



NovaScale 9000 Power comes as standard



New servers for GCOS 8,
Microsoft® Windows® and
Linux® applications

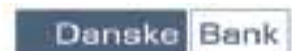
NovaScale 9000: New servers for GCOS 8, Microsoft® Windows® and Linux® applications

First introduced in 2003, the NovaScale family of servers has proved to be extremely successful, in most countries of the world and in every sector of the economy. For technical computing as well as for business - running Oracle or Microsoft SQL Server databases - they regularly rank number one for performance in independent benchmarks.

In GCOS 7 and GCOS 8 environments, as well as in Windows and Linux environments, NovaScale servers are renowned for their power, flexibility and robustness. That is why they have been chosen by many public sector bodies, major enterprises and important research centers: not least the French Atomic Energy Authority, who has selected NovaScale as the basis for one of the world's most powerful computers. Bull's NovaScale 9000 series ensures that GCOS 8 users can continue to guarantee the return on their existing investments, while also getting the full benefit of new technologies in terms of functionality, performance and cost reductions from a range of servers that has already proved highly successful the world over.

**Bull NovaScale 9000 servers
can simultaneously host native
GCOS 8 applications
and others running under
Microsoft® Windows®
and Linux®.
Powerful and robust, they
provide the ideal evolutionary
path for DPS 9000 servers**

Servers from the
NovaScale 9000 range are
used successfully in every
industry sector worldwide



A strategy for the long-term

Bull NovaScale® 9000: the open mainframe

The Bull NovaScale 9000 series of servers is based on Bull's FAME architecture (Flexible Architecture for Multiple Environments) and standard Intel® Itanium® 2 processors.

They have been designed to provide an evolutionary path for DPS 9000 servers, while combining the robustness of GCOS8, the power of Intel® processors and the openness of Linux® and Microsoft® Windows® environments for the long-term.

Running GCOS 8 applications on the most powerful Intel® Itanium® 2 processors

GCOS 8 applications can be run on NovaScale 9000 servers in the same way as on Bull DPS 9000 models, with no need for modifications or recompiling. With Bull NovaScale servers, compatibility is guaranteed, ensuring that GCOS 8 applications can run on different generations of servers.

A program combining Bull's expertise in open systems and mainframes

The new Bull NovaScale 9000 servers have been designed and developed as part of the Helios R&D program.

The Helios program involves hundreds of R&D engineers, primarily in the United States (Phoenix, Arizona) and in France (Paris and Grenoble areas), who have in-depth expertise in mainframe architectures and open systems, working in close collaboration with teams from Intel. Helios builds on the success and experience gained in the development of the NovaScale and Diane programs, leading to standards-based and open servers and technologies that enable native GCOS 8 applications to run on Intel® processors.

With its new NovaScale 9000 series, GCOS 8 customers can now benefit from highly scalable and powerful servers, which make the most of the latest technologies for the years to come.



New NovaScale 9000 servers...

◀ *The robustness of mainframes*

Innovative architecture

Bull NovaScale 9000 server architecture includes:

- Powerful, scalable and robust hardware platform
- Linux® operating system
- GCOS 8 operating system
- V9000 virtual engine, a collection of firmware ensuring GCOS 8 interface with Linux®
- 'Turbo' functionality (GTSP - GCOS 8 Turbo Server Processor) allowing GCOS 8 to run in a native 64-bit mode, delivering a significant power increase
- 64-bit Performance Option Cobol 85 compiler, which allows the writing of native 64-bit applications, again delivering additional power.

This architecture brings to GCOS 8 applications the benefits of highly scalable and powerful servers with a tight integration with Windows® and Linux® environments.

Openness and mainframe-class security

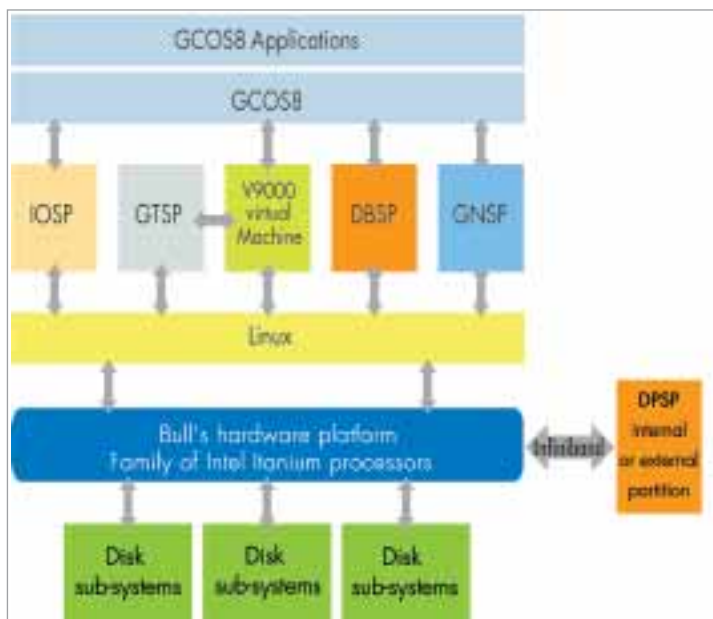
Both GCOS 8 and Linux® run on dedicated processors, providing enormous flexibility of use and guaranteeing optimum performance, while also benefiting from mainframe-class security.

