameter `l1clp.product.processor.version`

L1CTOP performs a cross check between version contained in JobOrder and real version and displays the following message if those versions have not the same major.minor:

Processor version `03.00(.x)` in JobOrder differs from installed version `03.01.01`.

3.3.4 Execution procedure

For local mission:

Execute `$INSTALL_DIR/L1clpLocalLauncher.sh </absolute/path/to/joborder.xml>`

In Local mission it is possible to process a whole dump in one execution or granule by granule (for example a granule can be 80 seconds of data) in multiple executions. In all cases input data files can be of any length. Examples of valid usages:

- "whole dump" valid usage: process the whole local dump by putting in JobOrder all data from dump and Sensing_Time=[start of dump; end of dump].
- "granule by granule" valid usage:
 - first execution with Sensing_Time=[start of dump; start of dump + 80s], along with all necessary data for this interval following TaskTable margins;
 - second execution with Sensing_Time=[start of dump + 80s; start of dump + 160s], along with all necessary data for this interval following TaskTable margins;
 - etc.

For Global mission:

Execute `$INSTALL_DIR/L1clopGlobalLauncher.sh </absolute/path/to/joborder.xml>`

In Global mission it is only possible to process a whole dump in one execution. Example of valid usage:

- "whole dump" valid usage: process the whole global dump by putting in JobOrder all data from dump, along with all necessary data from previous dump following TaskTable margins.

Log messages and exit code

Log messages are printed to stdout and stderr following log messages configuration and threshold levels in JobOrder.

Exit code can be the following:

Table 7: Exit code

Exit code value	Label	Description
0	OK	Product generation or task execution successfully completed.
1	INCOMPLETE	Product generation or task execution completed, but at least one generated product has non-zero general_quality_flags.
128	ERROR	No product generated, task execution failed.
129	ERROR_NO_PRODUCT	No product generated, not due to task execution failure.

3.3.4.1 Execution on TREX platform

Once connected on TREX platform, connect to a node with the wanted number of cores and memory using commands:

```
unset SLURM_JOB_ID
srun -A iasing -N 1 -n 1 -c <number-of-cores> --time=<HH:mm:ss> --mem=<number-of-gigas>G --pty
bash
```

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Note on CPU cores requested: To avoid other programs on TREX platform to interfere with L1CLOP CPU performance (e.g. for operation or performance tests) you need to request a complete node.

For example: with 128 cores nodes, replace <number-of-cores> by 128.

Note on memory requested: For proper working on TREX platform, you need to request more memory (~10 GB) than the amount you wish to allocate to L1CLOP.

For example: to run L1CLOP with 128GB replace <number-of-gigas> by 138.

3.3.4.2 Execution with Singularity

Once connected to a TREX node (see §3.3.4.1), start singularity using:

```
module load singularity
singularity shell /softs/rhall/singularity-images/RedHat_8.8_HPC6G.sif
```

This will open a shell allowing to perform commands inside the singularity container:

```
Singularity>
```

From this shell execute the following command before executing L1CLOP:

```
export LD_LIBRARY_PATH=/work/IASING/L1CLOP/L1CLOP_2.1_patch singularity:$LD_LIBRARY_PATH
```

After that you can execute L1CLOP as described in §3.3.4.

To exit Singularity container use the command:

```
exit
```

3.3.4.3 Execution with Docker

If you want to recreate the docker image, see §4.3.

Pre-requirement: a platform with Docker installed and useable by the current user.

To use L1CLOP with Docker, extract the delivery **L1CLOP-docker_<version>.tgz** archive into a temporary directory of your choice. **This directory must be empty.** In the remaining of this chapter this temporary directory is referred to as **\$DOCKER_DIR**.

On the Linux console, use the following commands to define the DOCKER_DIR variable and create the installation directory:

```
DOCKER_DIR=<absolute path to a non-existing directory>
mkdir $DOCKER_DIR
```

Copy the installation archive into the temporary directory and expand the archive:

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```
cp <DELIVERY>/bin-kit/L1CLOP-docker_<version>.tgz $DOCKER_DIR
cd $DOCKER_DIR
tar xzf L1CLOP-docker_<version>.tgz
```

(<DELIVERY> is the folder containing the L1CLOP delivery to be installed)

The temporary directory now contains the following directory tree:

```
├─ L1CLOP-Dockerimage-<version>.tar
└─ L1CLOP-Dockerfile-<version>
```

- L1CLOP-Dockerimage-<version>.tar is the Docker image file. The Docker image file internally has name "l1clop" and tag <version>;
- L1CLOP-Dockerfile is the Dockerfile used to construct the image.

Docker image usage

Load the image into local Docker image cache:

```
docker load -i L1CLOP-Dockerimage-<version>.tar
```

This command loads an image named **l1clop:<version>**

Then, in order to process data, start a container from the image:

```
docker run --rm --entrypoint <launch> <mounts> l1clop:<version> <joborder>
```

where:

<launch> is either /opt/l1clop/L1clopLocalLauncher.sh or /opt/l1clop/L1clopGlobalLauncher.sh depending on the mission to use

<mounts> is a sequence of "-v hostPath:containerPath", mounting all input and output paths pointed to by joborder, including the path to joborder itself

<joborder> is the path to the JobOrder from within the container.

3.3.5 Output data

L1CLOP output data is listed in the table below:

Table 8: Output data

Type	Local mission	Global mission	Configuration parameter to set to <i>false</i> to disable output
IAS-1C-RAD	Yes	Yes	-
IAS-1C-ENG	Yes	Yes	l1clop.product.eng.generate
IAS_1C_AUX_CAL_	No	Yes (sometimes)	l1clop.aux.cal.generate
IAS_1C_AUX_SCHB	No	Yes (sometimes)	l1clop.aux.schb.generate
IAS_1C_AUX_RAD_	No	Yes	l1clop.aux.rad.generate
IAS_1C_AUX_COEF	No	Yes	l1clop.aux.coef.generate
IAS_1C_AUX_OFST	No	Yes	l1clop.aux.ofst.generate
IAS_1C_AUX_SDB_	No	Yes	l1clop.aux.sdb.generate

Some outputs with can be disabled by setting a configuration parameter to *false*. The default value of the configuration parameter for IAS1CENG is in CONF_DEF_L1CLOP (§ 3.2.2), while the others are in CONF_DEF_MISSION Global (§ 3.2.4).

AUX_CAL and AUX_SCHB are generated in Global mission only when a precise set of conditions occur (time since last generation, number of gathered acceptable spectra). Therefore, depending on AUX_CNF configuration, they might not be generated at each L1CLOP run.

Processing of BRCs

An IAS00SRC input product consists of a list of TM packets. One BRC is constituted of around 300 TM packets. Packets form adjacent BRCs are interlaced. IAS00SRC products are split between TM packets, regardless of the BRC they belong to.

An IAS1CRAD output product contains data for a list of BRCs. All data for each of these BRCs are fully contained in the product. Only complete BRCs are processed and included in products.

An IAS1CENG output product contains data for exactly the same BRCs as the ones contained in the IAS1CRAD output product generated by the same L1CLOP run.

Start and stop times of L0 and L1C products are not comparable because L0 products are at TM packet granularity, while L1C products are at BRC granularity.

3.4 UNINSTALLATION

Uninstalling a particular version of L1CLOP removes corresponding binaries and configuration.



Before uninstalling, if changes have been made to the default configuration (CONF_DEF_ALGO, or CONF_DEF_L1CLOP, or CONF_SCHEMA, or CONF_MISSION, or CONF_MSG), a backup of those changes in the configuration must be made as the uninstallation process deletes them.

To uninstall L1CLOP:

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On the Linux console, type the following to define the INSTALL_DIR variable pointing to the L1CLOP installation directory:

```
INSTALL_DIR=<absolute path to the L1CLOP installation directory>
```

Then, remove this directory:

```
rm -rf $INSTALL_DIR
```

4 ANNEXES

4.1 EXPERTISE OUTPUTS CONFIGURATION

Each algorithm has a predefined set of parameters that can be output in expertise files. The following document details these parameters and the configuration of the expertise data system.



4.2 TASK TABLE

The Task Table is an XML file describing to user framework which input data must be provided to L1CLOP for its execution.

The Task Table is not directly used by L1CLOP for its operations; this file is only used for framework integration activities by user. A Task table file is provided here to guide user framework integrators.

This file is built with guidance and support from CNES and EUM.

The Task Table files for Local and Global missions are different.

4.2.1 Local mission

Task table content:

```
<?xml version="1.0" encoding="utf-8" standalone="no"?>
<PGF_Task_Table xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Processor_Name>L1CLOP</Processor_Name>
  <!-- XX.YY must be replaced by the current version, without patch number. Example: 03.02 -->
  <Version>XX.YY</Version>
  <Test>No</Test>
  <Min_Disk_Space units="MB">2048</Min_Disk_Space>
  <Max_Time units="sec">0</Max_Time>
  <List_of_Cfg_Files count="0"/>
  <List_of_Dyn_ProcParams count="3">
    <Dyn_ProcParam>
      <!-- Number of cores the processor will use -->
      <Param_Name>CORES</Param_Name>
      <Param_Type>number</Param_Type>
      <Param_Default>32</Param_Default>
    </Dyn_ProcParam>
    <Dyn_ProcParam>
      <!-- Maximum memory the processor will use, in GB -->
      <Param_Name>MEMORY_GB</Param_Name>
      <Param_Type>number</Param_Type>
      <Param_Default>128</Param_Default>
    </Dyn_ProcParam>
  </List_of_Dyn_ProcParams>
</PGF_Task_Table>
```

```

<Dyn_ProcParam>
  <!-- Target duration of output products, in seconds -->
  <Param_Name>OUTPUT_DURATION_S</Param_Name>
  <Param_Type>number</Param_Type>
  <Param_Default>60</Param_Default>
</Dyn_ProcParam>
</List_of_Dyn_ProcParams>
<Sensing_Time_flag>true</Sensing_Time_flag>
<List_of_Pools count="1">
  <Pool>
    <Detached>false</Detached>
    <Killing_Signal>2</Killing_Signal>
    <List_of_Tasks count="1">
      <Task>
        <Name>L1CLOP</Name>
        <!-- XX.YY must be replaced by the current version, without patch number. Example: 03.02 -->
        <Version>XX.YY</Version>
        <Critical>True</Critical>
        <Criticality_Level>2</Criticality_Level>
        <File_Name>/path/to/installed/l1clop/L1clopLocalLauncher.sh</File_Name>
        <List_of_Inputs count="16">
          <Input>
            <Mode>ALWAYS</Mode>
            <Mandatory>Yes</Mandatory>
            <List_of_Alternatives count="1">
              <Alternative>
                <Order>1</Order>
                <Origin>DB</Origin>
                <Retrieval_Mode>ValIntersect</Retrieval_Mode>
                <T0>161.0</T0>
                <T1>141.0</T1>
                <File_Type>IAS-00-SRC</File_Type>
                <File_Name_Type>Physical</File_Name_Type>
              </Alternative>
            </List_of_Alternatives>
          </Input>
          <Input>
            <Mode>ALWAYS</Mode>
            <Mandatory>No</Mandatory>
            <List_of_Alternatives count="1">
              <Alternative>
                <Order>1</Order>
                <Origin>DB</Origin>
                <Retrieval_Mode>ValIntersect</Retrieval_Mode>
                <T0>161.0</T0>
                <T1>141.0</T1>
                <File_Type>IAS-00-REP</File_Type>
                <File_Name_Type>Physical</File_Name_Type>
              </Alternative>
            </List_of_Alternatives>
          </Input>
          <Input>
            <Mode>ALWAYS</Mode>
            <Mandatory>No</Mandatory>
            <List_of_Alternatives count="1">
              <Alternative>
                <Order>1</Order>

```

```

    <Origin>DB</Origin>
    <Retrieval_Mode>ValIntersect</Retrieval_Mode>
    <T0>161.0</T0>
    <T1>141.0</T1>
    <File_Type>NAV-00-SRC</File_Type>
    <File_Name_Type>Physical</File_Name_Type>
  </Alternative>
</List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>ValIntersect</Retrieval_Mode>
      <T0>35.0</T0>
      <T1>15.0</T1>
      <File_Type>VII-1B-RAD</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>ValIntersect</Retrieval_Mode>
      <T0>35.0</T0>
      <T1>15.0</T1>
      <File_Type>VII-02-CMA</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>Yes</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>0</T0>
      <T1>0</T1>
      <File_Type>IAS_1C_AUX_CNF</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>Yes</Mandatory>

```

```

<List_of_Alternatives count="1">
  <Alternative>
    <Order>1</Order>
    <Origin>DB</Origin>
    <Retrieval_Mode>LatestValCover</Retrieval_Mode>
    <T0>0</T0>
    <T1>0</T1>
    <File_Type>_____AUX_IBA_</File_Type>
    <File_Name_Type>Physical</File_Name_Type>
  </Alternative>
</List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>0</T0>
      <T1>0</T1>
      <File_Type>_____AUX_POFD</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>0</T0>
      <T1>0</T1>
      <File_Type>_____AUX_RD09</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>0</T0>
      <T1>0</T1>
      <File_Type>_____AUX_LSM_</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>

```

