

EDITORIAL

Making the transition to fast-forward mode



The Group's recently announced results for Q3 2006 confirm that we have achieved the transformation we committed to make towards a more services-oriented business model, and a focus on high added-value products. Indeed, we recorded a growth rate of 20.8% in our revenues for services, and a 35% increase in orders (making

an overall figure of 16.6%) while our products business – where we recently appointed a new Director – has suffered somewhat from strong pressure on prices. These results confirm the performance of our combined products and services offerings, and show that the strategic choices and the Group's action plan we defined at the start of the year were correct. Today, that plan is in full swing, with the main points being:

- A special focus on seven key growth initiatives relating to high added-value products. In particular, I'd mention HPC (supercomputing), where we are reaching new heights of success with Aliena Aeronautica (a subsidiary of Finmeccanica), the University of Manchester and a significant contract in Asia. There can be few companies in the world capable of moving up from 229th to 5th position worldwide (and number one in Europe) in less than two years in the field of supercomputers. Other initiatives include storage solutions and high added-value services, notably in telecommunications, where recent success stories include Maroc Connect, Embratel and SFR – whose project to deliver video content to mobile phones, delivered with the help of our new subsidiary Agarik, amply demonstrates the value placed on our solutions. And, of course, our services and software solutions for customs and tax authorities, where Bull has a global reputation.
 - A new sales and marketing organization in France for both products and services, aiming to optimize the operational efficiency and re-organization of the Western European network outside France, in order to stimulate product sales.
 - A new worldwide organization for our maintenance and support services, with a new Director at its head responsible for re-energizing this business and redefining our offerings in order to halt the decline in revenues due mainly to the increased reliability of hardware. We are already making good progress in this respect.
 - A new R&D organization, designed to accelerate innovation both in products and services, and to encourage synergies.
- All this represents the accelerated business transformation that we are committed to delivering. By combining our strategic vision with our key areas of expertise, I am convinced that Bull has all the qualities needed to ensure the success of your most critical projects.

Didier Lamouche, Chairman and Chief Executive Officer

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EXECUTIVE OPINION

Edgar Snoijnk,
Group Field Engineering and Customer Support

Ensuring availability

As Information Systems become increasingly complex, customers need the quality of support Bull can provide.

Today Information Systems tend to be increasingly complex and increasingly heterogeneous – with systems, storage, networks, often from different suppliers, all integrated into a sophisticated infrastructure, most often performing mission-critical operations. This

is why ensuring availability is the top priority of Bull's customer support teams which are our key intimacy forces at customer sites. Such proximity is unique for the company's customers.

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GUEST CONTRIBUTOR

Dave McLaury,
Interim Chief Deputy Director - State of Michigan
Department of Community Health

Bull Services helps the State of Michigan to deploy one of the most ambitious Business Intelligence Systems in U.S.A.

Why did the State of Michigan launch a Business Intelligence (BI) project and how has it evolved?

Michigan first invested in a BI solution (data warehouse) from Bull Services in 1994 – during the early stages of BI technology – to help manage its Medicaid program (which provides health care

services to needy citizens). As the Medicaid rules and regulations became more complex, the state implemented the data warehouse to monitor Medicaid claims for quality of care, as well as for over-payment, fraud and abuse. The solution has evolved with Michigan's needs over the past decade.

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Tailoring the organization to the new environment...

Bull has recently created an international Field Engineering and Customer Support organization with new management. Our 1600 field engineers guarantee maintenance and proximity support services to customers all around the world

We have decided to add new programs to make our services more pro-active and more responsive to customer needs for trouble-free operations and near 100% availability. The new organization is taking shape. It is based on two pillars: Field Engineering and Customer Support.

- Field Engineering is focused on Bull accounts who require intense, continuous support. It services their special needs, assuring infrastructure availability. They also build bespoke solutions for them when the need arises and integrate Bull and non-Bull products into the infrastructure.
- Customer Support, which includes maintenance services, is offered to all Bull customers. Here again, the mission is to assure customers of high availability, especially for their mission critical applications. With customers linked to

the Bull customer support network, the Bull engineers are able to monitor customer systems, detect bottlenecks or potential problems in their infrastructure, and react in real-time. Even to the point of fixing the problem before it actually happens.

... and capitalizing on strengths

In preparation for the development of new customer support services, we have instituted a process of dialogue between the different Bull country organizations and our partners. While each country has been serving its customers very well – if the results of the customer satisfaction surveys are anything to go by – the cross-fertilization of processes and best practices needed to be intensified. This is exactly what we are focusing attention on today for the development of new offerings that will revolve mainly around very large infrastructures. Here, customers need help to master their end-to-end solutions. They need Bull's know-how to do it. Similarly, as Eastern Europe's IT market explodes, customers can obtain better support if the Bull national organizations are bundled into stronger units with critical mass. This will enable the creation of high-level expert teams to work across borders and better mobilize the Bull expertise. In fact, this is one of Bull's big competitive advantages. Being based in Europe, it is geographically close to its customers. If there is a really important issue, a Bull team of development engineers can be on a plane and on site in three hours or so to fix the problem.

Our obsession is customer satisfaction: anything less than a 100% satisfied customer is not acceptable

The key measurement of our services is customer satisfaction. Indeed, the support specialists are the company's customer facing eyes and ears. And they are committed to aspire to absolute satisfaction. For the last five years, customer surveys done by the independent TNS SOFRES

Institute show the progress of customer satisfaction, which is at its best for the last two surveys. The same surveys show that more and more customers prefer Bull services against competitors.

As Architect of an Open World™, Bull is well placed to be the supplier of choice for customer support services

• Committing on High Availability

As already stated, our key focus area is high availability. Bull France has a highly competent high-availability centre providing proactive services to its customers with references in SAN/NAS storage heterogeneous solution, and in various operating systems environments (AIX, GCOS, Linux, and Windows). Starting in 2006, our skills are made available to support customers on a pan-European basis with already new contracts in Spain, Italy, Germany and Belgium.

• Handling heterogeneity

As heterogeneous infrastructures become more and more widespread, customers with numerous brands want a single point of contact to support them according to their needs. This is where Bull has a trump card to play – its knowledge of heterogeneous systems. A rather unique expertise that many IT suppliers do not have. We can fulfill the role of main contractor, detect problem areas and make sure the customer has only one single point of contact: Bull! We also provide similar services for non-Bull heterogeneous facilities, and indeed today act as independent support provider for organizations.

• Maintaining and supporting Open Source environments

Bull is a long-time Open Source advocate. It has built up in-depth know-how over the years to become an acknowledged Open Source expert. In addition to expertise epitomized in our Open Energy suite of services and NovaForge, a secure, shared tool for the design, verification and development of distributed applications, we are providing our customers with an industrial support through our call centers, tailored to their needs, supporting their information systems.

GUEST CONTRIBUTOR

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State of Michigan profile

Long considered a national leader in its use of information technology to improve operations, the State of Michigan utilizes one of the nation's most sophisticated Business Intelligence (BI) data warehousing solutions – developed by Bull Services – to manage most of its critical functions in Health and Human Services, as well as supporting activities in the Department of Treasury, the Courts, Corrections, and Unemployment. With more than 9,000 state government users, the BI data warehouse has become the critical backbone to support the informational and knowledge needs across Michigan state government, improve the efficiency and effectiveness of programs, deliver services to citizens, and help ensure that Michigan taxpayers are getting the most value for their money. Michigan's BI solution, a model for other states to emulate, has received national recognition from some of the most prestigious industry analysts and organizations in the United States, including: the National Governors Association (NGA), the National Association of State CIOs (NASCIO), the The Data Warehousing Institute (TDWI).

Why did the State of Michigan launch a Business Intelligence (BI) project and how has it evolved?

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Quickly, the BI data warehouse provided the Michigan Department of Community Health (DCH) with the ability to conduct in-depth analysis on the Medicaid program, reducing the time it took staff analysts to get answers from one-to-three weeks to 10-minutes to one hour. Workers were able to directly access mainframe-sourced data and bring it into spreadsheets on their PCs for rapid and comprehensive analysis.

