

EDITO

Vitality and realism



We are very proud to be concluding 2006 with the CCRT's¹ decision to choose Bull as the supplier of France's most powerful civil supercomputer (43 teraflops²). Bull has shown that it has the talent to rival the most prestigious players and, if there is any basis for economic realism in Europe,

I am certain our success in the high-performance computing sector will be multiplied in 2007.

The transformation undertaken by Bull in 2006 is taking us towards a business model that is firmly solution-oriented, and relies on our service capabilities and high added-value products. With this aim in mind, we have strengthened our capabilities in emerging economies (Eastern Europe where we have acquired AMG.net to develop our business activities in the telecoms and finance sectors, and South America with large integration projects), as well as in France, notably with our purchase of Agarik for hosting and outsourcing critical Internet infrastructures. In the United Kingdom, we have successfully re-entered the services market, largely thanks to the substantial €110 million contract signed with Barnsley Metropolitan Borough Council.

We have consolidated Bull's position through important alliances and initiatives in areas that are critical to our customers' sovereignty and ability to innovate: for example, our agreement with JBoss for Open Source, and with NEC in the area of IT security.

We have just announced the acquisition of our Italian subsidiary by Eunics, a leading Italian IT services company with an aggressive growth strategy. Following repeated difficulties in this market, we had to make changes in the way we operate. And to guarantee our long-term presence in Italy on behalf of our customers there, we finalized an exclusive 5-year distribution agreement with Eunics covering all our products: servers, storage and security. Our Italian teams have joined the Eunics Group.

In 2007, we will be moving into top gear on our flagship solutions. I thank you for putting your trust in Bull, and count on your continued support during 2007. On behalf of the Bull Group and all our staff, I offer you my warmest wishes for the year to come.

Didier Lamouche,
Chairman and Chief Executive Officer

(1) CCRT: Centre de Calcul Recherche et Technologie which operates for the CEA, EDF, SNECMA, Turbomeca and Techspace Aero.

(2) Teraflop: one thousand billion operations per second.

CONTENT

p.5/Hot topics: Michigan earned national award for innovative fraud detection in child care and food assistance.

p.6/Business News: SWIFT, world leader in secure financial transactions, chooses Evidian's Enterprise SSO. Driving license cards in Albania. SPORT, the free weekly sports magazine, selects AGARIK to host its Website - Systel, civil protection alarm calls.

p.8/Expert voice: Bruno Farcy, The art of administering a NovaScale ecosystem.

p.11/Solutions: Storage, the CEA's experience or the new supercomputing paradigm.

p.12/What's new - p.13/Events

TRIBUNE

Luc Saint-Jannet, Vice-President, International Operations Geo-1 and Worldwide Practice for Customs and Tax.

Helping customs & tax authorities remain competitive

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(Continued on page 2)

HOT TOPICS

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CCRT supercomputer will be dedicated to scientific and industrial research; designed around Bull NovaScale® servers, the computer will deliver performance in excess of 43 teraflops, positioning it among the 15 most powerful systems in the world.

The CCRT, the Center for Research and Technology Computing in France, has awarded Bull the contract to build a supercomputer delivering in excess of 43 teraflops (43 thousand billion operations a second). The CCRT's

supercomputer will be made available for the scientific and industrial communities to use in major areas of research, particularly aeronautical engineering, energy, life sciences and environmental research.

(Continued on page 4)

TRIBUNE



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They have to absorb changes in legislation as swiftly as possible, whether these are national, regional (European Union, Mercosur¹, NAFTA², etc.) or international (WCO³, FATF⁴, etc.). In other words, their information systems have to be more flexible to accommodate these regulatory and legislative evolutions as rapidly as possible, without causing any significant disruption to internal and external users.

- In the wake of 11 September 2001, security issues have assumed extreme proportions, and especially so for Customs and Tax administrations responsible for monitoring flow of freight and finance, and working effectively to protect the public in close collaboration with other national and international bodies. These functions all depend on very powerful information systems to handle and share information, rapidly and securely.
- With the accelerated globalization of the economy, competitiveness is a very sensitive area for countries hoping to attract investment and offer businesses state-of-the-art services. Customs and Tax authorities have a key role to play in this process, particularly when it comes to the performance of their information systems (the speed of customs clearance procedures, the cost of container clearance, turnaround times for collecting taxes to meet the nation's cash flow requirements, etc.).
- In other respects, the services provided by these authorities must be open to users, whether those in transit and commercial operators, citizens and enterprises, or other public sector bodies needing to check information.
- There is a noticeable trend to bring

together all the payments from taxpayers under the auspices of a single body, so as to offer better service (in particular to major taxpayers) and – by offering taxpayers a single account to manage – enhance flexibly and improve debt collection and fraud detection. These developments are pushing tax and customs administrations to bring together databases used to identify who is liable to pay taxes, for tax account management and business intelligence, and to harmonize transaction processing.

- Finally, the cost element is just as vital as it is in other areas. Budgets are limited, pressure on the operating and development costs of information systems means that applications are being updated on more flexible technical platforms, using open architectures.

Bull: reputation, commitment and specific, even unique, skills

Bull has achieved a good reputation as a supplier in this area over the past fifteen years through its successful support for customs and tax authorities, helping them to develop their information system, implement complex architectures, and deliver integration projects and innovative application solutions.

Today we serve around fifty customs and tax authorities worldwide. We are present, of course, in Europe, where Bull has been a major player in customs modernization projects related to accession to the European Union. Indeed, we supported most of the countries that have joined the EU since May 2004. We also have many customers in South America, northern and central Africa, and the Middle East. Our most recent achievements in the cus-

toms field have been in Bulgaria, Cyprus, Ireland, Lithuania, Morocco and Romania, and in the tax domain, in Bulgaria, Morocco and Saudi Arabia.

Reputation underpinned by our international customs and tax center of excellence

All the Group's specialized skills are coordinated under a single leadership to strengthen our performance, and support the solutions our subsidiaries provide to their customers. Over and above our historic knowledge in IT infrastructures, this entity brings the skill of its business experts, accumulated leadership experience from so many projects, as well as the solutions developed at our software production sites. Our organization analyses information from the marketplace, validates the investment needed to evolve our range of solutions, and qualifies all partnerships in this area.

