

2009 Aladin-Hirlam Workshop (Utrecht)

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Introduction-Content

- ⇒ Status of PINUTS
- ⇒ Status of GEOMETRY
- ⇒ Current works
- ⇒ Future Plans
- ⇒ Latest Nec News
- ⇒ Conclusion



Status of Pinuts (->cy35t2)

- ⇒ Subdo (bug when answer « N » to « same grid ?)
- ⇒ Makdo (bug in LMRT/interactive case-JFG Brux.)
- ⇒ EDF with egg_tools and fa_datas modules (are prepared for academic cases-1D, 2D Horizont.)
- ⇒ EDF (modification of code to show extension zone in MRT)
- ⇒ Cleaning (According to the norm for « ONLY » statements)
- ⇒ Domolalo (According to new GCO specifications; standard Pinuts out_nam format; tested on 90 domains in L, SP, M – mixed size,lat,lon parameters)



Status of *GEOMETRY*

- ⇒ Eggangles (new functions):
 - DIST_2REF : computes oriented distances in radian from COORD_LON to REF_LON => the result is in $[-\pi, \pi[$, the origin is REF_LON.
 - SIZE_W2E : computes the distance (length) in $]0, 2.\pi]$ between West_Coord%LON to East_Coord%LON clockwise.
 - These two functions suppress the bug for « huge domains » such as Polynesia (eggpack routines)
- ⇒ Some RESHAPE functions are replaced by loops (to optimize vectorization).