One year after its implementation, the full capabilities of the BI solution were quickly put to the test, when, in 1995, Michigan was studied and ranked nationally by the U.S. Centers for Disease Control and Prevention (CDC) for its performance in childhood immunization rates. Michigan's last-place finish was considered by state officials to be a powerful wake-up call, and they called for a united effort to address this critical issue. As one part of a comprehensive initiative to improve childhood immunization rates, officials explored the potential for the warehouse

to provide important information on the subject. The warehouse was not only able to tell DCH the status of childhood immunization on a county-by-county basis, it also rapidly provided the data necessary for notifying parents and providers across the state about the need for timely immunization schedules. The BI data warehouse was one of many factors that helped Michigan exceed the national average in childhood immunization rates within two years and finish first in the country by 2000.

Since then, Michigan's BI solution has evolved even more to better provide quality health care services, helping the state track standards for providers, manage contracts, analyze and measure the effectiveness of programs, and measure the performance of health plans. Today, as part of the "enterprise phase" of the BI data warehouse solution, and using the data warehouse as the backbone, Michigan, working with Bull Services, has integrated 21 separate health-related agency data sources into a single integrated environment. Many of DCH's 1.4 million clients are enrolled in multiple programs supported by the department. However, prior to this integration project, it was virtually impossible for the agency to track and monitor services and costs associated with a single client through these separate agencies. Now, the BI data warehouse is helping DCH track fraud and abuse, conduct advanced data analysis, interpret patterns, determine which programs are most cost effective, reduce overall costs to taxpayers, and predict the state's health care needs and

priorities in the years to come.

The BI data warehouse now encompasses far more than health care data. It is on its way to becoming a true statewide enterprise solution – the best example in the country – that contains data from the Department of Human Services (providing cash and food assistance for needy citizens), the Treasury Department, the Michigan courts, Corrections, and Unemployment. More than 9,000 Michigan employees now utilize the BI data warehouse to perform their jobs. No other state shares data and information so seamlessly to deliver better services to citizens and reduce the costs borne by taxpayers.

What kind of strategy did the State put in place to meet its objectives?

Michigan realized several important factors early in its development of a BI solution. For example, the State had the vision that the greatest benefits – both financial and programmatic – would accrue as the system added more data and users. Thus, it was imperative that it first implemented an open, flexible, non-proprietary architecture that provided the best possible data quality; enabled the capability to add disparate data rapidly; had the capability to introduce the latest, best-of-breed, industry-leading tools without disruption; and was relatively easy to use. The State geared its implementation (and subsequent expansion) of its BI solution toward end users, recognizing that for BI to be truly effective, it needs to move beyond the realm of the IT

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GUEST CONTRIBUTOR (CONTINUED)

department and provide answers and solutions to “business” problems. The Bull Services BI solution provided the flexibility, openness, high level of data quality, and ease-of-use to meet Michigan’s needs.

Next, Michigan recognized the importance of safeguarding sensitive data even as data is shared for the State’s benefit. Security is a paramount concern and the State has built in the necessary protections at many levels. For example, while data from several agencies resides on the BI data warehouse, only data that is intended to be linked together is shared. And, while some data sets allow access outside of the controlling agency, the data is controlled at the model, table, field, and even range levels. The data can be shared for a single analytic purpose, and access can be ended when the analysis is complete. The originating agency determines access to its data and the security, and the system tracks who accessed what; therefore data is protected via access security at the front end, and ability to monitor data access by individual user at the back end.

In addition, Michigan understood the importance of selecting and growing with a vendor that provided more than technology – one which could provide subject matter expertise, consulting services, mentoring, and a level of comfort working with state employees and sensitive state data. Bull Services’ lengthy state-and-local government experience, plus its Business Intelligence approach and expertise, provided Michigan with this assurance. For example, in the area of communications, Bull Services has worked with the agencies to provide information on the BI solution to state executives, develop “annual reports” to circulate across departments on the use of the system, and assisted the State in preparing the documentation for the various industry awards it has won for the BI data warehouse.

The State also recognized the need to create a common identifier across disparate data sets so that, as new data sources are added, they can be easily linked to existing data to provide user access to all data related to a specific individual. This concept will be critical in identifying data relationships as the State continues to build its enterprise data warehouse.

What are “best practices” and “things to avoid” when implementing a major BI project?

Many of the “best practices” were explained in the previous section. It is important to stress that, from initial discussions and project planning, to implementation, to growth and expansion, the State and its BI vendor must maintain a deep level of openness, communication, and trust. These are complex and far-reaching projects, and a vendor is entrusted with some of the State’s most sensitive data; therefore an honest working relationship is critical. This is much different than the client-vendor relationship with a product vendor – the client-BI vendor must develop more of a partnership. Bull Services and the State of Michigan have developed such a partnership of success. The State of Michigan and Bull did overcome some obstacles to achieve this success. The initial collection and cleansing of data brought with it a series of challenges, though this got easier as each new data set was added to the BI data warehouse. In addition, Bull Services and the State worked together to create a separate BI environment to supplement and complement the transactional environment (the system in place to process transactions, issue checks to recipients, etc.). BI is a querying environment built to conduct advanced analytics to transform data into knowledge; its entire structure and mission are different than a traditional transactional environment.

What kind of “business benefits” did you derive (and are you deriving)?

Michigan has achieved enormous financial and programmatic benefits from its BI solution, one of the most sophisticated in the United States. Industry analysts, publications, and other states have cited Michigan as a model to emulate in the BI space. In fact, the Michigan BI data warehouse, one of the first of its kind in the U.S., has served as a model for similar Bull Services’ implementations in Illinois, Minnesota, New York, and Utah.

As mentioned above, the data warehouse helps track and uncover fraud and abuse, conduct advanced data analysis, and interpret patterns. In addition to the “last-to-first” jump in child immunizations

already mentioned, some of the business benefits Michigan has achieved include the following:

- Estimated annual savings (MDCH) of nearly \$200 million (advanced health care analysis, federal bonuses, avoiding federal sanctions, etc.), a figure that should continue to grow.
- Medicaid administrative costs have been reduced by 25%
- DCH has doubled its identification of fraudulent Medicaid activity
- The State is better able to evaluate health care plans, payment rates, and policies, thus maximizing Medicaid program savings and sustaining quality care
- The BI data warehouse enables the State to track and substantiate its Medicaid pharmaceutical costs
- The solution helps identify coverage overlaps to reduce the number of instances in which individuals are obtaining similar or duplicate services across multiple programs.
- Michigan’s BI solution helps eliminate inappropriate payments; for example, comparing eligibility with lists of deceased residents is an important fraud issue.
- The BI data warehouse is used to analyze food stamp and cash benefits cases, tracking nearly \$1 billion annually in taxpayer dollars. The Department of Human Services in Michigan uses the BI solution to validate and independently cross-check the Electronic Benefits Transfer (EBT) processing vendor that actually manages individual recipient and retailer accounts
- Social service workers who visit clients are able to access the data warehouse remotely for the most up-to-date information, and then prepare their reports quickly and efficiently using pre-structured templates that help save time and resources.
- In the Department of Treasury Bureau of Revenue, the BI solution has helped the state achieve a dramatic increase in number, fairness, and efficiency of audit reviews. With its old “paper system,” the Bureau was limited to 6,000 reviews per year for audit consideration. It is now able to review all 450,000 business taxpayers

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GUEST CONTRIBUTOR (CONTINUED)

annually with the same staffing levels, helping it to select the best candidates to audit.

For these and other achievements, the Michigan BI solution has been recognized by the National Governors Association (NGA), the National Association of State CIOs (NASCIO), The Data Warehousing Institute (TDWI), and several national trade publications.

How will your BI project/application evolve in the future?

In Michigan, this evolution has already begun – at its core is the willingness and desire of more agencies and departments to add their data to the BI solution to improve their efficiencies and deliver better service.