Our business model puts the emphasis on functional competence and 'replicability'. There are two dimensions to this approach:

- The business consultants who qualify the needs identified for both customs and tax functions, and design and validate the specifications at the same time as fulfilling project management roles
- A competitive application platform based on a modular architecture. These software suites, of which Bull owns the intellectual property, are e-biscus® for customs, and e-ris® for tax, and are based on FlexStudio®, our J2EEE transactional development platform.
- This configurable and customizable solution approach seems to me to be in synch with most of our customers' expectations, who are increasingly seeking rapidity of implementation for their

TRIBUNE (CONTINUED)

projects, backed by our modular technologies and our project management methodology. Meanwhile, some customers prefer to benefit from Bull's experience to develop their own applications; in this case, we provide project managers and developers from our centers of excellence, backed by the commitment to high quality and professionalism to ensure that every project is a success.

Specific, even unique, skills, supporting customs and tax authorities

Bull is one of the rare players to combine skills in both customs and tax, both in terms of business know-how and the range of our software applications. Now, it is clear that an increasing number of interconnections exist between these various bodies; in some countries, they are even integrated within a single organization. So our dual competence and our understanding of their business challenges are a considerable bonus in this changing landscape.

We are also one of the few companies capable of delivering every aspect of customs and tax projects: design, architecture, specification, development, implementation and maintenance, while most of our competitors can only really contribute in one area.

- Our business consultants help our customers to validate their vision during the early phases of a project by identifying, qualifying and specifying their needs.
- During the development and implementation phase, it is our ability to commit to timescales and budgets that our customers most appreciate. We strive to meet deadlines with all our experts and our teams all over the world, ensuring flexibility and efficiency for our customers.
- Finally, during the change support phase, being physically close to our customers is also vital. Our teams generally cooperate with local partners, whether for support, training or change management, or because such projects often affect thousands of users who need to work with people that speak their language and understand their way of work.

By way of conclusion, I would say that customs and tax authorities the world over expect vision, commitment, and excellence from their IT partners. Their projects are vital if their governments are to preserve, or even extend, their competitiveness and attractiveness in a global context. To meet these challenges, and create an efficient environment they can depend on, their information systems must be open, interoperable, reliable and

secure, and deliver high levels of performance.

To support them during their project timeframe, Bull, as "Architect of an Open World", is committed to offering them business skills, technological expertise and the ability to build an ecosystem that brings together its own and partners' teams with those of its customers, for effective skills transfer. In 2007, with new legislation arriving in Europe, in many countries in Central and South America, the Middle East and North Africa, information systems will once again have to be updated. Bull is excellently placed to bring these customers the benefits of best practices, and to help them achieve these major transformations within their systems.

The third World Customs Exhibition organized by the WCO (World Customs Organization) at Veracruz in Mexico from 25-27 April 2007 will be a new opportunity for our experts to demonstrate our know how and the evolutions of our offer.

- (1) *Mercosur: The Southern Common Market (Latin America)*
- (2) *NAFTA: North American Free Trade Agreement*
- (3) *WCO: World Customs Organization*
- (4) *FATF: Financial Action Task Force on Money Laundering*

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The CCRT, the Center for Research and Technology Computing in France, has awarded Bull the contract to build a supercomputer delivering in excess of 43 teraflops (43 thousand billion operations a second). The CCRT's supercomputer will be made available for the scientific and industrial communities to use in major areas of research, particularly aeronautical engineering, energy, life sciences and environmental research. In particular, the system will be used by the members of the CCRT, including the French Atomic Energy Authority (the CEA), Electricité de France (EDF) and three companies from the SAFRAN Group: SNECMA, Turbomeca and Techspace Aero.

The new supercomputer will comprise a cluster of Bull NovaScale servers, equipped with Intel® processors. It will be integrated into the CEA's computing complex to create one of the world's most significant scientific computing infrastructures enabling the research community to bene-

fit from synergies between programs in defense, industry and other areas, as well as the fruits of the digital simulation program.

"The CCRT's decision to commission this new supercomputer signals our desire to ensure that France – and Europe more widely – has a computing complex that is fit to match the industrial and economic challenges we will have to face over the next few years," stressed **Christophe Béhar**, President of the CCRT.

"We are very proud that the CCRT has chosen Bull. For us, it is the recognition of our ability to develop the innovative technologies that are so essential to maintain French and European sovereignty in areas that are vitally important for their future," commented **Philippe Miltin**, Vice-President of Bull's Products and Systems Division.

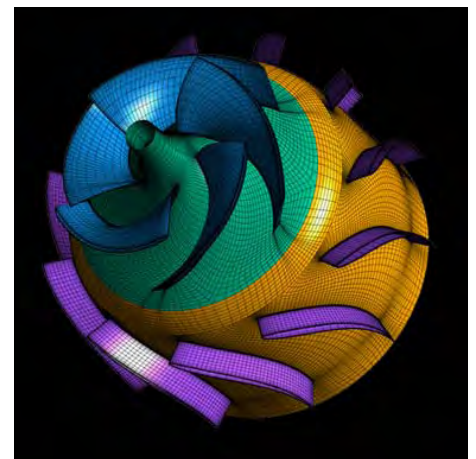
The CCRT's supercomputer, designed by Bull, will be made up of a cluster of NovaScale servers, including 848 processing nodes, and 26 dedicated I/O

and systems administration nodes. Each node will feature four Intel® Itanium® 2 dual-core processors. The system will be operated via an HPC platform specially optimized by Bull and featuring, notably: the Linux® operating system; NovaScale Master, the system administration software suite developed by Bull; the Intel development environment; and the Lustre® file system from CFS.

The NovaScale servers will be connected by a high-performance InfiniBand network, supplied by Voltaire. The data storage infrastructure, also designed and integrated by Bull, will offer in excess of 420 terabytes of disk storage capacity.

"We are pleased that CCRT chose Bull NovaScale servers with Intel Itanium processors to deliver a leading European supercomputer dedicated to civil and industrial research", said **Richard Dracott**, Intel's General Manager for High Performance Computing, "The high performance and scale of dual-core Itanium processors will support breakthroughs in the research and innovation that CCRT delivers to France and the European community".

The CCRT supercomputer will be deployed in early 2007. Expansions of the system are planned to ensure that, by the end of 2008, it will deliver several tens of teraflops of additional power.



HOT TOPICS (CONTINUED)

Michigan earned national award for innovative fraud detection in child care and food assistance; effort identified more than \$9 million in fraud

NASCIO* honored Michigan's Department of Human Services Office of Inspector General (DHS) with a recognition award for innovative use of Information and Communication Technology (ICT) for fraud detection.