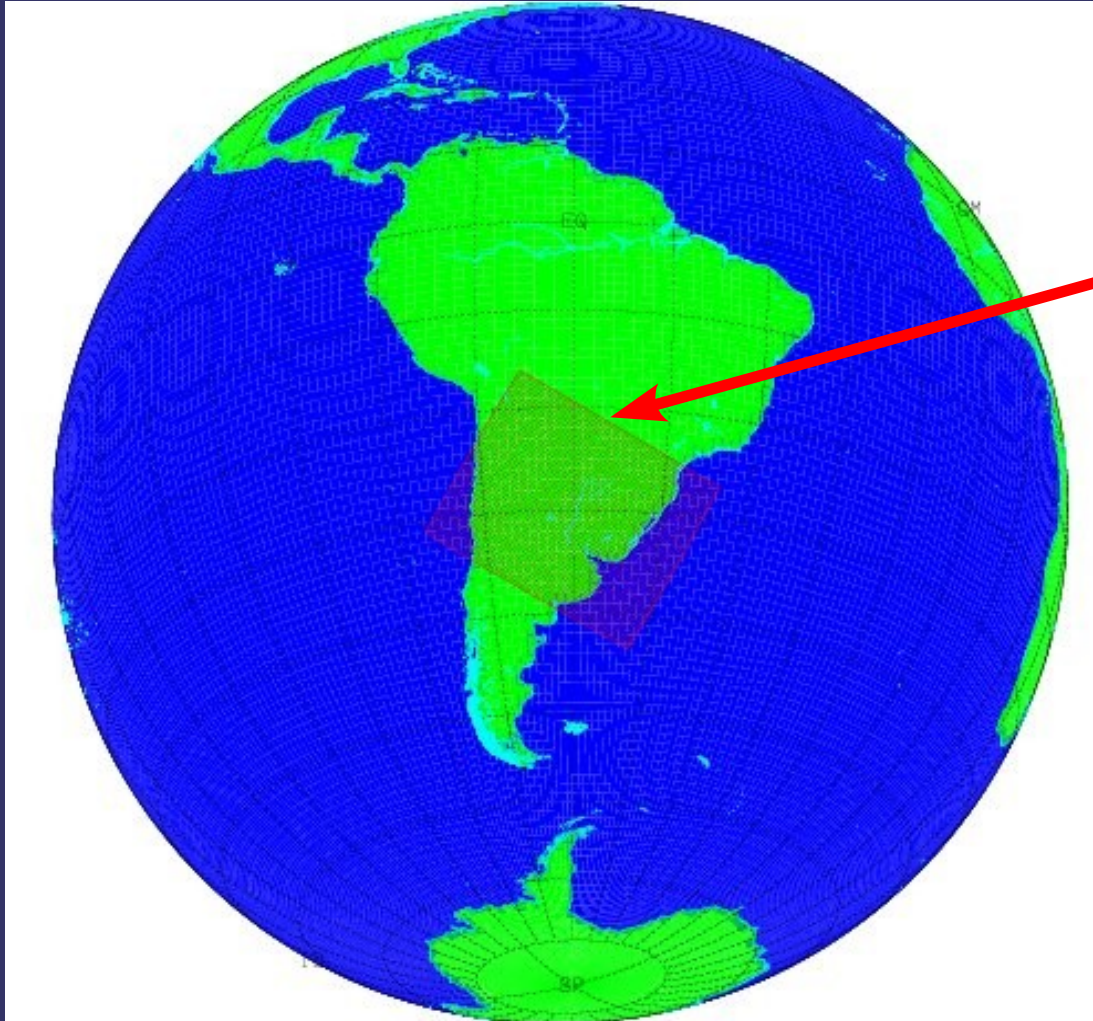


Current Works (1)

- ⇒ On one hand, MERCATOR ROTATED TILTED:
 - Missing a call, in suegeo1, to the ELARCHE routine (I didn't see it, don't blame me). In this part, the model uses Mercator, thus inducing crashes, instead of Mercator Rotated-Tilted. A