```
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>0</T0>
      <T1>0</T1>
      <File_Type>IAS_1C_AUX_CAL</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>Yes</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>0</T0>
      <T1>0</T1>
      <File_Type>IAS_1C_AUX_ODB</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
</List_of_Inputs>
<List_of_Outputs count="2">
  <Output>
    <Destination>DBPROC</Destination>
    <Mandatory>Yes</Mandatory>
    <Type>IAS-1C-RAD</Type>
    <File_Name_Type>Directory</File_Name_Type>
  </Output>
  <Output>
    <Destination>DBPROC</Destination>
    <Mandatory>No</Mandatory>
    <Type>IAS-1C-ENG</Type>
    <File_Name_Type>Directory</File_Name_Type>
  </Output>
</List_of_Outputs>
<List_of_Breakpoints count="0"/>
<Number_of_CPUs>32</Number_of_CPUs>
</Task>
</List_of_Tasks>
</Pool>
</List_of_Pools>
</PGF_Task_Table>
```

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4.2.2 Global mission

Task table content:

```
<?xml version="1.0" encoding="utf-8" standalone="no"?>
<PGF_Task_Table xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Processor_Name>L1CTOP</Processor_Name>
  <!-- XX.YY must be replaced by the current version, without patch number. Example: 03.02 -->
  <Version>XX.YY</Version>
  <Test>No</Test>
  <Min_Disk_Space units="MB">2048</Min_Disk_Space>
  <Max_Time units="sec">0</Max_Time>
  <List_of_Cfg_Files count="0"/>
  <List_of_Dyn_ProcParams count="3">
    <Dyn_ProcParam>
      <!-- Number of cores the processor will use -->
      <Param_Name>CORES</Param_Name>
      <Param_Type>number</Param_Type>
      <Param_Default>64</Param_Default>
    </Dyn_ProcParam>
    <Dyn_ProcParam>
      <!-- Maximum memory the processor will use, in GB -->
      <Param_Name>MEMORY_GB</Param_Name>
      <Param_Type>number</Param_Type>
      <Param_Default>512</Param_Default>
    </Dyn_ProcParam>
    <Dyn_ProcParam>
      <!-- Target duration of output products, in seconds. Must be an integer divisor of the day (86400). -->
      <Param_Name>OUTPUT_DURATION_S</Param_Name>
      <Param_Type>number</Param_Type>
      <Param_Default>80</Param_Default>
    </Dyn_ProcParam>
  </List_of_Dyn_ProcParams>
  <Sensing_Time_flag>>false</Sensing_Time_flag>
  <List_of_Pools count="1">
    <Pool>
      <Detached>>false</Detached>
      <Killing_Signal>2</Killing_Signal>
      <List_of_Tasks count="1">
        <Task>
          <Name>L1CTOP</Name>
          <!-- XX.YY must be replaced by the current version, without patch number. Example: 03.02 -->
          <Version>XX.YY</Version>
          <Critical>True</Critical>
          <Criticality_Level>2</Criticality_Level>
          <File_Name>/path/to/installed/l1clop/L1clopGlobalLauncher.sh</File_Name>
          <List_of_Inputs count="16">
            <Input>
              <Mode>ALWAYS</Mode>
              <Mandatory>Yes</Mandatory>
              <List_of_Alternatives count="1">
                <Alternative>
                  <Order>1</Order>
                  <Origin>DB</Origin>
                  <Retrieval_Mode>ValIntersect</Retrieval_Mode>
                  <T0>241.0</T0>
                  <T1>0.0</T1>
                </Alternative>
              </List_of_Alternatives>
            </Input>
          </List_of_Inputs>
        </Task>
      </List_of_Tasks>
    </Pool>
  </List_of_Pools>
</PGF_Task_Table>
```