Michigan's Department of Human Services (DHS) is one of the State's largest and most important organizations, managing approximately \$5 billion in funds for many of Michigan's critical programs, including food and cash assistance, and child support services. More than 1.2 million Michigan people depend on DHS programs for life's necessities.

To deliver these services to the State's neediest citizens – in a tightly controlled fiscal environment – DHS must get the greatest value possible from each and every dollar spent. Neither the agency or its clients, nor Michigan taxpayers, can afford the misuse of funds through fraud, waste, or abuse.

As part of its efforts to deliver value, DHS's Office of Inspector General (OIG) has implemented some of the most innovative fraud detection methods in the country. Using a sophisticated data warehouse/decision support system supplied by Bull, as an informational backbone, DHS's OIG has utilized advanced analytics in an unprecedented way to combat fraud activities in the Child Development and Care program [Day Care], and fraud and trafficking in food and cash assistance areas. In so doing, the OIG links data about providers and recipients with Wages data, Unemployment data, national food assistance data, and other sources, to undertake the comparative analysis necessary to achieve breakthrough results.

In fiscal year 2005, the DHS OIG efforts – unprecedented nationwide – identified more than \$9.2 million in documented Day Care fraud to be recovered, up from an impressive \$3.3 million in 2004, the first year of the data match, and far more significant savings beyond that. OIG now identifies households who have long left Michigan while failing to report their

departure. This query alone impacts DHS programs with savings of \$1.6 million each year. Moreover, OIG investigators are now much more targeted in their efforts to fight fraud and abuse, and when they confront alleged abusers, they are most often armed with irrefutable statistics and information – meaning their "hit rates" are substantially higher, and the potential for fraud recoveries much greater.

In addition to the monetary savings the agency has realized, and will realize in the future, other major benefits include:

- Savings of future program dollars when fraud is stopped through the "sentinel" effect that puts both clients and retailers on notice that the State has advanced fraud-fighting capability
- Saving investigation time since analysts and investigators are pulling data from one central source
- Saving time and money for partnering agencies (for example, the Michigan State Police) by filtering out "bad" trafficking referrals in the food and cash assistance programs.

The benefits of the DHS OIG fraud-fighting efforts do not stop at the state border. Because OIG activities serve as a national model, other states contact DHS to seek the agency's advice. Further, federal enforcement authorities – particularly, the United States Department of Agriculture's OIG – rely on the quality of DHS OIG data and analytics to support their documentation for trafficking search warrants they execute in Michigan, and for evidence in cases that they prosecute. By utilizing the rapid analytical capabilities of the data warehouse and integrating records from disparate databases, Michigan DHS has established a national model in innovative techniques to battle Child Day Care, Food Assistance, and

Cash Assistance fraud. In so doing, the agency has also embodied the principle of "Better Government" as spelled out in the Governor's Cabinet Action Plan. Governor Jennifer Granholm and the State's Department of Information Technology (DIT), view the "enterprise approach" to data sharing as critical to Michigan's success. As the Governor stated recently: *"Information-sharing is absolutely critical to have units of government deliver the best to assist taxpayers. If you cannot share data, then you are not delivering the biggest bang for your buck."*

** NASCIO, the National Association of State Chief Information Officers, represents in the USA, 57 state chief information officers and information resource executives and managers from the states, territories, and the District of Columbia.*

BUSINESS NEWS

SWIFT, world leader in secure financial transactions, chooses Evidian's Enterprise SSO

Linking 8000 financial institutions in 206 countries, SWIFT is the world's leading intermediary for financial transactions, providing secured exchange services between banks, financial services, investment funds, and companies.

Whether transfers concern payments and cash management, treasury, trade services, or investments, security is clearly the prime concern of SWIFT,

whose services provide 24x7 reliability? 99.999 % uptime.

SWIFT was looking for an Enterprise SSO system to deploy organization-wide, to reinforce its password management and application access control policy. After exhaustive evaluation of the solutions available today, SWIFT chose Evidian's WiseGuard.

Building on the existing directory infrastructure, WiseGuard will allow SWIFT to

define and enforce an advanced password management policy, while strengthening the access control policy for the various applications. WiseGuard will be deployed for several thousand employees and will be reinforced by modules managing strong authentication by smart cards and biometrics.

More information:

www.evidian.com

Albania chooses Bull to deliver driving license cards in total security

Bull and the Albanian General Directorate of Road Transport Services (D.P.SH.T.RR) – which is responsible among other things for the implementation and supervision of road transport policy and administration including the driver training and examination system, issuing driving licenses and technical verification of vehicles – have signed a contract in Tirana for an extension of the personalization system for producing driving licenses.

Bull's partner, Állami Nyomda Nyrt (the State Printing Company Plc) will bring its recognized expertise in security document printing, card production, design and implementation of the data capture solution to the project.

Project objective

The project will enable twice as many

personalized driving license cards to be produced: up to a rate of 400,000 cards a year. The cards comply with EU directives, and are supplied with 14 different special security elements, a two-dimensional barcode and even include data about the holder's fingerprints.

The existing system will be complemented by the expansion of the current informa-

tion system, including additional personalization equipment, high-performance scanners, workstations and extension of the software solution that processes the applications and manages the production of personalized cards.

Bull won the first stage of this project in 2005, and the company has already supplied the IT system, which is still being used to process license applications and has produced over 100,000 cards to date.

BUSINESS NEWS (CONTINUED)

SPORT, the free weekly sports magazine, selects AGARIK to host its myfreesport.fr Website

AGARIK* establishes high-availability on-demand platform to ensure the Website's success.

SPORT, the free weekly magazine dedicated to sport, published in France, is continuing its development with the launch of myfreesport.fr: a highly interactive Website aimed at reaching a million individual visitors per month next year. AGARIK has been chosen to support this initiative because of its highly recognized expertise in the French market for Web hosting and critical infrastructure management.

In response to SPORT's needs, AGARIK has developed a modular and evolution-

nary platform, featuring high-availability, redundancy and scalability, to enable the customer to manage the future growth of the system.

Frank Ducret, Operations Manager at SPORT, explains how the magazine has chosen the highest levels of flexibility offered by AGARIK's solution: *"The platform that AGARIK has set up can absorb significant increases in workload without any additional management costs. We really appreciate the technical and financial adaptability offered by AGARIK's solution. And this flexibility is linked to an irreproachable quality of the hosting service"*.