The most recent major addition has been the Michigan Judicial Data Warehouse project sponsored by the Michigan State

Court Administrative Office (SCAO), one of the most ambitious in the nation. Bull Services, ultimately will combine data from 251 different courts – circuit, district, probate, and family – loading criminal, civil, traffic, and juvenile cases onto the BI data warehouse. The project will standardize data across Michigan's court system, allowing judges, clerks, and administrators to track an activity an individual has had within any court in Michigan – essentially "one version of the truth" – through a Statewide Name Search capability.

Once completed, judges, clerks, and administrators will have access to standardized, linked data with strong privacy and security safeguards. The court will have the ability to track individuals through the court systems, court operations are expected to be faster and more cost-effective, and courts will eventually have the ability to predict – not

just report – the impact of changes to laws and policies.

Also under way is the aforementioned first-in-the-nation Child Day Care and Food Stamp/Cash Assistance fraud-fighting program undertaken by the Department of Human Services. Investigators have already identified millions of dollars in savings by linking cash assistance, child day care, wages, and unemployment data into the BI data warehouse for extensive analysis and comparisons.

These are just two examples of the widespread capabilities of the Bull Services BI solution for the State of Michigan. The State continues to put forth its innovative ideas, suggestions, and programs – and the Bull Services solution continues to have the flexibility and robustness to handle them all.

BUSINESS NEWS

Agarik's video portal – pivotal technology for video-to-mobile delivery – ensures SFR 60 channels broadcast through its Vodafone live! portal

The speed, flexibility and responsiveness of Agarik*, new Bull's subsidiary are at the heart of SFR's success.

In November 2004, French operator SFR launched its very first television channels that could be received by mobile phones. Since February 2005, the company has retained Agarik to provide consulting and support to assist in the encoding of these services.

Agarik's role has since developed considerably, to the extent that Agarik is now SFR's only video portal supplier, managing 132 video streams to provide 60 channels broadcast through its Vodafone live! portal, with access to three major bundles of services: SFR, CANALSAT and TPS.

For Marc Baudy, TV-Video Manager at SFR, Agarik's responsiveness is a determining factor in the success of the project: *"Agarik's teams successfully adapted to a totally new requirement when we asked them put in place the first TV channels. Since then, Agarik has successfully delivered a rapid increase in power to achieve what's required for the current channels. In parallel, Agarik's expertise and responsiveness has enabled us to offer our customers innovative new services in very short timescales."*

Agarik has provided SFR with a powerful platform consist of over 150 equipments including servers, demodulators, a switch and a firewall. All this ensures a high level of responsiveness and modularity: a

bundle of 15 channels can be added in the space of just five days.

()*: In July 2006, Bull acquired critical Internet infrastructure outsourcing company Agarik, enhancing its offerings and strengthening competitive position in Web hosting and critical Internet infrastructure outsourcing market for Web operators. Therefore, Bull consolidated its presence in the strategically important Telecoms sector.

Outsourcing has the wind in its sails

Following hot on the heels of the recent major contract signed with Barnsley Metropolitan Borough Council in Northern England, two new contracts in France: one with the Ministry of Employment, for its service to help young people into employment, and the other with the French Atomic Energy Authority (CEA).

The French Ministry of Employment, Social Cohesion and Housing has Demonstrated its renewed confidence in Bull, with a three-year contract involving infrastructure availability and operation, and helpdesk services for the national 'Parcours 3' application. The new deal complements the existing partnership with the Ministry's national body for local employment advisors (Conseil National des Missions Locales) which covers the hosting and outsourcing of the Regional Parcours3 applications: 225 individual contracts with local offices, representing a

user base of around 4,000 people. The Parcours 3 information enables local offices (financed by the State and the local authorities) to track the progress of almost **a million young people** every year, as they are integrated into the world of work. The result of a project launched in 1998, Parcours 3 has become an extremely useful monitoring and management tool for the local offices, and is used by the State, Regional councils and local authorities as a barometer to measure the situation with regards to young people between 16 and 25 years old. To meet these objectives,

Parcours 3 is divided into two distinct areas: a Regional Area, designed to support the work of the local offices, and the National Area, which monitors and consolidates the data made anonym while collected from across the entire network.

The CEA's Aquitaine Center for Scientific and Technical Studies (CESTA) has awarded Bull the operational management of its installed base, consisting of around 2,500 general and 200 scientific workstations, and 120 servers.

This on-site outsourcing contract is worth around 3 million over three to five years.

BUSINESS NEWS (CONTINUED)

Bull modernizes Tunisian Electricity and Gas Company's IT infrastructure

The *Société Tunisienne de l'Électricité et du Gaz (STEG)* – which is responsible for electricity and natural gas production, transportation and distribution across the entire country of Tunisia – has chosen Bull – along with its internal IT teams, a consulting firm and two Tunisian IT service firms – to redevelop its information system, as part of the roll out of its new customer management system (Alpha) developed using a J2EE architecture to administer over three million customer accounts.

The new information system is designed according to the latest and most innovative technology standards. It relies on a powerful and secure infrastructure, that is made up of four Bull NovaScale Intensive servers for data management, two NovaScale Universal servers for Web services and applications, and a Bull StoreWay data storage solution featuring two storage bays. The application servers will also be equipped with SafeKit software, the high-availability and loading management solution developed by Bull. Using NovaScale servers equipped with two different types of processors – Intel Itanium® 2 and Xeon® – in the same infrastructure, enables it to respond perfectly to STEG's demands in terms of performance, reliability, flexibility and cost.

"We awarded to a national group of companies – with Bull as a participant – the contract to modernize our information system. Bull was chosen because of their recognized and competitive technical solutions. The excellent understanding of our requirements, and the quality of the technical and support services provided by the Bull teams were decisive factors in the success of our project" said a Director at STEG.

Two identical configurations of the new system will be installed in two locations, Tunis and Sfax, interconnected with a broadband network, enabling to mutually secure the two sites in case of a major technical incident, and guaranteeing service continuity to the thousand users of the system. Bull will also provide various services including assistance with

implementation, technical training, system support and on-site maintenance.

"We are very proud to be able to include STEG among the list of our major customers," said Moez El Ghali, Managing Director of Bull Tunisia. *"Our information systems architecture expertise enabled us to respond to all the customer's requirements on this project, and to succeed. We actively contributed to a global approach built around a consultancy approach and our expertise both in infrastructure and systems integration. This approach allowed us to succeed with one of the most important IT modernization projects in the country and at the North Africa regional level."*

BUSINESS NEWS (CONTINUED)

Spanish Post Office (Correos) awards Bull project to modernize its office technology

Correos, the Spanish Post Office, has chosen Bull as the systems integrator for the technology modernization of over 1,000 postal centers and 100 new post offices across the whole country. The contract is worth almost 4.7 million.

In line with its objectives in terms of quality, efficiency and innovation, Correos is modernizing and updating its IT equipment across all of Spain, so it can continue to offer the best services to its customers. Against this backdrop, Correos will be acquiring, installing and configuring 10,750 IT equipments in various centers. Correos is carrying out this program of modernizing its IT equipment as part of an enterprise renewal plan. As a result, not only will it be equipped with state-of-the-art workstations which will make it easier for its employees to do their jobs, but it will also enjoy enhanced hardware availability.

Bull has long-standing expertise in ensuring the evolution and migration of massive distributed architectures, where geographic proximity and rapid project execution are key to success.

Bull, as the project integrator, will be responsible for provisioning, installation, configuration and after-sales support services over a three-year period. More precisely, these services cover:

- The integration and configuration of applications and specific Correos software for 3,800 new PCs and servers; all latest generation NEC Powermate
- Connecting the new IT equipments to the company's LAN network;
- Installing and configuring 1,000 Symbol optical laser bar-code readers;
- Renovation and updating of 1,500 Epson banking-quality laser printers;
- Maintaining the IT equipments at agreed operational levels, with 30 minute response time and problem resolution within four to eight hours at any geographic location;
- Recycling used hardware according to environmental protection standards.