corrected version of ELARCHE and ELARCHE5 with MRT is now written (P.B & I) and tested (G.K.). We thank a lot P. Vana who wrote the new code for ELARCHETD & ELARCHEAD and tested it in a very short laps of time.



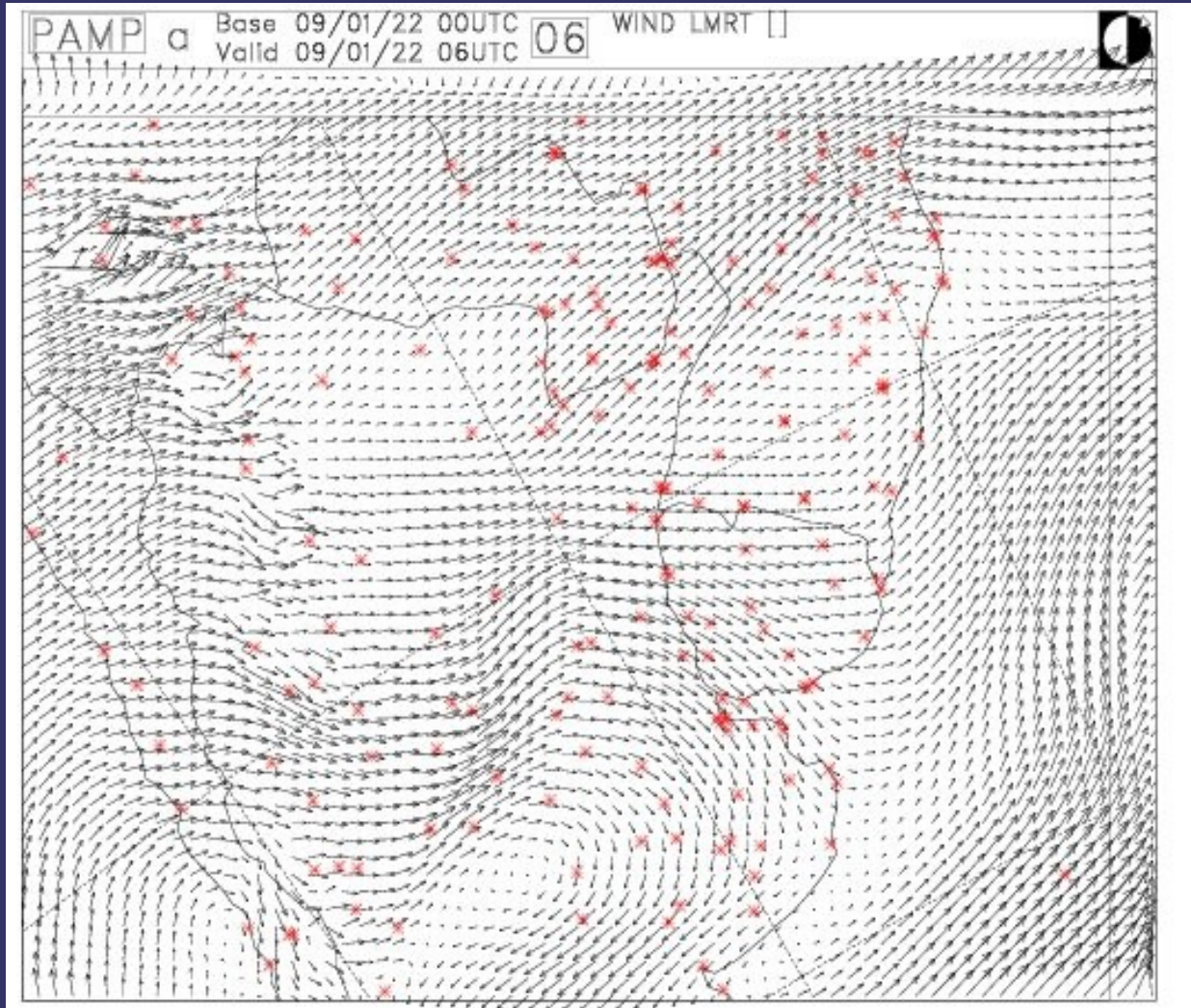
Current Works (2)