In addition, AGARIK is offering SPORT the most rigorous SLA (Service Level

Agreement) on the market when it comes to on-site intervention and maintenance downtime. SPORT has opted for AGARIK's Outsourcing Services offering, including a full range of 24x7 services (technical support, on-site management and monitoring) and optimum levels of security.

** Created in 1997, AGARIK is a recognized provider of hosting and outsourcing services in the French market. Since 2001, its annual growth rate has averaged almost 40%. In July 2006, AGARIK became a subsidiary of Bull.*

More information: www.AGARIK.com

High availability for the fire and rescue services

Systel is a specialist solutions integrator for call centers handling civil protection alarm calls, and more particularly emergency calls to the fire and rescue services.

Systel develops and deploys a software suite designed to handle emergency calls to an alarm call processing center via the French emergency number 18-112. As the fire brigade relies heavily on this application suite in its call centers, it must be available 24 hours a day, and

highly resistant to software or hardware failure. Therefore, Systel selected the Bull Evidian's SafeKit high-availability software solution.

Christophe Renoud, Systel's Marketing Manager, explains: *"Systel is Evidian's partner for its SafeKit 100% high-availability software solution. A number of fire brigades have already implemented Systel's solution and the SafeKit high-availability software"*.

Two major advantages of the SafeKit pro-

duct that influenced Systel decision are, on the one hand, the ease with which the solution can be deployed (with no need for disk sharing) on standard hardware, and on the other, the fact that the SafeKit solution is multi-platform, so Systel can deploy high-availability in the Windows version of its software suite as well as in its Linux version.

More information:

www.systel-fr.com - www.evidian.com

EXPERT VOICE

Bruno Farcy, manager of the Bull's "System Software Development" R&D The art of administering a NovaScale ecosystem



Why a System Management solution?

The common denominator between a JOnAS-based application server, a database solution under Windows and SQL Server, a Linux HPC cluster and a Web server farm, is (of course!) Bull's NovaScale server range, eminently capable of hosting these very diverse environments.

When a solution of this type is installed, the priority is always the smooth operation of the application concerned. To meet this requirement, configuration, surveillance and control tools are more often supplied with the solution. This is a must, but is not in itself always sufficient to ensure continuous availability. Indeed, this application is very closely tied in with the status of its ecosystem: both the hardware, and the host operating system. Therefore, it is usually viewed as a System Management solution that handles monitoring and control of the host system's physical and logical resources.

What is a System Management solution?

In the pyramid of systems administration products, a System Management solution must above all satisfy the demands of the pyramid's lower levels: Platform Management and OS Management. This article will not tackle the subject of Enterprise Management – which handles systems administration functions for applications, service quality and Business Processes management. In the first place, System Management must offer a centralized input point that is uniform and

After 5 years spent in an IBM's ISV subsidiary and then 5 years within Bull Evidian's R&D team, Bruno Farcy is managing the Bull's "System Software Development" R&D team since 2002. He also represents Bull within the DMTF (Distributed Management Task Force) consortium.

secure for the smooth administration of the system's logical and physical components.

Next, ergonomics are fundamental. It must be adapted to all phases in the product's life cycle: installation, configuration and operation.

Finally, the impact on the system itself must be minimal. System Management must never interfere with the application, particularly when it comes to performance.

The security aspect is also important, and involves authentication, role definition, certification and encryption mechanisms controlling access to system data and control functions.

Functions provided by System Management

The main function of a systems administration tool is monitoring and more precisely, detection of errors in the system. This translates in the first instance into being able to represent the entire system graphically.

One should be able to organize this to suit logical requirements (machines allocated to a particular project, to a particular application, by Operating System...) and/or depending on physical requirements (grouping machines geographically, by network, cluster, etc.). The monitoring function should make effective use of color, as shown in Figure 1.

Status levels can have several source formats:

- **Discrete value indicators:** OK or KO. For example, the indicators that signal the presence of a component, a process, or an intrusion
- **Digital indicators:** these indicate the situation with respect to a threshold (or several associated thresholds) defining a status. For example, percentage of memory used, temperature of a component, the number of processes currently being executed
- **Alarms** detection of an event, assessed in terms of its severity, enabling a status to be defined. For example, OS log events or an SNMP trap originating from a blade server housing.

To make the job of monitoring easier and more systematic (an operator will rarely stay in front of his control workstation screen the whole time) changes in status are linked to **notification** mechanisms, that can be used by management frameworks such as Evidian OpenMaster, Tivoli, OpenView and others. These will warn a designated addressee (a person or an application) if a problem occurs.

Once a problem has been identified by a change in status, either as a result of a regularly-run query, or if an alert is received, the systems administrator will try to discover additional information so as to understand what has happened. He will want to know the probable causes, the chronology, the background to the incident, etc. The two functions that are useful when it comes to doing this are the **inventory information**; machine type, disk capacity, OS type

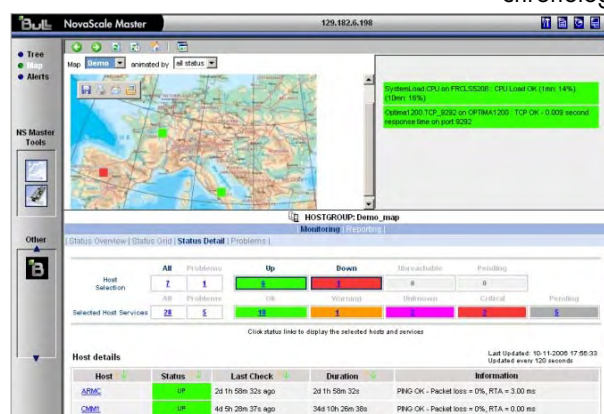


Figure 1 - Example of a graphical representation configured in NovaScale Master.

