IASI Operational Software

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IASI Operational Software

- Context
- OPS design
- Using the OPS
- Porting the OPS
- OPS benchmark
Context

• IASI OPS is part of the EUMETSAT CGS

• IASI OPS developed by CNES & Thales

• SAFNWP has been authorized to adapt IASI OPS for direct reception, and to redistribute it to AAPP users
OPS design (1)

- French C & C++ (40% / 60%)
- POSIX threads
- System calls
- Develloped for IBM power4
- Advanced industrial framework
OPS design (2)

- MP : main process
- MSGS : message server
- WOM : work order manager
- SD : data server
- JDBS : log server
- TES : time event scheduler
OPS design (3)

- MP starts and stops all other processes and collects commands
- WOM interprets commands
- SD executes commands
OPS design (4) - Data server

- Session manager handles incoming messages and subdivides them into tasks.
- Thread manager dispatches tasks to working threads.
- Tasks fall into two distinct categories:
  - *Line*: such tasks can be executed concurrently.
  - *Rendez-vous*: such a task must be run separately.
OPS design (5) - execution flow

- IMAGE: radiometric calibration
- ISRFEM: interferometer axis position / spectral calibration / apodisation functions
- FILTERING: of the interferometer axis position
- PRODUCTS: 1A / 1B / 1C
Using the OPS ( 1 )

**INPUTS**

- Level 0 products (from HRPT), PFS L0
- AVHRR 1B (from HRPT), PFS L1B
- Context file (recursive data), binary
- Spectral database (EUMETSAT, TBD), binary
- Configuration files (EUMETSAT, TBD), binary
- Command + Work-Order, xml
Using the OPS (2)

OUTPUTS

- Report file, xml
- Log/HKTM files
- Context file, binary
- Engineering data, PFS
- Verification data, PFS
- 1A, 1B, 1C products, PFS
Using the OPS (3)
Using the OPS (4)
IASI OPS tools

• Libraries & programs for reading, displaying, converting configuration files.

• Library for reading, displaying IASI level 1C

• Library, programs to convert from AAPP 1B AVHRR to PFS 1B AVHRR
Porting the OPS

• System dependent features

• ESSL (IBM scientific library):
  – FFTW (C)
  – LAPACK (F77)
  – NCAR math library (F77)

• Metop Lib: AAPP navigation routines
## OPS benchmark

<table>
<thead>
<tr>
<th>Platform</th>
<th>Seconds / 3 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>altix-4cpu-linux-gcc-3.2</td>
<td>164.</td>
</tr>
<tr>
<td>altix-4cpu-linux-icc</td>
<td>92.</td>
</tr>
<tr>
<td>v40z-4cpu-linux-gcc-3.3</td>
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</tr>
<tr>
<td>v40z-4cpu-linux-icc</td>
<td>105.</td>
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<tr>
<td>v40z-4cpu-solaris-cc</td>
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<tr>
<td>v40z-4cpu-solaris-gcc-3.3</td>
<td>122.</td>
</tr>
<tr>
<td>pc-2cpu-2Ghz-linux-gcc-3.4</td>
<td>235.</td>
</tr>
<tr>
<td>ibm-4cpu-power4</td>
<td>91.</td>
</tr>
</tbody>
</table>
OPS port validation

• Validation against various cases provided by CNES
• Sounder and imager radiances reproduced with utmost accuracy
• Geolocation data reproduced with 1/1000 degree error
• In the process of validating against EUMETSAT test orbit