About Correos

Correos leads the postal sector in Spain in the transport of documents and goods. The company distributes more than **5,400 million deliveries** each year and reaches over 19 million homes and two million companies. Correos is the leading company in the country for national coverage with more than **10,000 points of access to its services**: 1,987 multi-service offices, 1,980 distribution centers and 8,094 rural service points (customer services and/or deliveries).

Correos employs the largest number of people at the public's service in Spain. Around **65,000 professionals** are making Correos more **modern, efficient and competitive** - a company that offers customers and clients the best solutions.

Unique Vacations books Escala

Unique Vacations Inc. has ordered a new Escala PL1650R with EMC CX300 disks to support their web-based reservations system.

Unique Vacations is located in Miami, Florida. They are the worldwide representative for Sandals and Beaches Resorts, and are recognized as the Caribbean's No. 1 Ultra All Inclusive Resorts. Sandals is a collection of 12 of the most beautiful resorts on the Caribbean's best beaches in Jamaica, St. Lucia, Antigua

and the Bahamas. Beaches provides all-inclusive resorts for families in Jamaica, the Turks and Caicos islands.

Unique Vacations uses Bull Escala systems for their web-based reservation system to schedule everything from flights, to golf, scuba diving lessons, and even arranging for your own personal butler. Major concerns for Unique Vacations are the hurricanes that strike Florida each year.

According to Roger Seivright, Unique Vacations' IT Director, "While Information technology is critical to most industries, the

Travel and Leisure industry cannot function without 24X7 access to their computer systems. Our web based reservation system is the backbone of our business. We have to ensure that we can continue to operate around the clock, even when natural disasters, like hurricanes that strike Florida each year, are predicted. The new Bull system will enable us to provide a mirror-image back-up of our primary reservation system, which also run on Power 5 servers."

EXPERT VOICE

Thierry Fromont, Engineer in Bull's hardware development division

High performance Data Center thermal management

Thierry is an engineer in Bull's hardware development division. He trained at the Ecole Supérieure de Physique et Chimie de Paris (ESPCI), and his job with Bull is to package servers and HPC clusters.

During the 1980s, high-level information processing systems were based on ECL bipolar semi-conductor technology. This technology was extremely wasteful, and the systems employing it were generally cooled by circulating water around the actual components. The arrival of CMOS



technologies enabled some reduction in wasted power and increased integration on a single integrated circuit (IC). It soon became possible to put together a high-

level processor using just a few IC's, consuming fewer than 5W each (in the 1980s), followed by a single IC consuming less than 10W (at the start of the 1990s). Air-cooling became much easier to use, and so this became the standard technology.

IT applications have always demanded ever-increasing amounts of processing power (for databases, business intelligence applications, intensive processing, Internet access...); and they still do today. Servers have advanced considerably as a result, incorporating more powerful processors and resulting in the increasingly standard use of SMP (symmetrical multi-processor) architecture. This route is the "Scale-in" method, whereas deploying clustering techniques to enable the power of several basic servers to be added into the equation is known as the 'Scale-out' method. Therefore, the processing power of computer systems has continued to grow thanks to:

- Being able to include more transistors on just one silicon chip, to enable more powerful processor architectures (SMP architecture, for example)
- Higher frequency system clocks (intrinsic core performance)
- Creation of large clusters (integrating

up to 10,000 basic processors). In particular, it is these large clusters that enable High-Performance Computing (HPC).

The first two avenues of progress result from the use of increasingly refined technology to create transistors. In the short term, this happened without any significant increase in heat output; but increases in leaked current from transistors (from 90nm technology onwards) and the race for frequency led to the explosion in power dissipated from a processor, which today can be as high as 130W. This sudden change has created a fundamental challenge: just how do you air-cool such components within a server?

The third avenue of progress requires the creation of huge computer processing rooms, where the aim is to install the maximum number of servers in three dimensions with tall server racks comprising row upon row of racks... The objective here is to install the maximum GFlops, or the maximum number of Internet connections, per square meter. The data processing room will be filled to the upper physical limit in terms of the available space, electrical power supply or heat evacuation, whichever is reached first. This new development has created a second challenge: how, and to what point, to maintain air-cooling within the computing room?

Integrating components within servers

Cooling a processor that dissipates 130W demands high-performing heat sinks and fans, and good control of air-flow within the server. The industry has developed the technologies for heat sinks used in servers. This translates into an increase in the number of fins, and the use of materials providing good thermal conductivity (copper). The reduction in the distance between fins and the high air-flow requirement are the two main elements contributing to increased pressure drop in heat sinks, and require the use of more powerful fans. The market

for fans has kept pace with these requirements. It is now possible to provide more compact fans (between 160mm and 60mm diameter, or even less) enabling the creation of almost identical air flows by optimizing the shape of the blades and increasing the rotation speed (up to 8,000 turns per minute), and capable of withstanding significant pressure drop.

All that remains is to construct the system, while guaranteeing good air circulation at the places that need it to ensure an optimum thermal environment around each component, and taking into account the heterogeneous structure of local pressure drops. This is achieved by using thermal modeling/fluid dynamics and digital simulation methods. **Figure 1** shows an example of the kind of digital simulations used. The temperature fields in a sub-assembly are represented before and after optimization of air output circuits. The red zones (in the left-hand image) represent the hot points, and by adding a deflector, the situation is clearly improved (in the right-hand image).

At the end of the survey, a thermal map of the machine is generated, and this can be used to ensure that the server is

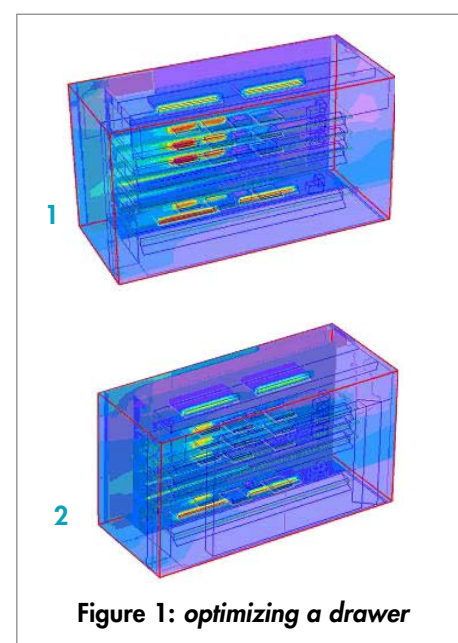


Figure 1: optimizing a drawer

(continued on page 10)

EXPERT VOICE (CONTINUED)

functioning correctly, as long as the temperature of the incoming air remains below 30°C (this is a typical value for the air input).

Integrating servers in racks, and the racks in the data center

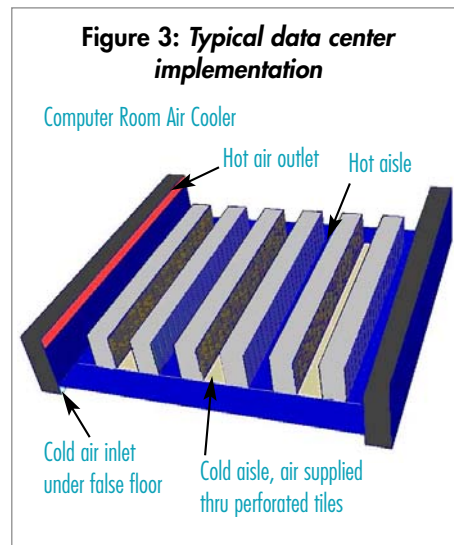
Once integrated within a rack, the servers no longer need to be modeled to such a high level of detail. All you need to know, to begin with, is the heat output per unit of height and the air-flow required. The heat output per U (where 1U = a 44.45mm unit of standard height in the 19-inch rack system) has significantly increased now that more powerful components are available, and is also helped by higher density integration. It has increased from 200W/Unit to 400W/Unit, and in the near future we are anticipating densities of between 500W/Unit and 1kW/Unit. Because the power dissipated by the server has increased, the power dissipated per rack may exceed 10kW, and require a preparatory modeling stage. The example in **Figure 2** shows a simulation describing the integration of 25 servers, each giving out 400W/U, in a rack. A first option for integration involves grouping the drawers into five groups of 5U and separating them by 3U. In the second option, a panel obstructs the inter-server spaces.

