

Dev::V2 Release

From WiseWiki



WSDS Version 2 Release Report



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Delivery Information

Version 2 was delivered on March 6. The version 2 release code base has been tagged in the WSDC Subversion repository as 'release-v2'. RTB test inputs and products have been archived in /wise/rtb/v2.

Version 2 Required Capabilities

Here are the WSDS v2 release requirements.

- QA: prelim
- Archive: prelim
- SSOID: prelim
- Exec: complete
- Multi-frame pipeline: complete
- Ingest: complete
- ICal: complete
- PCal: prelim
- Coadd: complete
- DetEx: complete
- Frame pipeline: mature

Version 2 Capabilities, Changes from V1

Ops Hardware

- 1 Gb/s ethernet dedicated subnet
- Development Server: RHE4 Linux, x64
- **Ingest server: RHE4 Linux, x64**
- File Server: Solaris 10, ZFS, SPARC, **20TB RAID Z**
- 12-node, 96-core cluster: commodity Linux, x64
- **Some nodes upped to 32GB RAM**

Development and Build Management

- **T&CC Engineer**

Exec

- Parameter handling
- Concurrent Job Management
- Output Logging
 - **Automated job resource monitoring summary tool**; RAM, net and disk I/O, times
- APIs
- Ops archive

Scan Pipeline

- Concurrent cluster processing
- QA data generation (esp. scansync data)
 - Numerous trend plots
 - **Added: PCal**
 - **Numerous visualization upgrades**
- Photometric calibration (PCal)
 - **More sophisticated offset computation**
 - **Apply meta-data to sources and images**
 - **Write QA and meta-data**
- Frame index update

Frame Pipeline

- Instrumental calibration (ICal)
 - Application
 - **Low spatial frequency response maps**
 - **Deglitching**
 - **Per-quadrant droop correction**
- Level 2a image generation
- Single-band detection and extraction (SDEX)
- Generate 2MASS position reference list
- Astrometric calibration

- SFPREx: position reconstruction and refinement
 - **Much more meta-data and cal data**
 - **3-parameter fit for ue, 20-parameter fit for trending**
- Level-1b image generation
- Level 2b image generation
- Multi-band source detection and extraction (MDEX)
 - WPhot: Aperture and profile-fitting extraction
 - **Aperture mags**
 - **Proper mag ZP handling**
- Artifact Flagging (ArtID) **integrated**
 - **Update MDex source list with artifact ID data**
 - **Diffraction spike finding/flagging**
- Photometric calibration (PCal) **integrated**
 - **Update MDex source list and images with new ZP's**
 - **Algorithm improvements**
- **SSOID integrated at scan and frame level**
- QA
- Frame index update **integrated**

Multi-frame Pipeline

- **Full multi-frame pipeline**
 - Throughput matching
 - Background matching
 - Outlier detection
 - Coadd
 - Intensity, coverage, uncertainty, mask image generation
 - QA data generation

Ingest Pipeline

- MOS Ingest
 - **H/K ingest and matching to frames**
- L0 Ingest

- **Ops-level error handling**
- **Concurrent band processing**

Version 2 Testing

Level-0 Frame Processing

- Simulation contents
 - **Full-orbit dataset**
 - **Multi-scan-fragment dataset**
 - **Realistic scan/frame numbering**
 - **Better WCS and noise characteristics**
- Processing
 - **Multi-scan-fragment dataset run from L0 archive** for performance testing
 - **Full-orbit dataset run from L0 archive** for resource testing
 - **Multi-scan processing**

Ingest Processing

- MOS Preliminary Ancillary data
- Image data
- Processing
 - Match to H/K data (coded but untested)

Multi-frame Processing

- **Run full multi-frame pipeline on multi-scan-fragment sim**

Results

All test frames, deliveries, and coadds completed without errors.

- **Resources**
 - Ingest (1 delivery): ~0.6 hours
 - 8-scan (delivery) run time: ~1 hour
 - Max. memory usage (1 process): ~1GB
 - Max. network rate: ~1Gbps (saturated ~10 min.s)
 - Typical network rate: ~0.1Gbps (sustained)

- 1 scan run time: ~1 hour (8 at a time)
- 1 frame run time: ~6 min.s (88 at a time)
- **Ingest+scans for day complete in < 8 hours**
- Detail, per module:

```

starttime = 09/03/03_21:49:10Z
endtime = 09/03/03_22:03:27Z
maxrssk = 1056400
| executable | entries | min-elapt | max-elapt | mean-elapt | sum-elapt | mean-util | mean-totcpu | sum-totcpu | min-rssk | max-rssk |
spawn_awaic  592   4.129    10.306    6.36374493 3767.337  0.8877095  6.446402027 3816.27   404884   411486
spawn_mdet   380   3.632    34.657    9.13625263 3471.776  0.8787316  9.122842105 3466.68   218584   284984
spawn_wphot  380   1.405    64.698    13.3685368 5080.044  0.9222316  12.12834211 4608.77   135160   491180
spawn_instrufram 304   2.675    31.69     10.0391349 3051.897  0.7211546  9.617434211 2923.7    52256    335966
spawn_sfprex 150   1.2      40.346    6.85494667 1028.242  0.9231867  2.270066667 340.51    4228     4848
spawn_frameqa 76    20.303   54.114    31.6624868 2406.349  0.8812632  247.8328947 18835.3   256148   393160
spawn_flag   76    2.803    6.366     4.41472368 335.519  0.9089868  3.336710526 253.59    81232    197808
spawn_get_latent 76    1.166    7.398     2.36419737 179.679  0.9228816  1.960657895 149.01    9700     11880
spawn_fpcal  72    0.033    2.814     0.31034722 22.345   0.8369444  0.591388889 42.58     4792     9044
spawn_wsspipepos 1    130.625  130.625  130.625    130.625  0.63      104.6       104.6     22928    22928
spawn_wssflag 1    114.039  114.039  114.039    114.039  0.626     68.23       68.23     30028    30028
spawn_spcal  8     2.011    41.582    11.917625  95.341   0.903625  2.04        16.32     6660     16980

```

Columns:

```

elapt = elapsed clock time
util = (user cpu time) / (system cpu time)
totcpu = child(sys&yser)+parent(sys&user) cpu time
rssk = Resident set suze (kilobytes), AKA memory use

```

Executables:

```

awaic = coadder
mdet = source detector
wphot = source extraction
instruframecal = Instrumental frame calibration
sfprex = position reconstruction and refinement
frameqa = QA product creation for framesets
flag = artifact flagging
get_latent_parents = identify latent generators
fpcal = find matches to photometric calibrators
wsspipepost = frameset post-processing
wssflag = update latent-parent DB

```

Problem Reports

All PR's tracked in Roundup tagged with the 'for v2' category were resolved prior to delivery except TBD which were deferred.

Here are the v2 PR's.

TBD File:V2-issues.png

Liens

Missing Capabilities

- S/C vectors in ingest
- H/K matching to frames not tested realistically; needs spec

Missing Docs or Processes

- Ingest table SIS's
- Exec SDS
- More formalized testing

Items to Watch

- Intermittent PCal bug
- Latent flagging too slow and incomplete
- Table I/O and other minor bugs (fixed in dev)

Document Number

WSDC D-P005

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