ESAS upgrades in SAS

Carlos GABRIEL + S3MT + SAS WG

XMM-Newton Science Operations Centre – ESAC / ESA

SAS development, future plans, and expected ESAS upgrades in SAS

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SAS platforms

* due to 32- and 64-bit versions number of binaries released almost doubled wrt SAS 10

Table of SAS 11.0.0 builds and supported Operating Systems and Versions Patch 11.0.1 for all platforms

Build on	Processor	Kernel	gcc/libc	File to download	Tested to work as well on
Linux Red Hat 9	Intel	2.4.20, 32 bit	4.3.3/2.3.2	sas_11.0.0-RH9-32.tgz	Fedora Core 1 and 2
Linux Red Hat Enterprise (RHEL) 4	Intel	2.6.9, 32 bit	4.3.3/2.3.4	sas_11.0.0-RHEL4-32.tgz	RHEL 4 and 5
Linux Red Hat Enterprise (RHEL) 5	Intel	2.6.18, 32 bit	4.3.3/2.5	sas_11.0.0-RHEL5-32.tgz	RHEL 5 or later
Linux Red Hat Enterprise (RHEL) 5.1	Intel	2.6.18, 64 bit	4.3.3/2.5	sas_11.0.0-RHEL5.1-64.tgz	RHEL 5 64 bit or later
Linux Open SUSE 11.2	Intel	2.6.31, 32 bit	4.3.3/2.10.1	sas_11.0.0-openSUSE11.2-32.tgz	SuSE and OpenSUSE 11 or later
Linux Open SUSE 11.2	Intel	2.6.31, 64 bit	4.3.3/2.10.1	sas_11.0.0-openSUSE11.2-64.tgz	SuSE and OpenSUSE 11 64 bit or later
Linux Fedora 8	Intel	2.6.23, 32 bit	4.3.3/2.7	sas_11.0.0-Fedora8-32.tgz	Fedora 8-11
Linux Fedora 8	Intel	2.6.21, 64 bit	4.3.3/2.7	sas_11.0.0-Fedora8-64.tgz	Fedora 8-11 64 bit
Linux Fedora 12	Intel	2.6.31, 32 bit	4.3.3/2.11.1	sas_11.0.0-Fedora12-32.tgz	Fedora 12 or later
Linux Ubuntu 8.04	Intel	2.6.24, 32 bit	4.3.3/2.7	sas_11.0.0-Ubuntu8.04-32.tgz	Ubuntu 8 or later
Scientific Linux CERN 4.05	Intel	2.6.9, 32 bit	4.3.3/2.3.4	sas_11.0.0-SLC4.5-32.tgz	Scientific Linux 4.5 or later
SunOS 5.8 (Solaris 8)	Sparc	Solaris 8, 32 bit	4.3.3/2	sas_11.0.0-SunOS-5.8.tgz	Solaris 8, 9 and 10
Mac OS X 10.5.8 (Darwin 9.8.0, Leopard)	Intel	Darwin 9.8.0, 32 bit	4.3.3/-	sas_11.0.0-Darwin-9.8.0-Intel-32.tgz	Leopard on Intel 32 bit
Mac OS X 10.5.8 (Darwin 9.8.0, Leopard)	PowerPC	Darwin 9.8.0, 32 bit	4.3.3/-	sas_11.0.0-Darwin-9.8.0-PPC-32.tgz	Leopard on PowerPC 32 bit. On Intel 32 bit, translated by Rosetta
Mac OS X 10.6.6 (Darwin 10.6.0, Snow Leopard)	Intel	Darwin 10.6.6, 32 bit kernel	4.3.3/-	sas_11.0.0-Darwin-10.6.0-32.tgz	Snow Leopard on Intel 32 and 64 bit.