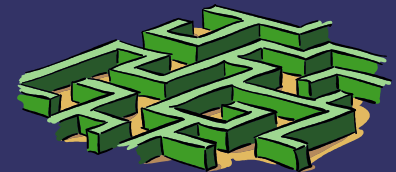
- Results :To test what I have just mentionned in the worst conditions and not to make team jalous, we chose this domain.
- We will never work on this domain... (never say never !!!)



Current Works (3)



- An example of wind field from an Aladin MRT run. The plot is made with Ncar chagal tool (Toulouse frozen version) which recognizes the MRT projections as cylindrical ones.*



* <http://ngwww.ucar.edu/supplements/ezmap/#CylindricalProjections>

Current Works (4)

- Plot with Lambert (top) and MRT (bottom) of the same field.

Features of Projections:

PROJECTIONS :	LAMBERT			MRT		
Points :	LON	LAT	MapFactor	LON	LAT	Map Factor
Center :	-60	-30	1,00000000	-60	-30	1,00000000
Reference :	0	-30	1,00000000	30	0	1,15477004
SW :	282,86	-31,05	1,00016755	282,93	-31,11	1,01284255
SE :	307,31	-43,44	1,02962929	307,33	-43,52	1,01284255
NE :	316,43	-26,81	1,00153791	316,35	-26,78	1,01284255
NW :	294,47	-16,25	1,02821117	294,47	-16,17	1,01284255

Note that the most important differences are on Map Factor :
 In Lambert the symetrical values are on both sides of 30S Latitude but they are from the middle horizontal axe of the domain in MRT (green lines)



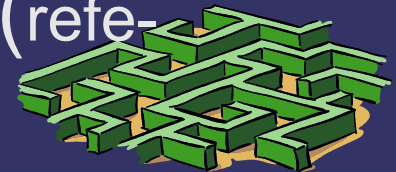
Current Works (5)

- ➔ On another hand, I have coded a Tool in Python to Read FA (LFI) files. A beta version is working for ALADIN/AROME files using only Python code; but I think that it can work for ARPEGE too. This first version was developed to understand the « how does it go » of the xrd FA Fortran Library. So, I'll write asap a new documentation on the FA structure (field part).



Future Plan (1)

- ➔ The next version of Geometrical routines has new vector functions to optimize running time (for MRT cases, I have written a new code of ELARCHE using EGGPACK routines which gave the same length of time as the new, classic coded ELARCHE MRT. But, due to the computations of the derivatives in the others routines -elarche5, elarchetl and alarchead- we must use the second one to have intermediate data).
- ➔ This future version of pinuts will be put in a precompiled binary on CNRM webdav to be used on PC64 bits by Toulouse users (referenced PINUTS_mdv2008s64b_5.0_20090429)



Future Plan (2)

- ➔ To clean up Pinuts and the Geometrical code according to the Norms
- ➔ To document Pinuts, Geometrical, Structure of FA fields
- ➔ To prepare the new reader version of FA in Python using numPy library to optimize the code using arrays
- ➔ To look for ways to use Python graphical libraries for plotting data, domains...