```

        <File_Type>IAS-00-SRC</File_Type>
        <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
</List_of_Alternatives>
</Input>
<Input>
    <Mode>ALWAYS</Mode>
    <Mandatory>No</Mandatory>
    <List_of_Alternatives count="1">
        <Alternative>
            <Order>1</Order>
            <Origin>DB</Origin>
            <Retrieval_Mode>ValIntersect</Retrieval_Mode>
            <T0>256.0</T0>
            <T1>0.0</T1>
            <File_Type>NAV-00-SRC</File_Type>
            <File_Name_Type>Physical</File_Name_Type>
        </Alternative>
    </List_of_Alternatives>
</Input>
<Input>
    <Mode>ALWAYS</Mode>
    <Mandatory>No</Mandatory>
    <List_of_Alternatives count="1">
        <Alternative>
            <Order>1</Order>
            <Origin>DB</Origin>
            <Retrieval_Mode>ValIntersect</Retrieval_Mode>
            <T0>256.0</T0>
            <T1>0.0</T1>
            <File_Type>VII-1B-RAD</File_Type>
            <File_Name_Type>Physical</File_Name_Type>
        </Alternative>
    </List_of_Alternatives>
</Input>
<Input>
    <Mode>ALWAYS</Mode>
    <Mandatory>No</Mandatory>
    <List_of_Alternatives count="1">
        <Alternative>
            <Order>1</Order>
            <Origin>DB</Origin>
            <Retrieval_Mode>ValIntersect</Retrieval_Mode>
            <T0>256.0</T0>
            <T1>0.0</T1>
            <File_Type>VII-02-CLD</File_Type>
            <File_Name_Type>Physical</File_Name_Type>
        </Alternative>
    </List_of_Alternatives>
</Input>
<Input>
    <Mode>ALWAYS</Mode>
    <Mandatory>Yes</Mandatory>
    <List_of_Alternatives count="1">
        <Alternative>
            <Order>1</Order>
            <Origin>DB</Origin>

```

```

    <Retrieval_Mode>LatestValCover</Retrieval_Mode>
    <T0>241</T0>
    <T1>0</T1>
    <File_Type>IAS_1C_AUX_CNF_</File_Type>
    <File_Name_Type>Physical</File_Name_Type>
  </Alternative>
</List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>Yes</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>241</T0>
      <T1>0</T1>
      <File_Type>_____AUX_IBA_</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>241</T0>
      <T1>0</T1>
      <File_Type>_____AUX_POFD</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>241</T0>
      <T1>0</T1>
      <File_Type>_____AUX_RD09</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>No</Mandatory>
  <List_of_Alternatives count="1">

```

```

<Alternative>
  <Order>1</Order>
  <Origin>DB</Origin>
  <Retrieval_Mode>LatestValCover</Retrieval_Mode>
  <T0>241</T0>
  <T1>0</T1>
  <File_Type>_____AUX_LSM_</File_Type>
  <File_Name_Type>Physical</File_Name_Type>
</Alternative>
</List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>Yes</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>241</T0>
      <T1>0</T1>
      <File_Type>IAS_1C_AUX_CAL_</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>Yes</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>241</T0>
      <T1>0</T1>
      <File_Type>IAS_1C_AUX_ODB_</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>Yes</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
      <Origin>DB</Origin>
      <Retrieval_Mode>LatestValCover</Retrieval_Mode>
      <T0>241</T0>
      <T1>0</T1>
      <File_Type>IAS_1C_AUX_ATM_</File_Type>
      <File_Name_Type>Physical</File_Name_Type>
    </Alternative>
  </List_of_Alternatives>
</Input>
<Input>

```

```

<Mode>ALWAYS</Mode>
<Mandatory>Yes</Mandatory>
<List_of_Alternatives count="1">
  <Alternative>
    <Order>1</Order>
    <Origin>DB</Origin>
    <Retrieval_Mode>LatestValIntersect</Retrieval_Mode>
    <T0>241</T0>
    <T1>0</T1>
    <File_Type>IAS_1C_AUX_RAD_</File_Type>
    <File_Name_Type>Physical</File_Name_Type>
  </Alternative>
</List_of_Alternatives>
</Input>
<Input>
  <Mode>ALWAYS</Mode>
  <Mandatory>Yes</Mandatory>
  <List_of_Alternatives count="1">
    <Alternative>
      <Order>1</Order>
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      <T0>241</T0>
      <T1>0</T1>
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      <File_Name_Type>Physical</File_Name_Type>
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      <Origin>DB</Origin>
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      <T0>241</T0>
      <T1>0</T1>
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</Input>

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```

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        <File_Name_Type>Directory</File_Name_Type>
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    </Output>
    <Output>
        <Destination>DBPROC</Destination>
        <Mandatory>No</Mandatory>
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        <File_Name_Type>Directory</File_Name_Type>
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    </Output>
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</Task>
</List_of_Tasks>

```

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```

</Pool>
</List_of_Pools>
</PGF_Task_Table>

```

4.3 RECREATE DOCKER IMAGE

You may need to recreate the docker image to customize configuration files or accommodate platform specifics.