EXPERT VOICE (CONTINUED)

| Computer Information | | | | |
|----------------------------------|------------------------------|-------------|---------------|------------------|
| Name : | CHARLY4W | | | |
| Domain : | WORKGROUP | | | |
| Model : | NOVASCALÉ | | | |
| Manufacturer : | BULL | | | |
| Physical Memory : | 4.0 Gbytes | | | |
| Bios Information | | | | |
| Name : | Default System BIOS | | | |
| Manufacturer : | BULL | | | |
| Version : | B844.005.12/13/2005.16.29.29 | | | |
| Serial Number : | XAN-S11-99999 | | | |
| Version, as reported by SMBIOS : | B844.005.12/13/2005.16.29.29 | | | |
| Processors Information | | | | |
| ID | Name | Clock Speed | Address Width | Load over the La |
| CPU0 | Itanium 2 | 1300 MHz | 64 bits | 0 % |

Figure 2 - Example of an OS inventory displayed in NovaScale Master.

(see Figure 2), number of processes, etc. and operating reports or summary reporting (status log, numerical graphs and displays...).

The inventory information contributes to understanding the background to a problem, enabling us to then quantify the problem in terms of time (Since when? How many times? Did the problem manifest itself suddenly or over a period of time?...).

Figure 3 shows an example of a digitized display.

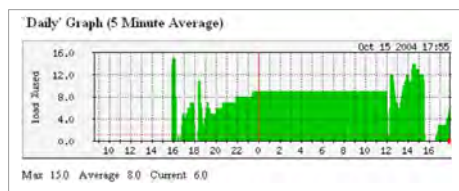


Figure 3 - Example of a digital graph produced by NovaScale Master.

Reporting can also be used preventively to monitor system loading and performance, allowing us to anticipate subsequent problems.

When the problem has been analyzed and understood, it only remains to act on the system, at best to solve the problem or at worst to implement a bypass. To do this, the System Management solution should provide **Remote Control** tools and/or access to these tools if they exist elsewhere.

This usually takes one of two forms: control GUIs (access to OS sessions, configuration tools, etc.) and scriptable commands, which can be integrated within batches. For this kind of domains to work really effectively, the openness of the solution is crucial. This translates into being able to integrate contextual calls from third-party tools, and to use open and recognized protocol standards

such as SNMP, CIM/WBEM, WS-Management, IPMI, etc.

Most of these systems administration standards are implemented in Bull's **NovaScale Master** solution supplied with the NovaScale range.

NovaScale Master: NovaScale System Management

The topological definition of the NovaScale monitoring system will always be the first step of its integration into a System Management solution. To facilitate this definition, NovaScale Master offers a simple topological model. This provides a basic scheme for grouping machines, as well as linking functions to system components (clusters, servers, disk bays, housings, etc.).

NovaScale Master covers all the functions of a System Management solution that we have just described and illustrated, for all Bull's NovaScale Intensive and NovaScale Universal ranges.

Services provided include monitoring, notification, reporting and inventory services, and more.

And it provides, as illustrated in Figure 4, an open and configurable Web console, which plays the role of a collective and uniform input point for server administration and all peripherals.



Figure 4 - Example of the NovaScale Master console. NovaScale Master: an open architecture.

Technically speaking, NovaScale Master is a Web solution made up of a three-tier architecture as illustrated in Figure 5: part console, part server, and the target part that requires administration.

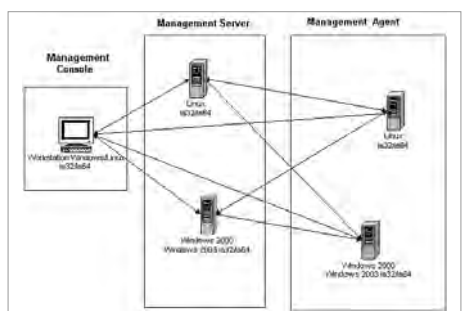


Figure 5 - Three-tier architecture

All three levels of the solution are designed with openness as a priority. In this way, for example, each part can be installed, as required, on either a NovaScale Universal or NovaScale Intensive machine, running under Linux or Windows. This is why we have made it a priority to integrate open technologies such as PHP, JavaScript, Perl, Java, etc.

This also brings together several **Open Source tools**, each with an excellent reputation in their own area (Nagios, SNMPTT, Webmin, MRTG, IPMItool, nmap, UltraVNC, Cygwin...), along with Bull's expertise in the world of systems and administration.

To illustrate this marriage: the Open Source Nagios tool acts as a monitoring server within NovaScale Master. But the first challenge for the R&D team was to port the solution to Itanium® 2 as well as to Windows. In addition, its ergonomics has been reworked, so it integrates better with the NovaScale Master console, as illustrated in Figure 6.

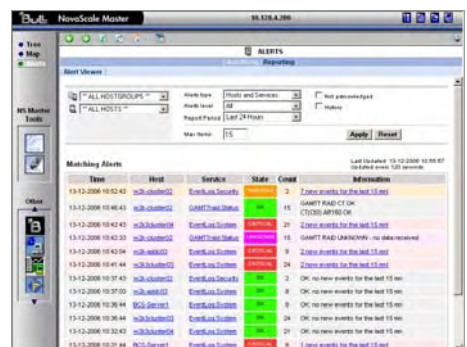


Figure 6 - Example of a Nagios page modified and integrated into the NovaScale Master console: Alerts Viewer.

Additional functionality and tools developed by the R&D team, available separately from the Web console itself, fulfill the following functions:

- Notify Bull maintenance sites (if a support contract permits this).
- Incorporate inventory information derived from hardware and operating systems into the NovaScale Master console.
- Provide a "Power control" Web interface of computers.
- Integrate, through simple configuration, any other SNMP agent provided with a peripheral or third-party tool.
- Customize the system monitoring function.
- etc.

A series of configuration tools has been designed to centralize data and make the

EXPERT VOICE (CONTINUED)

systems administrator's job easier. Figure 7 shows the home page.



Figure 7 - NovaScale Master Web configuration application.

All these open technologies and tools help us meet not just generic requirements, but also the specific requirements of each customer.

Some examples of NovaScale Master in use

Bull is, naturally, one of NovaScale Master's biggest users. For example, in the United Kingdom Bull uses it to monitor a series of Windows servers and Ethernet switches at one of its main sites in Hemel Hempstead, just outside London. This solution was much appreciated when a neighboring oil depot blew up, preventing all access to the site. When the machine room remained inaccessible over several days, the applications kept running thanks in particular to the remote monitoring and control facilities via the Web offered by NovaScale Master.

The monitoring function of the French Atomic Energy Authority's TERA-10 HPC cluster is based on a NovaScale Master solution that administers more than 600 NovaScale Intensive computing nodes.

At telecoms operator SFR, the NovaScale machines and Linux OS that go to make up a Bull VoIP (Voice over IP) solution are administered by NovaScale Master.