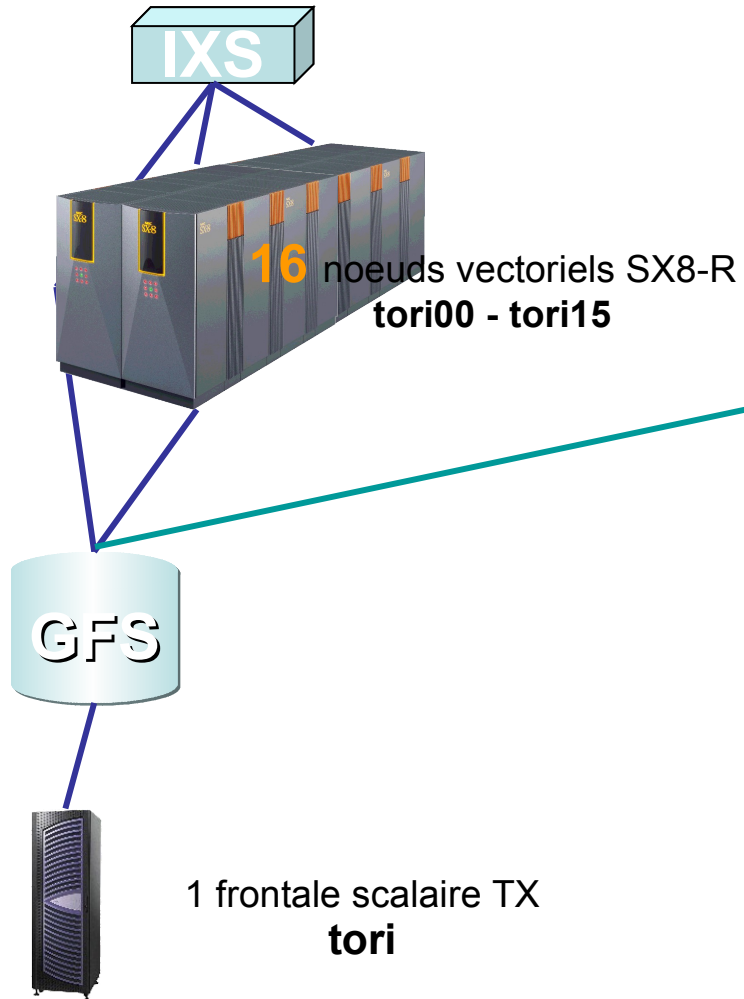
LATEST NEC NEWS

- ➔ From OLD to NEW Hardware Environment
- ➔ Features
- ➔ User Environment

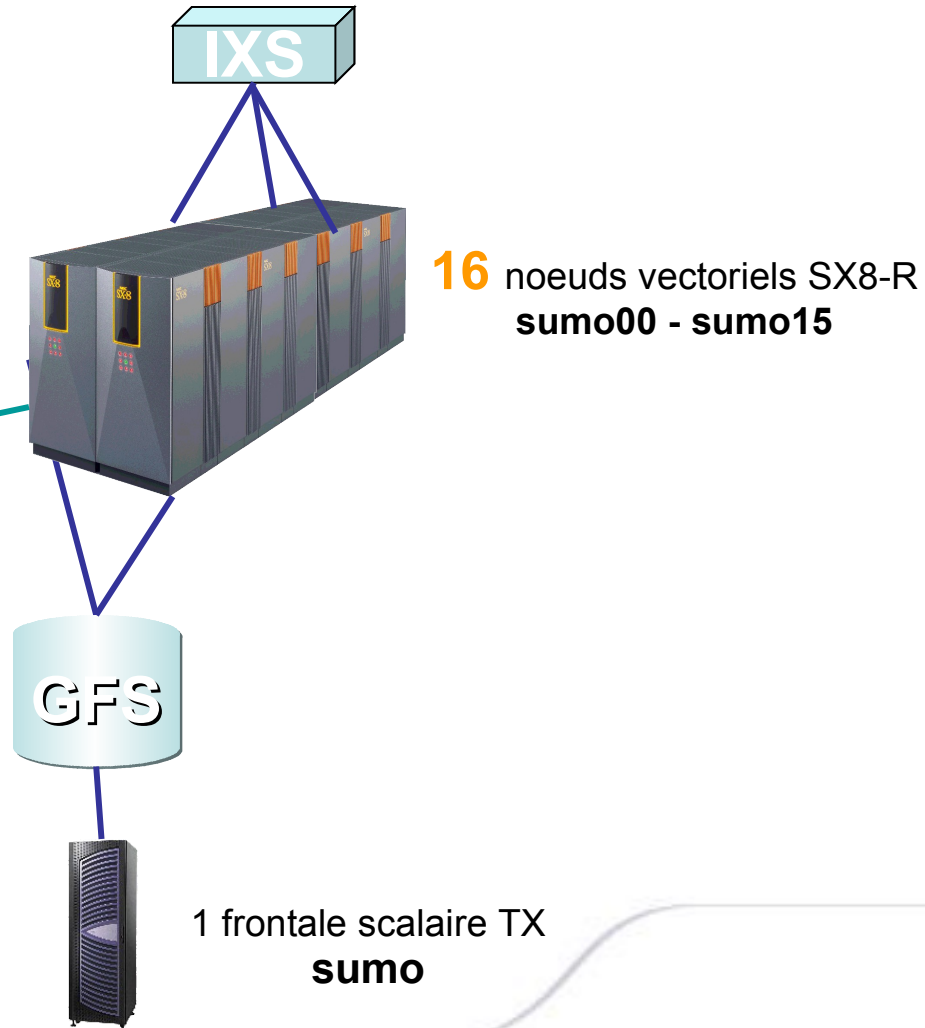


Configuration de la phase 1 (2007-2009)