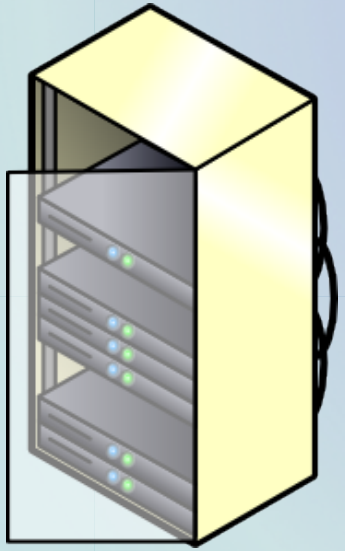
Virtual Machines for SAS 11.0.0 (VM4SAS11)

Assembled on	File to download	tested to work on
Linux Fedora 14 32 bit	VM4SAS11-32.7z **(3.91 GByte)**	Windows XP and Vista, Linux and Mac OS X
Linux Fedora 14 64 bit	VM4SAS11-64.7z **(4.02 GByte)**	Windows XP and Vista, Linux and Mac OS X

SAS Building and Development Environment

sasdmz01 - FC 12 – 32 bits
Dell Optiplex 960
8 GB RAM - Intel Core 2 Quad 2.83 GHz
250 GB HD

xmmls11 - RH 9 – 32 bits
Dell PowerEdge 2600
2 GB RAM - 2 CPU Xeon P-IV 2.8 GHz
6 x 146 GB HD Raid 5



Linux

sasbld01 - RHEL 4 – 32 bits
4 GB RAM - 2 x Dual Core 1.6 Ghz (64 bit) - 2 x 73 GB HD (Raid 1)

sasbld02 - RHEL 5 – 32 bits
3 GB RAM- 2 x Dual Core 1.6 Ghz (64 bit)- 2 x 73 GB HD (Raid 1)

sasbld03 - FC 8 – 32 bits
3 GB RAM - 2 x Quad Core 2.0 Ghz - 2 x 140 GB HD (Raid 1)

sasbld04 - RHEL 5 – 64 bits
8.3 GB RAM - 2 x Quad Core 2.0 Ghz - 2 x 140 GB HD (Raid 1)

sasbld05 - SuSE 11.2 – 32 bits
8.3 GB RAM - 2 x Quad Core 2.0 Ghz - 2 x 140 GB HD (Raid 1)

sasbld06 - FC 8 – 64 bits
8.3 GB RAM - 2 x Quad Core 2.0 Ghz - 2 x 140 GB HD (Raid 1)

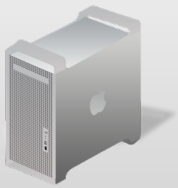
sasbld07 – SuSE 11.2 – 64 bits
8.3 GB RAM - 2 x Quad Core 2.0 Ghz - 2 x 140 GB HD (Raid 1)

sasbld08 – Virtual Machines
8.3 GB RAM - 2 x Quad Core 2.0 Ghz - 2 x 140 GB HD (Raid 1)

sasbld09 – Ubuntu 8.04.2 – 32 bits
8.3 GB RAM - 2 x Dual Core 2.0 Ghz - 2 x 140 GB HD (Raid 1)

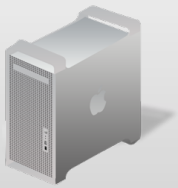
sasbld10 - SciLinux 4.5 – 32 bits
8.3 GB RAM – 2 x Dual Core 2.0 Ghz - 2 x 140 GB HD (Raid 1)

Mac OS X



xmacserver
10.5.8 - Leopard (Intel)
4 GB RAM
Quad Core Intel Xeon 2.8 GHz - 1 TB

xmac01
10.6.5 - Snow Leopard (Intel)
2 GB RAM
Intel Core 2 Duo 2.16 GHz - 250 Gb



xmac02
10.5.8 - Leopard (PPC)
2.5 GB RAM
Power PC 4 xG5 2.5 GHz - 232.9 GB HD

Solaris

xvsas04 -Solaris 8
Sun Blade 10[illegible] - 4 GB RAM
2 CP[illegible]US III 75[illegible]MHz - 36 + 36 GB HD

xmmw[illegible]16 - Solaris 8
[illegible]un Blade 1000 - 1 GB RAM
[illegible]PU US III 750 MHz -36 + 36 GB HD

25 November 2010 – Eduardo Ojero Pascual – SAS Team - XMM-Newton SOC

SAS Building and Development Environment - migration

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sasdmz01 - FC 12 – 32 bits

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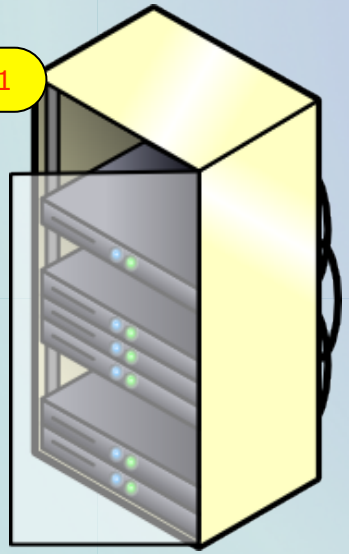