Generally speaking, customers have successfully integrated NovaScale Master, with the help of Bull teams, both in the early and completion stages of their projects. Bull provides audit, monitoring, installation, configuration and (of course) technical support services for NovaScale Master.

R&D collaborates closely with the service and support teams, to develop and back-up these services. It also responds to various requests for product updates.

NovaScale Master and the future

The three avenues for developing NovaScale Master are linked with:

- The evolution of the NovaScale range and its peripherals (storage, KVM, OS, PowerSwitch, etc.)
- The integration of enhancements and new functions programmed and/or detected in our customers' systems
- The incorporation of the fruits of co-operative R&D projects both internally within Bull (High Performance Computing, telecoms, Windows Competence Center, Storage, GCOS and Innovations) and external joint ventures (Intel, LSI, etc.).

The integration of the WS-Management standard (Web Services) is a development that is due to be completed in 2007.

Recently the new NovaScale range of 'virtual' servers has been launched, alongside the NovaScale 'physical' range. The VMs (Virtual Machines) bring slight variations to the concepts behind System Management. There is, for example, the idea that a (physical) machine can contain several others (virtual machines). This is why we are currently working on the development of NovaScale Master to integrate these new 'machines'. The challenge is to link the physical world and the virtual world, at least from the System Management point of view.

Conclusion

To ensure that applications have a smooth and productive life, a System Management solution is essential to organize and administer their ecosystem. For Bull's NovaScale range, this solution is called NovaScale Master.

This solution is the successful result of combining the Open Source world with Bull's system expertise. Through a single ergonomic, interactive and secure Web input point, it brings together all the monitoring, reporting, inventory and remote control functions of NovaScale servers and operating systems. But above all, it is an open and scalable product thanks to the standard technologies it uses. It enables generic administration needs to be fulfilled, but also matches the specific and changing demands of each NovaScale customer. And to achieve all this, Bull can support its NovaScale Master customers thanks to the services, support and expertise it provides.

Glossary

CIM/WBEM: Common Information Model/Web Based Enterprise Management. XML/http enterprise management protocol. Flagship standard of the DMTF consortium. (See below).

DMTF: Distributed Management Task Force is the System Management solution standardization consortium in which brings together practically all the HSVs, ISVs and OSVs. Further information can be obtained from:

www.dmtf.org

GUI: Graphical User Interface

IPMI: Intelligent Platform Management Interface. Platform Management protocol specified by a consortium, co-founded by Intel, NEC and others.

KVM: Keyboard, Video, Mouse. Switching system enables sharing of a keyboard, screen, mouse, between several machines, without having to restart these every time a change occurs.

LAN: Local Area Network.

SNMP: Simple Network Management Protocol. Remote or local systems administration protocol that are used on Internet type networks, originally designed for bridges and routers, and now more widely.

System: Group of machines, peripherals, networks, OS, components etc, that require administration.

NovaScale Master Bull documents:

Documents and other information on NovaScale Master can be found at the following address:

<http://support.bull.com>

in the section entitled:

[Platforms/NovaScale Master](#)

SOLUTIONS

Storage: the CEA's experience or the new supercomputing paradigm

IDEAS, a worldwide recognized industrial analyst specialized in IT, has recently published a new report highlighting "Bull's systems integration capabilities within a storage environment". Here is an extract from the report.

In supercomputing centers, data is at the heart of the system architecture. Via the middleware layer, the data will be able to be used in every phase of a scientific or engineering task from initial modeling to computation, and exploitation of the final results. Compared with existing solutions, the main effect will be to add middleware layers that make the use of the various IT resources involved in different phases much more transparent. By adapting much more closely to user needs, this kind of architecture will improve overall system efficiency to an even greater extent. Moreover, for many IT departments, to store, extract, save and archive data, powerful, scalable and robust storage solutions that are fully integrated within the Information System are mandatory. For CEA, with its Tera-10 supercomputer that produces data equivalent in volume to the one of the French National Library (BNF) in three days, storage is of paramount importance.

Bull Helps CEA Stay on "Tera-Firma"

The French atomic research organization, Commissariat à l'énergie atomique (CEA), employs roughly 15,000 people and focuses on energy and health technologies, as well as defense and national security. Within CEA there is an agency called the Military Applications Directorate (DAM), which maintains nuclear deterrence credibility and supplies nuclear weapons to the French Army. Within this agency, Hervé Lozach is involved in a very large program called "The Simulation Program," which concentrates on improving the physical models used in numerical simulation, improving numerical simulation itself (Hervé Lozach's area), and validating simulations with experimental results. Hervé's group of about 50 people works with a very large computing facility where Tera systems are hosted. Tera actually refers to three different computing environments at varying stages of

deployment (with four years between the installations of each successive one). The first, Tera-1, is in use since many years. Hervé Lozach currently works on the second, Tera-10 – a system installed by Bull in 2005. Based on the latest TOP500 results, Tera-10 is one of the largest computing system in the world. Tera-100 is the third planned system.

Within the computer center where the Tera installations reside, systems exist for two purposes: "pure computing" and archiving. Tera-10 supports the pure computing environment, and contains about 600 nodes, roughly 10% of which are I/O channels. Fifty-four Data Direct Network (DDN) I/O controllers are attached directly to the nodes (eliminating the need for a SAN), and the I/O servers are designed to take advantage of the controllers' full bandwidth. For failover purposes, the I/O controllers are multi-access and shared. Tera-10's archival system, also designed and integrated by Bull, is built upon 13 Intel® Xeon®-based nodes, 4 petabytes of disk (DDN controllers), and the IBM High Performance Storage Server.

Hence, Hervé's environment is both large and complex, and for this reason, his view of system integration is quite comprehensive. In his view, system integration involves the design, delivery, and (of equal importance) maintenance of complex solutions such as his, including all of the hardware, software (including open source), and networking components involved.

When seeking an integration provider, CEA generated an RFP for both the pure computing and archiving environments. The pure computing RFP was particularly complex with hundreds of requirements; however, the greatest emphasis was placed on I/O bandwidth (30 terabytes per day requiring 100 gigabytes per second). Internodal connectivity was particularly important as well.

Bull was chosen to be the integration pro-



vider for both environments in 2004 and the Tera-10 system was installed at the end of 2005. One of the reasons Bull was selected was its perceived ability to provide servers that

- a) offer the best computing power,
- b) are based on industry-standard technologies, and
- c) support open source operating environments.