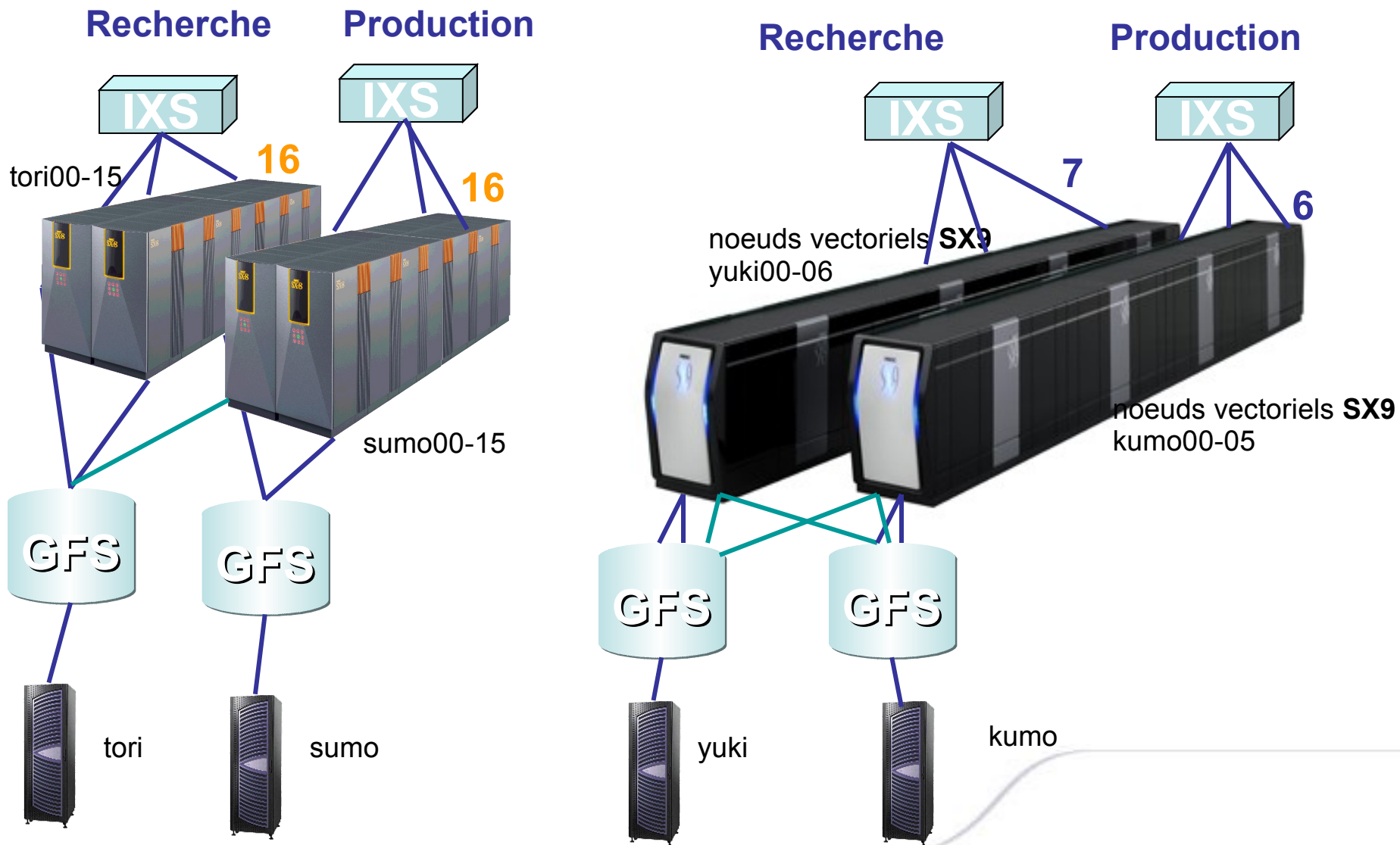
Recherche



Production

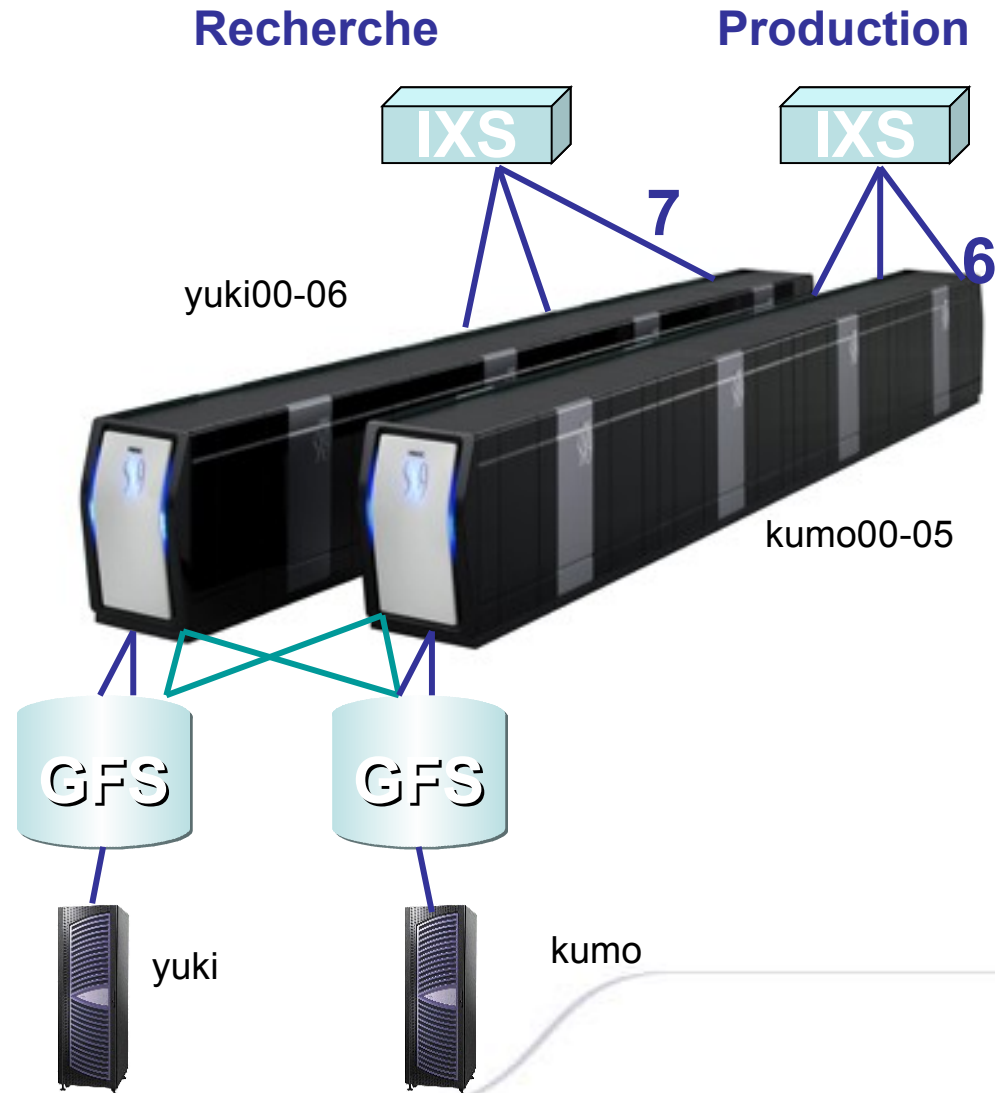


Configuration de la phase 2 (1er semestre 2009)