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- RHEL 5.x - 32 bits - internal
- RHEL 5.x - 32 bits - internal
- Fedora 14 - 32 bits - internal
- RHEL 5.x - 64 bits - internal
- SuSE 11.x - 32 bits - internal
- Fedora 14 - 64 bits - internal
- SuSE 11.x - 64 bits - internal
- Fedora 14 - 64 bits - SASDMZ02
- Ubuntu 10.10 - 32 bits - internal
- Ubuntu 10.10 - 64 bits -

Mac OS X

- xmacserver >> XMAC02 - DMZ - Snow Leopard - 32 bits
- iMac - XMAC01 - internal - Snow Leopard - 64 bits
- iMac - XMAC03 - internal - Lion 64 bits

SAS 12.0 in ~ April 2012

EPIC

- new spatially dependent PN CTI/gain > finished - DONE
- catcorr task - boresight rectification using catalogues > finished - DONE
- eboxdetect upgrade (solving problems for slews) > finished - DONE
- epnoise - new algo to reject soft X-ray noise in PN > basically done - testing by MPE needed - **still**
- a background flare filtering task > bkgfilter basically done - DONE
- 2D-PSF as default mode > re-normalization of components done - DONE
  new spoke keywords in CCF needed <-> CAL upgrade
- pile-up corrections > work started - simulator built - ~ September
  trainee at ESAC working on it
- refinement of PN event time jumps recognition > agreement MPE - SOC - "easy" to be done
- specgroup upgrade > "easy" to be done
- emosaicproc and emosaicprep upgrades > too complex - splitting for Mosaic and overlapping cases
  see discussion
- ESAS general upgrade > re-written in F90 + CAL-DB into normal CCFs
  status to be clarified <-> CAL upgrade needed **- still**

SAS 12.0 in ~ April 2012

RGS and OM

- RGS heliospheric corrections > ready - DONE
- RGS wavelength scale correction due to RGA tilt (?) > temperature & solar aspect angle dependency using catcorr? #CAL-Sci input needed
- RGS LSF components separation > out of rgsrmfgen & into CAL >> calview
- RGS: provide separate arf/rmf response matrix components > work started together with LSF
- RGS bad pixel filtering refinement > criteria for hot pixels / columns wrong for bright sources # CAL-Sci input needed
- RGS spatial imaging of emission lines from extended sources > images with less background than EPIC images in narrow energy range - schedule?
- OM-SAS upgrades (omdetect + omqualitymap flagging) > Partially done

GENERAL

- graphical I/F for xmmextractor > no clear schedule for implementation yet

Planning to go into release track mode mid March

Future of ESAS

>> change of emask discovered to break ESAS software after SAS 11 release (by SS)
>> ESAS upgraded promptly by SS + esas-caldb upgraded at same time (no public info on this)
>> after re-validation testing (on Linux machine) SAS 11.0.1 patch released

... a week after >> tests on MacOS (Snow Leopard) showing **problems** with ESAS-swcx (**seg faults**)
(I recall: SAS 11.0 = binaries for 15 platforms + 2 VMs !)

Conclusions - endorsed by BGWG 2011:

- we need to make ESAS tasks MORE "SAS conform", including **harness testing**
>> re-writing everything in C++/F90? GOF: "(75+/-25)% will be recoded by October ... 2011"

- big effort by KK (+ others at GOF?) for a reduction of calibration files (122 >> 25 !!, 2.8 GB >> 1.4 GB !!)
>> should be followed by **real conversion to CCFs** under Configuration Control of SAS CCB

GOF: ESAS and more

ESAS - Upgrades for the next release

Major

MOS processing will use 5 eV spectral channels >> will require upgraded CalDB files

Adaptive smoothing tasks now provide additional information >> Image and histogram of FWHM of smoothing kernel

Minor

A number of relatively minor bug fixes >> None affect quantitative results

Missed

Conversion to F90/95 - process has begun

Conversion from CalDB to CCF << Senior Review and Trend data production conflicted

Other

Trend data processing now works

Archive mostly now populated

Documentation partially completed

Trend data tools partially completed