We can see in the first instance that the air exiting from the servers is sucked back in at the front, and that the incoming air

temperature increases by about 4°C. These air re-circulation phenomena can be further exacerbated by the presence of more solid doors.

Similarly, integrating the racks in a datacenter requires thermal and fluid modeling before the cluster installation phase. This is all the more necessary when the power output per rack is higher than 4kW and when the number of racks giving off heat increases. Air conditioning systems enable around 4kW/m² to be extracted (typical values). For a density of about 2m² per rack, a mean dissipation per rack of about 10kW is obtained. This explains the fact that currently racks are not systematically filled to their maximum capacity, as a function of the cooling capacity for the room in question. The first step in designing a datacenter is therefore to respect these limitations, both in terms of the level of the server installation within the racks, and the installation of the racks in the room itself, also taking into account all the other relevant constraints. One of the most important of these is the limitation on length for some of the inter-rack electrical connections, which can require more costly fiber optic links.

Using simulation tools, we can effectively predict the fluidic and thermal behavior of datacenters, and juggle the various parameters (the way the bays are arranged, for example, the positioning of the perforated floor tiles, the depth of the



raised floor....) to optimize air temperatures while ensuring that each server is operating under the best possible conditions.

As mentioned above, the re-circulation of air limits the possibility for air-cooling. The alternation of hot and cold passages limits this phenomenon (see **figure 3**). This effect is mainly noticeable at the edge of the cluster. **Figure 4** clearly shows the hot air taken back by a rack.

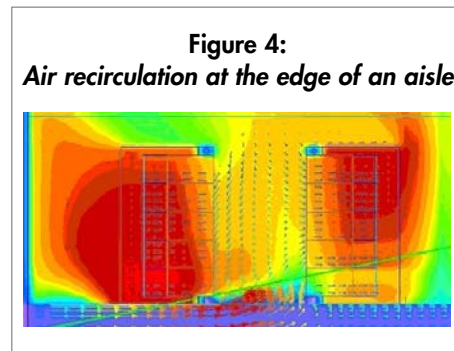
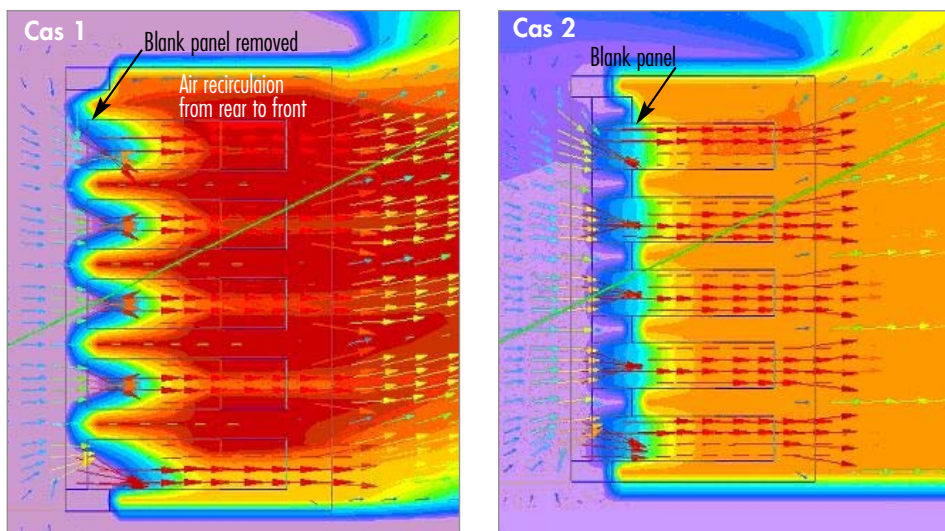


Figure 2: temperature fields in a rack before and after obstruction of the inter-server spaces



Bull has extensive experience of installing these kinds of high heat output systems, and has even implemented a cluster of 250 racks with output of 8kW per rack.

Figure 5 (on page 11) shows an example of a datacenter simulation, with the temperature fields in two perpendicular planes. One of these is situated at the entrance to the racks, which enables the incoming air temperature for each server to be checked, to ensure it falls within its specified limits. In this diagram, one row of racks has been removed to improve the readability of the diagram.

(continued and concluded on page 11)

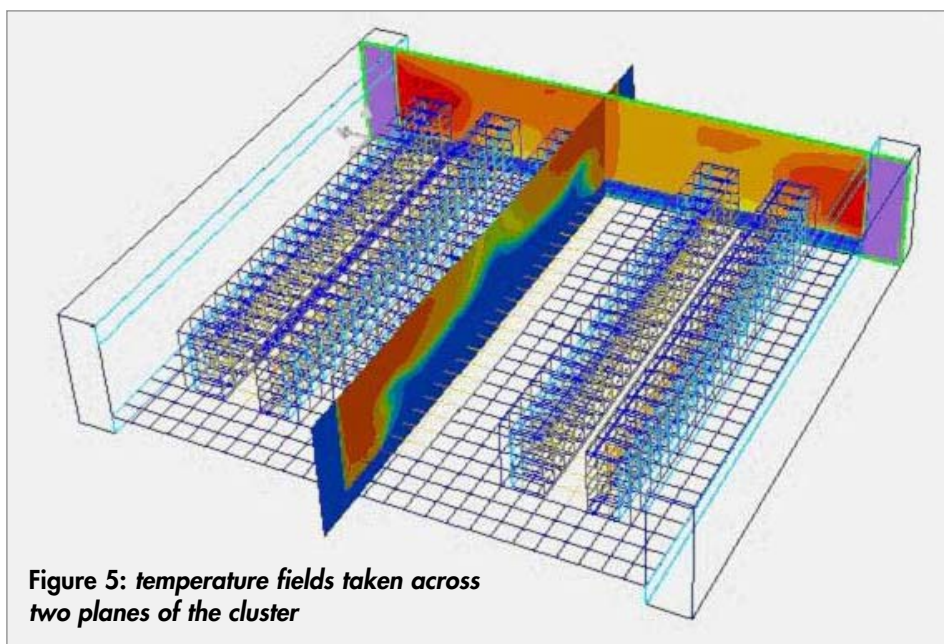
EXPERT VOICE (CONTINUED)

Figure 5: temperature fields taken across two planes of the cluster

Improving processing power in computing rooms

In order to respond to the demand for increased processing power from each unit of surface area, Bull is working in two main areas:

The first of these is the optimization of existing systems by organizing the air-flows within the computing rooms more effectively. Selective closing-off of particular areas, distribution of air-conditioning units around the room and guiding air-flows using baffles are typical areas for this kind of research. The overall aim is to capitalize on the customer's existing investments by drawing the greatest

possible benefit from them. Implementing such a solution requires the setting up of flow simulations, and the estimated limit of such an approach is of the order of about 12kW per rack. This is a highly cost-effective solution as it achieves a higher average density than 60% of the maximum density obtained by completely filling the racks.

Meanwhile, the increased sophistication of fluid dynamics and thermal modeling software enables increasingly detailed simulation of these kinds of systems, with a view to scoping and optimizing them even more effectively.

The second major avenue of interest is the use of liquid refrigerants – with up to 4,000 times greater cooling capacity than air – closer to the servers and so limiting the amount of air that needs to be processed by the air-conditioning units in the room. The technologies involved are mainly refrigerated doors, and closed racks with built-in air-water exchangers. This approach should enable the racks to be entirely filled within the 20-40kW range. It requires the addition of an in-built [heat] exchanger, as well as ventilators within the housing. Over and above the evaluation of the real gain in density, two areas need to be addressed:

- One technical, with two coexisting ventilation systems (for the heat exchanger and the servers)
- One economic, concerning the additional costs involved for an existing computer room.