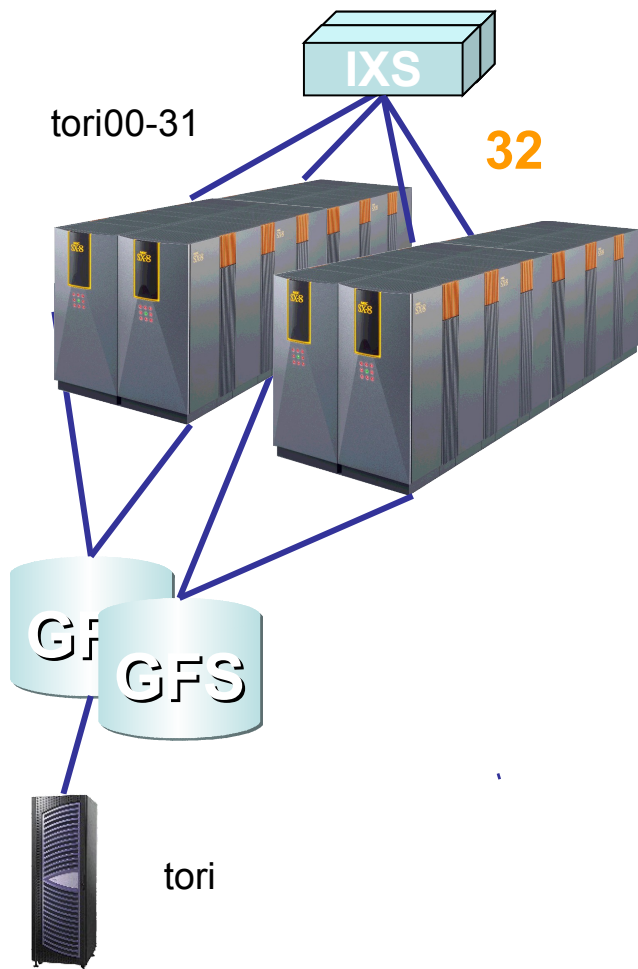
Configuration intermédiaire (été 2009)