Indeed, Tera-10's 600+ servers are all Bull NovaScale servers running Linux, and contain 9,000+ Intel® Itanium® 2 cores.

Another reason was Bull's recommendation that CEA use the QSNNetll® clustering solution from Quadrics, a European high-speed networks provider that was able to supply the quality and performance CEA required. CEA's stringent requirements for high-speed data transfer between servers and storage components were adequately addressed through a combination of Lustre® (an open source file system) and Data Direct Networks disk controllers, providing CEA with transfer speeds exceeding 100 GB/sec. Bull was also able to provide powerful nodes (up to 16 processors and large I/O capabilities) due to its NovaScale architecture. The interior connection (midplane) of these systems allows the interconnection of four QBB (the standard Intel® four-way Itanium® building block) and one or two I/O boxes incorporating a Bull-designed ASIC.

Hervé indicated that Tera-10 will be operational through 2010, when RFPs for Tera-100 will be created. CEA is not assuming Bull will be the vendor of choice for Tera-100, but given Bull's history of keeping CEA satisfied, it improved its chance of once again winning the day.

More information:

www.Bull.com/storage/ideas

WHAT'S NEW

Benoît Hallez named as new Director of Bull Storage business

Benoît Hallez (45) has been appointed as Director of the StoreWay business unit that brings together all Bull's worldwide storage activities.

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Benoît Hallez began his career in 1980 at Digital Equipment Corp (DEC), where he fulfilled various sales roles before taking over as the group's Director of Major International Accounts in 1995. In 1998, he joined Silicon Graphics Inc. (SGI), where he was appointed as Sales Director for the Industry, Aerospace and

Defense sectors. Then in 2000, he took over as Sales Director for the whole of France. Appointed as General Manager, France, he succeeded in taking France to the top of the league among the countries where Silicon Graphics Inc. operates in terms of revenues, margins and growth initiatives. Since 2004, he was General Manager in charge of the Southern Europe, Middle East and Africa region for the company.



EVENTS

Grenoble, on January 16 - Paris, on January 18

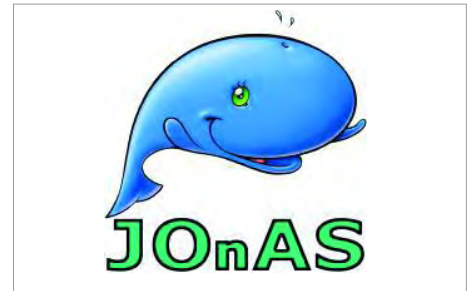
JOnAS Days

From portals to ESB, application servers are key for building next generation business applications. JOnAS, the Open Source Application Server from ObjectWeb, offers a unique alternative for deploying open, robust and enterprise-class J2EE applications. Supported by a broad international community, JOnAS 4.8 has been released end of 2006, offering strong innovations in clustering and EJB3 support. These JOnAS Days will help you leverage JOnAS 4.8

and the future JOnAS generations for your information systems.

Thanks to the JOnAS Days, you will:

- Understand how to deploy open, secure and robust applications with JOnAS servers
- Get advanced information about R5, the JOnAS next generation release coming out in 2007
- Network with experts and developers to share expertise, insights and best practices



- Meet the team that leads the JOnAS project
- Discover the ObjectWeb middleware ecosystem (Orchestra, Bonita, Exo platform, NovaStudio, Petals...).

For more information and registration:
Benoit.Pelletier@bull.net

Paris, 30 January to 1 February 2007

Linux and Open Source solutions



Host to more than 10,000 visitors, the "Linux and Open Source Solutions" exhibition is a major event dedicated to the world of Linux® and Open Source applications.

As one of the leaders in the field of Open Source in France, Bull will be exhibiting (booth C21) its Open Energy™ family of Open Source services and its NovaScale® servers running on Linux, and will also launch NovaForge™, the first comprehensive shared platform for project management and distributed development projects based on Open Source software.

Jean-Pierre Barbéris, General Manager Bull Services and Solutions will deliver a keynote address on **Tuesday 30th**, from **10:30 am to 11 am**, on the theme: "Open Source: the new engine to create innovation and value".

A number of Bull experts will also contribute to conference events, speaking on the following topics:

• **Administering, controlling and operating open source systems (S2)**

Tuesday 30 January 14.30 - 18.00

Migrating proprietary system management solutions to Open Source: lessons learned by **Bruno Paul Martin**, Bull Consultant.

• **J2EE Architectures and Open Source software (S8)**

Wednesday 31 January 9.30 - 13.00

JOnAS 5: new generation Open Source server applications by **François Exertier**, Project Leader, ObjectWeb / Bull.

• **SOA and Open Source software (S14)**

Wednesday 31 January 14.30 - 18.00

This session is to be chaired by **Jean-Pierre Laisné**, Chairman of ObjectWeb and Director of Open Source Initiatives at Bull.

- The PRESTO project: implementing administration exchange protocol using Open Source software by **Jacques Cayuela**, middleware architecture and SOA from Bull, and **Frédéric Law-Dune**, project manager, DGME-SDAE (a Ministry of Finance' directorate for State modernization).
- Deploying a Business Process Management in Open Source: lessons learned, by **Miguel Valdés Faura**, ObjectWeb Bonita project leader, Bull.

• **Workstation (S15)**

Wednesday 31 January 14.30 - 18.00

A secure mobile office with Linux and Open Source by **Alain Filée**, Director of the TrustWay Business Unit, Bull.

• **DBMS (S20)**

Thursday 1 February 9.30 - 13.00

Migrating a proprietary DBMS to an open environment: choosing a suitable industrialization methodology by **Ugo Brunel**, DBMS consultant, Bull.

• **ObjectWeb (S22) day**

Thursday 1 February 9.30 - 13.00

- Orchestrating Web services with Orchestra by **Goulven Le-Jeune**, Java middleware developer, Bull.
- Simplifying Java EE clusters administration: the Jasmine project by **Benoît Pelletier**, developer, Bull.
- The EJB3 EasyBeans and OSGi container: the perfect combination by **Florent Benoît**, Bull developer.