Taking these cooling constraints into account is an essential part of data center design. But it does involve knowing how to characterize the materials used in great detail, and a good understanding of modeling techniques. Bull has all the necessary tools and expertise to successfully manage this evolution. Today, Bull is working towards defining these products in such a way as to be able to propose scaled solutions ranging in power, cost and density in the range of 10-60kW per rack.

EXPERT VOICE (CONTINUED)

Ugo Brunel, DBMS consultant

An example of porting to an open environment: migrating Oracle to PostgreSQL

Ugo Brunel has more than 10 years' experience working in the field of database management. He joined Bull in 2002 to develop a database center of competence within the outsourcing business. Ugo's extensive knowledge of the major DBMSs (Oracle, PostgreSQL, MySQL, SQL Server and Progress) makes him an invaluable contributor to many customer projects. He is also responsible for ensuring the commercial readiness of the Group's database migration product – one of the components of Bull's Open Source services solution, Open Energy.



In an IT world that is increasingly open to RDBMSs, we are witnessing the emergence of a new battle between Open Source databases on the one hand, and proprietary databases distributed free of charge on the other. Of course, this battle is being governed by extremely stringent and restrictive rules in an international marketplace where the cost of DBMS licenses alone is in excess of \$15 billion.

Free proprietary databases, also known as "Express" version, are currently very promising but also quite limited in terms of the resources they offer.

Today even the biggest software publishers have entered the race towards the open world, and are offering free versions of their databases: the most interesting being Oracle – as the leading DBMS supplier in an increasingly competitive market – and SQL Server, that relies more than ever on Microsoft technology.

These two big players offer complete but lightweight and free "Standard Edition" versions of the most advanced DBMS engines currently available, and as a result are expecting to attract a lot of customers.

The only weakness of these products – albeit a major one – is that although both the Oracle and the Microsoft "free" offerings are based on state-of-the-art technology, they are really only designed for smaller organizations. It seems inconceivable they could have sufficient production capacity to meet the demands of larger organizations, given that they cannot support databases larger than 4Gbytes and their CPU and memory limitations have a negative impact on their performance. So the 'free' offerings from Microsoft, Oracle and even Sybase are, in effect, restricted products. There is a world

of difference between a product that effectively has only a limited sphere of operation and a product that is both unlimited and free (MySQL and PostgreSQL). This is why the most sensible solution for limiting costs while conserving maximum functionality and compatibility is to turn to Open Source databases like PostgreSQL and MySQL that exploit machine resources to the maximum of their capacity.

Meanwhile, debate and news in the DBMS arena is extremely lively, and publishers are very actively protecting their market shares, while taking the competitive challenge of the open software very seriously. Oracle's recent acquisition of the InnoDB MySQL storage engine is recent proof of this.

Migrating an existing database?

While Open Source databases are naturally a very attractive choice for new projects, the question is a good deal more complex when your project involves migrating an existing database to an open database. Because, while there may be considerable benefits when it comes to lower support and maintenance costs, it is clearly vital to ensure that the migration will not result in any loss of functionality... and that the cost of the migration will not outweigh the potential savings to be made!

So how can you complete this kind of migration with total confidence? How can the process be automated as far as possible, both for qualification and development environments and production environments?

As part of its Open Energy range of services, Bull has decided to develop just these kinds of migration tools and methodologies for porting to PostgreSQL and MySQL. For Oracle migrations, Bull makes use of the ora2pg open application, among others, as part of its purpose designed OTP migration tool (having actively contributed to the development of ora2pg).

An example of migration: the WEBTEC project

By way of concrete example, we can look at the migration of a software application used by Bull called WEBTEC, which was ported from Oracle to PostgreSQL using OTP.

WEBTEC is a monitoring and planning capacity tool developed by Bull for its outsourcing business. It provides an overview of production activity, enabling improvements to service quality and productivity to be made. All data retrieved is archived and analyzed. The application relates to databases, operating systems, back-up applications, messaging systems, networks and knowledge bases. It gives us a daily summary of the information about the previous 24 hours of production, and as such it is clearly a tool that is central to our outsourcing activities.

PostgreSQL is closer to Oracle than MySQL, and it is totally Open Source. Hence the choice of PostgreSQL for this migration, even though MySQL may of course be an attractive alternative in many other instances.

In the context of this migration, the Oracle production database (11Gbytes of useful data) used by the Bull/WEBTEC software was initially ported successfully to PostgreSQL using OTP. The configuration required and the migration method are detailed in the appendix to this article.

The application software, initially written in PHP/Oracle, has also been re-written using PHP/Oracle syntax. This detailed but relatively straightforward task was necessary for WEBTEC since the pages were developed specifically for Oracle, with queries written directly in code without passing, for example, via a query pool file. Application software elements written in Java are often much quicker when it comes to this particular conversion.

(continued and concluded on page 13)

EXPERT VOICE (CONTINUED)

Tests were carried out on Linux Red Hat and Windows XP platforms, showing that it was also possible to change the type of platform between the source and target server, since the exported files are simple text files.

Positive results

The results of this migration enabled us on the one hand to validate the transfer and data migration mechanisms, and on the other, to limit the risks that the application software would malfunction as a direct or indirect result of the migration from Oracle to PostgreSQL.

From a functional point of view, the outcome proved to be undeniably positive.

- Equivalents in PostgreSQL were found for all the types of data used during testing
- Procedures stored could be manually adapted to the PL/PgSQL language without difficulty
- Heavy SqlLoader load operations in the Oracle database were simply replaced by COPY FROM commands
- LOB type objects (images, documents,...) were ported without any problem
- Operating procedures (back-up, restore) were updated to iso functionalities.

Performance and reliability tests on PostgreSQL were carried out by Bull's database center of competence at Echirolles in France, with summary tables listing key items (data volumes, number of users, "best practices"...)

The ROI also proved to be excellent, with the migration of the database and application software costing the equivalent of 20 person/days of effort: much less than the anticipated savings to be made on licensing and support.

Feedback from this experience shows that it really is possible to envisage moving away from proprietary components, but a feasibility audit must be carried out beforehand to verify compatibility between software applications, the necessary functionalities and the available Open Source components.

This migration will of course serve to enrich Bull's experience and its Open Exchange solution, designed for porting towards Open Source.

For more information:

www.bull.com/fr/services/libre_energie.php

APPENDICES**Migration tools used**

The tool developed by Bull (OTP) for this migration is based on the ora2pg module and designed specifically to enable the module to be used in commercial contexts (with audit trails, flexibility, parallelism...).

Ora2pg, available under a GPL license, can be downloaded from www.samse.fr/GPL/ora2pg/. Bull is an active contributor to its development.

Ora2Pg functions as follows:

- Connection to an Oracle database
- Automated validation of database structure and objects in the database
- Conversion of the database into PostgreSQL syntax
- Export to a PostgreSQL database.

List of exported SQL elements:

- [SCHEMA?]/NAMESPACE
- TABLE, VIEWS
- CONSTRAINTS: Unique, Primary, Foreign key, Check
- INDEX
- TRIGGER
- SEQUENCE
- FUNCTIONS, PROCEDURES, PACKAGES
- RIGHTS (Grant, Role, User)
- TABLESPACES (PostgreSQL v.8.x.x)

They can be loaded in two ways:

- DATA : one line of INSERT per tuple
- COPY: block of data.

They can be loaded in two ways:

- As individual files using the psql command
- Directly via a link to the PostgreSQL database.

Only the TABLE, INDEX, CONSTRAINTS and SEQUENCE elements are automatically converted to PostgreSQL.

Other types (VIEWS, TRIGGER, FUNCTIONS, PROCEDURES, PACKAGES and RIGHTS) need to be adapted manually for PostgreSQL since the PL/SQL language used by Oracle is significantly different from PL/PgSQL as used by PostgreSQL.