4.3.1 Pre-requisites

- Docker installed and current user has permission to create Docker images;
- Docker configured to be able to fetch base images (either from Internet or local Docker Registry);
- Docker configured to be able to install yum packages during image build. The corresponding configuration depends on the platform and company proxy specifics. The provided Dockerfile contains a line to enable factory-specific proxy and another line to disable it. **You must customize or remove these lines to accommodate for your specific environment.**

4.3.2 Outline

In the file **L1CLOP-docker_<version>.tgz** you'll find:

- file **L1CLOP-Dockerfile-<version>** : contains the recipe for L1CLOP docker image generation.

The outline of L1CLOP docker image generation is straightforward:

- run command "docker build" with proper tag (l1clop:<version>) and customized Dockerfile as arguments;
- export the generated image from docker cache to file on disk.

4.3.3 Automated steps

A script provided in the sources archive automates the generation and extraction steps. In source tree under packaging/ directory you'll find:

- file **Dockerfile** : contains the recipe for the L1CLOP docker image (same as delivered **L1CLOP-Dockerfile-<version>**).
- script **build-docker.sh** : automates image creation, then extraction.

To use the script, create a new "base" directory, then populate this directory as follows:

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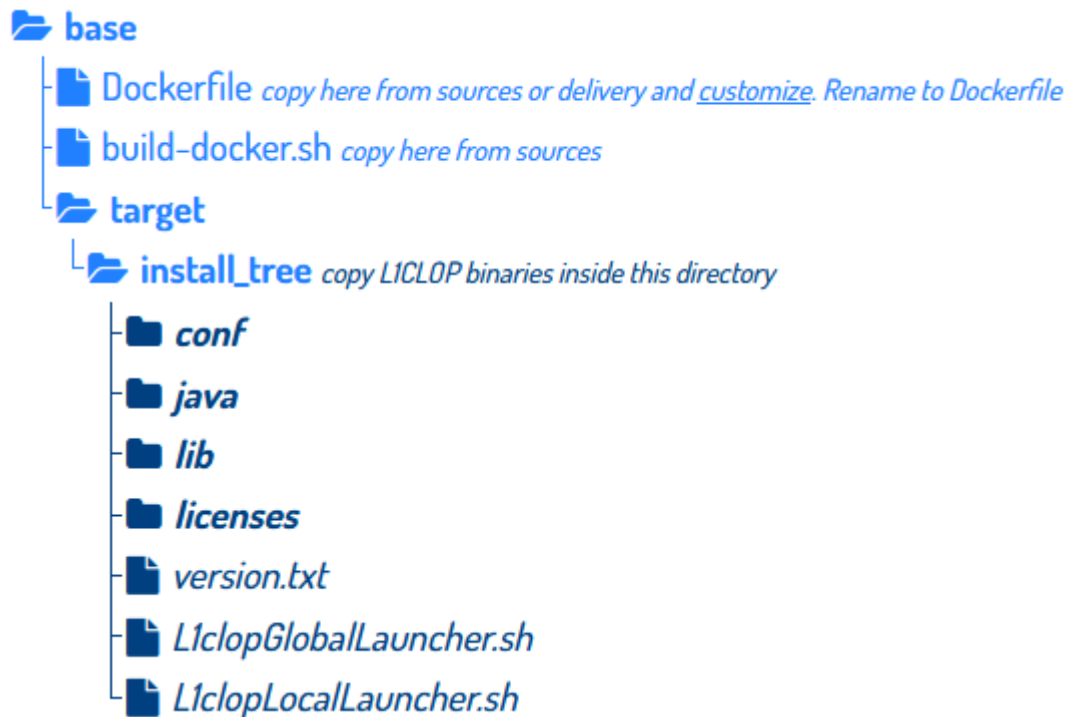


Figure 1: Directory tree for Docker image generation

Launch the build-docker.sh script.

The script executes the following steps:

- Delete previous image from local docker cache.
On first run for a specific version, it is normal to have the "*Error: No such image: l1clop:xxx*" error message.
- Delete previous saved image.
- Build Docker image.
This step requires Docker daemon access to Internet or Registry access, and build container access to yum repositories.
- Export image to target.
This step extracts the docker image under newly created directory **target/docker_tree/**.

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END OF DOCUMENT

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