For more information and conference registration, click on:

http://www.solutionslinux.fr/fr/visiter_in dex.php

EVENTS (CONTINUED)

Barcelona, 12 to 15 February 2007

3GSM World Congress 2007

3GSM World Congress, the world's premier mobile event, attracted over 50,000 people in 2006, from more than 180 countries. 3GSM World Congress 2007 will bring together leaders and personalities from mobile operators and equipment vendors, as well as players from the Internet and entertainment worlds. It will feature the very latest technology, services and developments, bringing to life the promise of mobile broadband for all and defining the industry's path to continued growth.

The structure of 3GSM World Congress 2007 is being developed to reflect the ongoing changes in the mobile value chain. The program identifies the risks that will be taken, and highlights the rewards that can be reaped, in bringing



these changes to all geographic markets and mobile services.

The conference program will feature five plenary sessions providing an effective platform for the most senior figures from the mobile industry and other industries that are now impacting the mobile world. Two streams look in detail at the strategic and technical drivers and implications of these. Concerning mobile strategy, subjects like convergence, segmentation and partnership, scaling up, emerging markets, new costs and revenue structures will be covered. Presentations on techni-

cal aspects will focus on standards, WiMAX and mobile TV technology. A third stream is dedicated to the emerging force of mobile entertainment. The technology breakout sessions also introduced last year will be enhanced to allow for deeper examination of key technical issues.

Bull's Telecommunication & Medias worldwide division will be present and will take the opportunity of this major event to organize private meetings with its major customers and prospects.

More information:

<http://3gsmworldcongress.com/flashintro.asp>

Paris, 14 to 16 February 2007

Alcatel-Lucent Enterprise Forum 2007

The Alcatel-Lucent Enterprise Forum 2007 will take place in Paris from February 14 to 16. With the theme "*User-centric and use-focused, the New Business Generation is here to stay!*", the three-day forum will feature the most inno-

vative, user-centric and use-focused communications solutions available today. The forum offers over 80 conferences with industry visionaries, expert analysts, partners, customers and Alcatel-Lucent executives.

Benoît Hallez, Director of Bull Storage business, will hold a conference on "Multi sites Information flow management".

More information:

<http://forumalcatel-fr.evenium.com>

Hanover in Germany, 15 to 21 March 2007

CeBIT2007 The leading business event for the digital world

Under its banner Architect of an Open World™, Bull will be attending CeBIT 2007 on the stands of its partners Intel and Xandros and within the Public Sector area.

On the Intel stand (Hall 2, stand C6), in the "Digital Enterprise" area, Bull will be showcasing its NovaScale servers, including some equipped with the latest gene-

ration of Intel® Itanium® 2 processors, the whole set-up will be managed using the Bull NovaScale Master system administration tool.

On the Xandros stand (Hall 5, F58/1), Bull Germany will present opencenter@bull, the integrated Open Source software stack based on Xandros Linux, Scalix Groupware, O3Spaces collaboration suite, and other solutions.

Within the Public Sector area (Hall 9, E54), Bull Germany will show solutions dedicated to local authorities including "Intelligent Video Surveillance" (IVS): computer intelligence at the service of video surveillance camera networks and disaster management.

EVENTS (CONTINUED)

London, 24 to 26 April 2007

InfoSecurity Europe

As each year, Bull will be present at InfoSecurity London, the main security event in Europe that will take place in London, from April 24 to 26. On its



booth, Bull will demonstrate the software solutions of its Evidian subsidiary

(Identity, Access and Single Sign-On management).

More information:

<http://www.infosec.co.uk/>

Veracruz in Mexico, 25 to 27 April 2007

WCO IT Conference & Exhibition: The World in Transition

The WCO IT conference and exhibition organized by the WCO (World Customs Organization which involves 169 Member Governments) will take place in Veracruz/Mexico from April 25 to 27.

According to **Michel Danet**, Secretary General of the WCO*: "The World in Transition" is a particularly significant theme as modern Customs must embrace the integrated supply chain perspective and manage the transition from a context of closed economies to the modern global environment with increasing volumes of trade and unprecedented calls for safe, secure, efficient and well-managed borders. In this respect, no doubt that IT plays a pivotal role in this new Customs environment which emphasizes the importance of security while promoting the facilitated movement of goods across the globe.

Bull is sponsor again of the 2007 WCO IT Conference and Exhibition. The event will be a new opportunity to exhibit on our booth (# 1 & 2) our e-biscus® open and

flexible software solution suite for Customs, which facilitates the legal commerce through fraud detection, fast clearance and efficient enforcement. Our experts would be delighted to welcome you during [the company breakout session on April 26 from 3:30pm to 4pm in room A.](#)

Bull has gained worldwide recognition in the public sector for its expertise, in particular in aligning Customs systems to new international demands. For several years now, Bull has been involved in developing customs solutions in several European countries during their preparation for EU accession, supporting the implementation of EU requirements. These countries include Bulgaria, Cyprus, the Czech Republic, Hungary, Lithuania, Malta, Poland, Romania; Ireland and Morocco



have also selected Bull's Customs solutions to modernize their system.

More information:

<http://events.wcoomd.org/aboutconferenceit2007.htm>

**WCO: Established in 1952 as the Customs Co-operation Council, the WCO is an independent intergovernmental body whose mission is to enhance the effectiveness and efficiency of Customs administrations. With 169 Member Governments, it is the only intergovernmental worldwide organization competent in Customs matters.*

Dresden in Germany, 26 to 29 June 2007

ISC (International Supercomputing Conference)

The largest supercomputing event in Europe – will once again be held from June 26 - 29 at the Dresden International Congress Centre in Germany.

Prof. Dr. **Hans Meuer**, General Chairman of ISC'07 and TOP500 initiator, has again put together an impressive program with the theme "The social significance or usefulness of supercomputing".

The program for the 22nd ISC event includes a three-day conference, alongside an exhibition of HPC solutions. Among the 2007 technological highlights are: High-Performance Networking, operating systems and algorithms for petaflop-scale systems, as well as industry solutions such as fluid dynamics. Two new tracks are in the

process to being put together: an "Automotive Afternoon" and a "Scientific Day" that will focus on many aspects of the larger HPC solutions such as: advances in the implementation of large-scale applications (capability computing), computing and data integration in medicine and biology, etc.

The eagerly-awaited TOP500 list will also be announced.

Bull will be present at ISC 2007 and will showcase the new series

of its NovaScale range of servers and HPC solutions. The Group will take the opportunity of this international HPC conference to make some announcements.

More information on ISC'07:

<http://www.isc07.org> www.isc07.org



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