How OTP works:

OTP is the module that encapsulates and automates the use of ora2pg. Using OTP, Oracle tables can be migrated to PostgreSQL step by step, with each step producing its own trace files.

In addition, this means the data export and import steps can be carried out in parallel depending on the source and target server capacities (memory and number of CPUs), and integrity and index constraints only need to be established once data import is complete (data import also being faster and more flexible).

This module is also written in Perl. It has a unique configuration file for all the steps making up the migration.

Data are exported to a file in flat format, and not directly to the PostgreSQL database. In the event of an import problem, this means the export stage does not have to be re-initiated.

In addition to Perl 5, ora2pg and OTP require the following Perl modules:

- DBI
- DBD: Oracle
- DBD: Pg (optional)
- Compress: Zlib (optional)

The module runs on all platforms supporting Perl, Oracle (client) and PostgreSQL (client).

SOLUTIONS

GCOS momentum

Update from Jean-François Bauduin, Director of the Bull GCOS Business Unit



Among our most recent successes, I'd mention the business applications for the Council of Yvelines, the school system applications for the city of Erie (PA) in the USA, Belgium's National Register which administers the database managing the country's entire population irrespective of their nationality or residency status, the Buenos Aires Stock Exchange in Argentina, and Spanish insurance company Cahispa.

For our customers, the NovaScale 9000 and NovaScale 7000 solutions offer:

- Flexibility and openness: thanks to the hardware's physical partitioning capabilities, our customers can simultaneously run applications under GCOS, Linux and/or Windows, and share data with IDS2 or open databases such as Oracle, PostgreSQL, etc.;
- Simpler IT infrastructure and systems administration;
- Cost control, as well as guaranteed performance and reliability, because these servers offer both the superior price/performance ratio of the standard

Bull, "Architect of an Open World" for its GCOS customers

The multi environment offering (GCOS, Linux and Windows) available on our NovaScale 9000 servers for GCOS 8 and NovaScale 7000 for GCOS7, at the heart of Bull's open systems strategy, is proving highly successful in commercial terms amongst our customer base. Very many of them have now chosen these solutions and successfully deployed them for their production environments, in a way that's totally transparent to users, while recording significant gains in performance.

Itanium® 2 processors supplied in large numbers by Intel, and mainframe robustness, traditionally Bull's area of expertise;

- Risk management: because these offerings give our customers a long-term evolutionary path without the prospect of them needing to modify or recompile their applications. Having GCOS and open Linux and/or Windows environments running in co-operation together on the same platform means evolution can happen seamlessly, avoiding costly and sometimes hazardous migrations. This co-operation allows our customers to focus their resources on creating value by offering new functionality to their end users.

New developments regularly enhance this strategically important product line

Interoperability tools enable our customers to integrate their systems into service-oriented architectures (SOAs), via gateways and Web Services between GCOS, Linux and Windows partitions and other information systems platforms. In addition, we have launched **StoreWay Virtuo, our data storage virtualization solution**, for Bull DPS 7000-XTA X5 and NovaScale 7000 servers, offering our customers the same back-up tool for GCOS7 data and data from open systems from which our NovaScale 9000 custom-

ers are already benefiting. StoreWay Virtuo, developed by Bull's expert storage system engineers, is an extremely timely offering in the face of the increasingly diverse range of back-up solutions and material currently available, because it enables data to be shared in a completely secure way. Based on "Disk-To-Disk-To-Tape" technology, StoreWay Virtuo gives lasting access to the accumulated wealth of enterprise information.

Finally, when it comes to **NovaScale 7000 and NovaScale 9000 support services**, we are offering our customers dedicated operational and application maintenance services for GCOS environments, thus helping them to optimize their costs, operate production environments more efficiently, and manage the integration of new technologies. Our contractual arrangements are especially flexible, to respond as closely as possible to our customers' requirements:

- Technical support, for regular or ad hoc access to expertise;
- "Insourcing" (on-site outsourcing services);
- Outsourcing, for customers who want to hand over all or part of their IT operations to Bull, and benefit from shared resources as part of a long-term service agreement based on commitment to results.

SOLUTIONS (CONTINUED)

StoreWay Virtuo 6.1: a new generation of virtual storage solutions for the datacenter

With StoreWay Virtuo 6.1, back-up and restore operations for data in large-scale computing centers are simpler, more powerful, more reliable and much less costly.

Designed for heterogeneous environments – IBM z/OS mainframes (with ESCON or FICON connections), Bull GCOS and open systems such as Windows, Linux, AIX, HP/UX, Solaris, etc. – StoreWay Virtuo 6.1, the new generation of virtual storage solutions just released by Bull, enables universal sharing for data back-up within any company, offering a very rapid return on investment.

StoreWay Virtuo automates, safeguards and accelerates the back-up and restore process while also delivering much greater flexibility and optimization of back-up resources. As a result, StoreWay Virtuo reduces the initial investment and operational costs for the entire back-up environment.

Putting an end to the problems encountered during data back-up and restore operations

Handling dozens of media formats and supporting multiple server and operating systems is a real nightmare for system administrators who need to carry out

regular back-up and archiving operations for corporate data. Emulating the tape reels and standard robots in the industry, StoreWay Virtuo allows them to free themselves from the inherent complexity of a heterogeneous infrastructure, while still maintaining their routine back-up software and associated procedures.

Substantial reduction in costs

Because they are now independent of media formats as well as different types of server and operating system, back-up and restore operations are simplified, and investment hardware and consumables is optimized. Among other things, the integration of information lifecycle management (ILM) functions – such as configuring how long data is held in the cache before being transferred onto tape – enables the cost of storing different types of data to be optimized as a function of the need for availability. This means the latest, more powerful and less costly technological advances can still be included in the data center, without having to redefine back-up procedures.

Optimum performance and security

Running parallel operations using a disk cache considerably reduces the back-up and restore timescales, and enables the system to meet on-going application availability requirements despite ever-increase data volumes. StoreWay Virtuo uses a secured disc cache ("mirroring" or RAID-5 depending on the model), and features a redundant fiber-channel connectivity and switching device that operates in the event of a breakdown and restoration of activity. StoreWay Virtuo also enables all or part of the back-ups to be automatically duplicated at a remote site, as an extra precaution against major incidents.

Main characteristics

The StoreWay Virtuo range consists of several models, to meet any organization's requirements in terms of availability and disk cache capacity (from 280Gb to 46Tb for standard models, and more than 100Tb for specially-commissioned models). The range entry configuration is priced at around 50,000 €.

With Upstream Provisioning, Bull Evidian simplifies the implementation of company ID databases

- The latest module in *Evidian Identity Manager* simplifies the creation of an identity-based database
- It facilitates synchronization of multiple sources and different identity formats
- It offers a simple alternative to costly meta-directories

The construction of an identity database is at the core of effective identity and access management (IAM). In effect, no matter how good your access security policy may be, or how effective or refined its implementation or reporting tools are, if the data defining the user is unreliable, the whole edifice will crumble. Setting up such a database can run into serious problems, for example when the model used is too complex, when the approach taken is purely technical, or the data defining the user's identity and his or her access rights is muddled. Before

launching into this kind of project, it is vital to use a methodology that will enable simple, robust and effective models and processes to be defined right from the start.

With "Upstream Provisioning" – a new component in the *Evidian Identity Manager* module of its IAM (Identity and Access Management) software suite – Evidian responds to the needs of businesses that want to create a database of reliable identities simply and quickly. The new component is designed to facilitate the creation, integration or

migration of corporate directories: for example as a result of a merger or acquisition, or a re-organization of decentralized business entities. It also enables customers to build identity databases, for example when creating a white pages service, or for identity management or company Single-Sign-On projects.

"Today, unifying identity and access management is at a central pre-occupation for numerous businesses that

(continued and concluded on page 16)

SOLUTIONS (CONTINUED)

have implemented diverse approaches to identity management, 'in silos' or by type of application, over the years," explains Hassan Maad, Bull Evidian's Managing Director. "This dispersal of information results in a loss of productivity, an increase in the number of security risks, and a proliferation of extremely unreliable identity sources. Upstream Provisioning enables these systems to be synchronized and unified, without the need to implement costly meta-directories."