Durée : environ 3 semaines

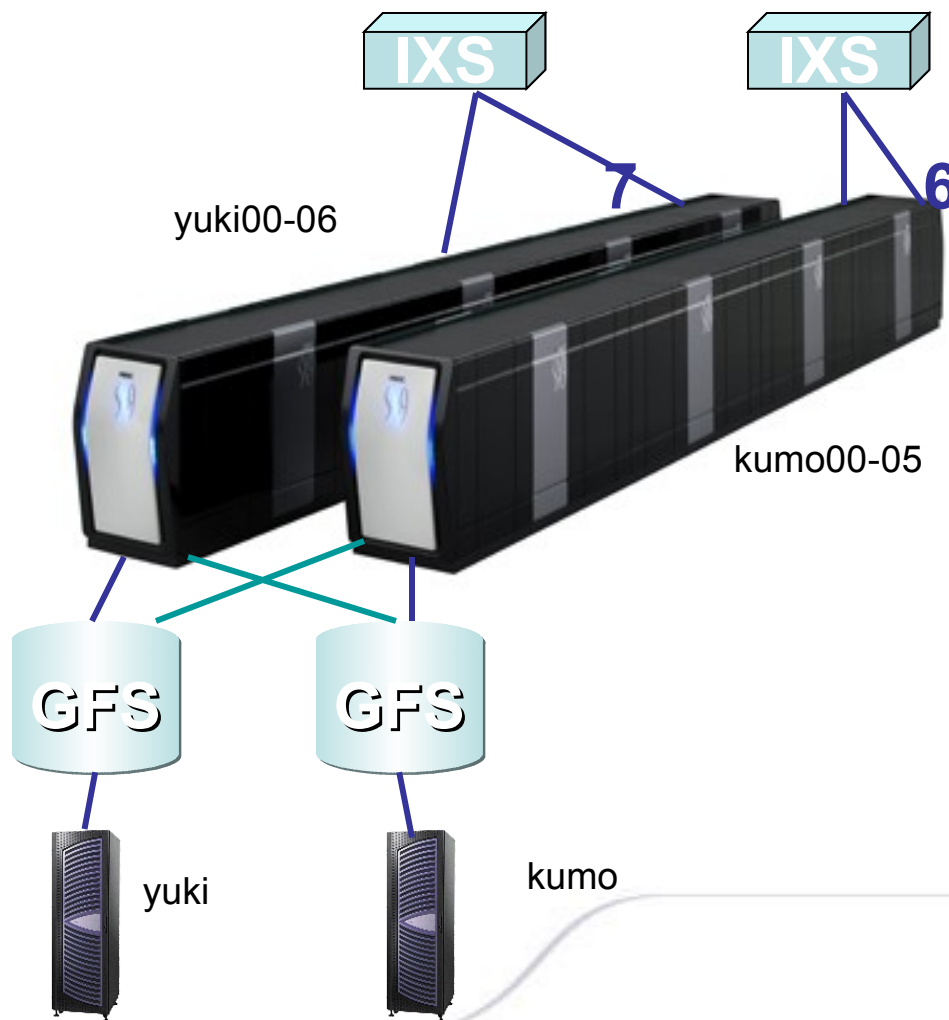


Configuration de la Phase 3 (été 2009)

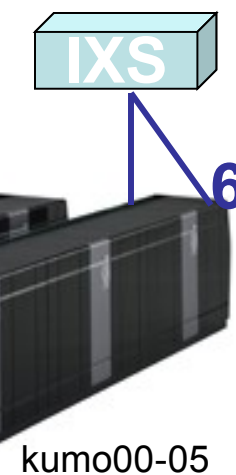
Recherche



Recherche



Production



Configuration NEC phase 1

Some features :

- 32 nodes of 8 processors SX8-R
- Processor Peak Power 35.2 Gflops
- 9.1 Tflops peak
- 128 Goctets of memory per node
- 500 Gigaoctets of local disk per node
- 36 Téraoctets of shared disk RAID5 (GFS)



Configuration NEC phase 2

Some features :

- 13 (then 20) nodes of 16 processors SX9
- Processor Peak Power : 102.4 Gflops
- Full Peak Power : 21 (then 32.8) Tflops
- 1 Téraoctets of memory per node
- 4 To of local disk per node
- 116 (60 + 56) To of shared disk RAID5 (GFS)



USER's Environment (1)

- ➔ What has not changed :
 - 2 clusters (research and operational)
 - Scalar frontends and their rules (interactive access, compilation, networking, file transfer)
 - NAS plugs to manage I/O
 - Servers to manage batch and clusters of vectorial nodes (that are only used for computation)
 - 2 kinds of disk space : a local one for the system on each nodes and frontends (swap, spool NQS, localtmp), another one (GFS) shared and opened to users through the nodes and frontends (HOME, WORKDIR, TMPDIR)



USER's Environment (2)

- ⇒ What has changed :
 - Vectorial nodes with new technology => others ways of optimization
 - Number of nodes (7 vs 16) => re-calibrate jobs
 - Number of processors/node (16 vs 8) => re-configure multi-nodes tasks
 - Disk space is multiplied by 3 (but users like Nature abhor a vaccum, but not for long...)
 - Cost of scalar vs vectorial
 - Cost of I/O (GFS vs local)



USER's Environment (3)

- ⇒ OnYuki users who want an account must send an email to E.Escaliere to get a user/password.
- ⇒ The file transfer from Tori to Yuki is the user sole responsibility
- ⇒ SX8 binaries work on SX9 (but without optimization, the best way is to recompile them)
- ⇒ More complete informations from Marion Pithon's (DSI) presentation will be translated by JAM asap.



Conclusion

- ➔ Do you have some desiderata regarding new tools ?
- ➔ Do you have any questions ?



THE END

THANK YOU FOR YOUR ATTENTION !