Upstream Provisioning: a simple and effective solution

Upstream Provisioning complements Evidian's identity provisioning software

solutions: "Identity Manager" and "Provisioning Manager". The solution offers three major advantages:

- **A global approach to the creation of identity databases.** Upstream Provisioning supports all the main identity sources on the market: not only LDAP directories, but also SQL databases, Lotus Notes and Exchange directories, CVS or LDAIF flat files, etc.
- **An easy-to-install solution with no need to deploy agents.** Simply installing Upstream Provisioning on a server is all that's needed to implement the solution. No additional deployment of agents is required.
- **A powerful solution.** With *Upstream Provisioning*, a straightforward XML

interface allows the mapping and synchronization rules between the reference directory and the multiple existing identity sources and formats to be defined. This means there is no need to commit to the costly development programs usually associated with meta-directories.

For further information: download the white paper: *Upstream and directory identity provisioning*. This white paper describes the basic principles for constructing a consolidated identity directory.

www.evidian.com/security/im/wp-upstreamprov.php

"Intelligent Video Surveillance" (IVS): computer intelligence at the service of video surveillance camera networks

Interview with Frédéric Lacombe, Director of Emerging Markets, Bull

What do we mean by "Intelligent Video Surveillance"?

Video surveillance has been growing significantly for many years now, accelerated by the introduction of programs such as "Homeland Security" in English-speaking countries and "Sécurité Intérieure" (internal security) in France. Video surveillance operators, on their own when it comes to detecting a crisis situation, are gradually drowning under the exponential growing amount of footage that needs to be processed. Under these circumstances, there is a growing risk that an important event will go undetected.

Intelligent Video Surveillance (IVS) involves using software to filter video footage, so that only relevant information is retained. Only this information is forwarded to the video surveillance operator, to remove any concerns of doubt and immediately trigger the predetermined action plan or response where appropriate. Detecting intruders or abandoned baggage, or counting people or vehicles, lend themselves particularly to IVS.

So why is Bull interested in IVS?

For the past decade, Bull has been involved in R&D projects around image processing and video surveillance, mainly in partnership with the INRIA/ORION laboratories in Sophia-Antipolis (the French national institute for research in computer science and control).

Once this technology was mature, INRIA/ORION asked Keeneo – a company staffed mainly by engineers who had worked in its ranks – to develop and bring to market an IVS software solution. In the footsteps of this, Bull and Keeneo have signed an exclusive business and technical partnership contract. Drawing on Bull's expertise in servers, systems integration and security solutions, IVS is a key element in Bull's emerging markets development strategy, and a driver for growth in the years to come.

What are the main advantages of Bull's IVS solution?

Bull provides its customers with a turnkey solution – including hardware, software and services – capable of being

integrated with any existing video surveillance camera network.

Thanks to its modular character, the Bull NovaScale range of servers is particularly well suited to guarantee IVS operators a high level of performance and availability, no matter how many cameras are deployed on the network.

Based on a 4D architecture (3D + time) that is unique in this market, the IVS software developed by Keeneo considerably enhances the reliability of detection, while at the same time drastically reducing the rate of false alarms.

Bull also offers a wide range of services including feasibility studies, scenario modeling, camera calibration, integration and deployment services, maintenance and support.

All these solutions are available internationally.

WHAT'S NEW

Philippe Miltin has been appointed Vice-President of Bull's Products and Systems Division

Having started his career in 1988 in sales with Rank Xerox, Philippe Miltin joined Altos in 1990 where he spent three years developing the sales network.

In 1993, he took over responsibility for sales development at Dell Corporation, where he grew the business significantly, particularly in the UNIX servers and PC sectors.

In 1995, Philippe Miltin joined Silicon Graphics where he held a number of roles including Marketing Manager and

Sales Manager. He was appointed as Managing Director of Silicon Graphics France in 1999, and then held the same role for Southern Europe between 2001 and 2004.

Since 2005, he has been Vice-President and Managing Director, EMEA (Europe, Middle East and Africa).



Bull and ESI Group announced partnership to deliver industry solutions

PAM-CRASH, the leading automotive virtual prototyping solution, has been designed and optimized to take advantage of Bull NovaScale's server and cluster architecture

Bull and ESI Group announce a partnership to support ESI Group's industry solutions for crash simulation on Bull NovaScale servers and Bull NovaScale clusters. The second step of this agreement will consist in the deployment of all of ESI Group solutions on Bull NovaScale servers and clusters.

Benefiting from the close cooperation between ESI and Bull technical experts, full scale tests of car to car crashes (a 2 Million element model of a Neon car) have been modeled and simulated on a NovaScale cluster of 128 Intel®



Itanium®2 processors. They show impressive levels of performance and scalability with a reported 89% efficiency on 64 processors and more than 78% efficiency on the full 128, thus enabling critically important overnight restitution times for the highly detailed models that are today required in the automotive industry.

Bull and ESI Group R&D teams also cooperate through projects such as FAME2, one of the key projects for the System@tic competitive cluster (pôle de compétitivité) to further enhance the scalability levels of ESI Group's industry solutions on NovaScale systems, and allow the industrial usage of even more detailed models. Ultimately, this work will allow automobile manufacturers to add more concrete security enhancements in the design of new car models without impacting their time-to-market and financial requirements.

EVENTS

November 7-8, Paris Expo - Porte de Versailles - Hall 5

VoIP Convention

According to the studies carried out by the leading industry analysts such as IDC, Gartner and Forrester, Voice-over-IP (VoIP) and its related convergence applications using the IP protocol represent a rapidly developing market. Such technologies bring together voice, video and data communications in the same infrastructure and incorporate media applications that enhance the way businesses interact with their customers. Destined to respond to the real need for

more information on this subject, the VoIP Convention is set to be an essential event for the networks and telecoms industry. More extensive than a simple exhibition and yet also more concrete than a conference, the VoIP Convention provides a unique platform to explore all aspects of the emerging IP market. It addresses large and small businesses, as well as public services – helping functional, operation and financial managers, to make their strategic choices.

As a major integrator of telecoms solutions for operators and other businesses alike, Bull will be playing an active role in the event alongside our partner Thomson Cirpack, a major supplier of platforms for IP networks. Our experts will be delighted to welcome you on our stand C8 and to tell you more about our infrastructure solutions and IP Centrex services.

November 11-17, Tampa (USA)

SuperComputing 2006

SC06, the premier international conference on high performance computing, networking and storage, will convene in November 2006 in Tampa, Florida. This year the conference will take its inspiration from Albert Einstein who said, *"Computers are incredibly fast, accurate, and stupid; humans are incredibly slow, inaccurate and brilliant; together they are powerful beyond imagination."*

On November 16, Jean-Louis Lahaie, Bull Project Manager for the TERA-10 will give a conference on the implementation of the Number 1 Supercomputer in Europe within the framework of the session "Clusters And Blades", room 13, 3:30-4:00pm. This presentation will cover the various technologies at the heart of TERA-10, the overall architecture of the system, as well as the issues that had to be addressed by the implementation team.



Visit the Bull booth (#1651)!

More information:

<http://sc06.supercomputing.org/>

November 22-23, 2006 – Paris

InfoSecurity Paris

As each year, Bull will be present at **InfoSecurity Paris**, the main security event in France that will take place at CNIT Paris la Défense, from November 22 to 23. Themes of conferences include: E-SSO, intrusion, phishing, encryption, audit, etc.

On its booth (number G14-H13), Bull will demonstrate the software solutions of its

Evidian subsidiary (WiseGuard, identity, access and Single Sign-On management, quality of service management, etc.), its TrustWay encryption solutions (cryptographic USB key/Personal Protection System, VPN appliances, encryption cards, etc.), and present its complete range of IT security services.