Furthermore, the integration of Linux® operating system within an open multi-processor platform means it benefits from a very high performance I/O architecture and can utilize standard interfaces and peripheral devices.

Thus, the operations running on IOSP (Input/Output Server Processor) and GNSP (GCOS 8 Network Server Processor) are integrated within the NovaScale system, leveraging standard software and hardware components.

The DBSP (Data Base Server Processor) specialized processor is based on an internal or external partition running Linux® Red Hat and communicates with the GCOS 8 via an InfiniBand link.

Bull NovaScale 9000 servers can also be integrated into SAN (storage area network) architecture, because of their fiber-optic links and management tools.



NovaScale 9000 architecture

... innovation at the heart of GCOS 8 environments

◀ The openness of standards

Integrating new technologies and industry standards

In a world of global networks where the number of exchanges continues to multiply, Bull's NovaScale 9000 series offers greater openness and increased flexibility.

The integration of GCOS 8 applications with those from open environments is enabled by rapid memory-to-memory exchange mechanisms, while the InfiniBand link provides fast access to databases such as Oracle and PostgreSQL.

With the Bull NovaScale 9000 series, interoperability takes on a new dimension, enabling GCOS 8 servers to be integrated rapidly in new infrastructures, including application servers, J2EE, Internet, Intranet, Web services and more.

Service-Oriented Infrastructure

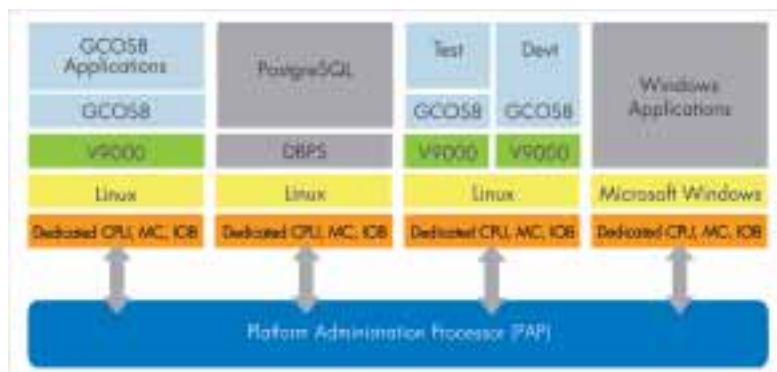
Thanks to its physical partitioning, NovaScale 9000 allows the implementation of a Service-Oriented Infrastructure, where applications and services of the GCOS, Linux and Windows environments will be executed. The 'watertight' sealing of partitions guarantees continuity of service, even in the event of a problem. The interoperability provided in particular by the GCOS 8 'Universal Interface' allows requesting and executing of services with GCOS as client or server. These requests can be carried out using Web Service interfaces, http or other standard protocols. This extensive opening of GCOS allows a complete integration of GCOS into the information system.

Scalable power

The Bull NovaScale 9000 hardware platform is based on FAME architecture which has been designed to support a very large number of processors. With its new NovaScale 9000 solutions, GCOS 8 customers can now benefit from highly scalable and powerful servers, thus making the most of the latest technologies for years to come.

The various stages in the Helios program and the associated implementations of FAME architecture will enable development of increasingly powerful servers based on the very latest Intel® processors, offering performance and price levels tailored to the needs of GCOS 8 users.

Bull NovaScale 9000 servers will offer GCOS 8 customers new power levels that will increase practically without limit for a long period of time.



NovaScale 9000 with 5 partitions

- 3 GCOS 8 partitions (production, test and development)
- 1 DBSP (PostgreSQL) partition
- 1 Windows® partition (Windows® applications).



Costs under control

Bull's NovaScale 9000 series ensures that GCOS 8 users can continue to guarantee the return on their existing investments, while also getting the full benefit of new technologies in terms of functionality, performance and cost reductions.

Rapid, seamless upgrading, with costs under control

With NovaScale 9000 servers, GCOS 8 users can benefit from a rapid, flexible and seamless upgrade, with no additional costs involved.

- Applications running on the GCOS 8 SR5.2 version of the Bull DPS 9000 systems will continue to run on the new servers without needing to be recompiled, as binary compatibility is guaranteed
- The interfaces on the GCOS 8 system console and associated software remain unchanged, so no special training is required.
- Access to telecommunications networks and existing workstations also remains unchanged.
- In addition, some peripherals connected to the Bull DPS 9000 systems may be reconnected to the new platforms.

So users will continue to benefit from everything that makes GCOS 8 a secure, reliable, high-performance production environment, with powerful automatic operating and recovery functions.

GCOS Competence Centers available for user support

GCOS 8 users will also appreciate the breadth and quality of services which Bull offers to help them integrate these new technologies rapidly and successfully.

When it comes to defining infrastructures, Bull can draw on all its expertise and added value as a manufacturer, and can guarantee total operational continuity throughout upgrade projects.

Bull's customers benefit from its mainframe experience and its expertise in open systems, ensuring that costs and timescales are strictly controlled.

With the help of experts from the Bull's GCOS Competence Centers, GCOS 8 users can upgrade their information systems at their own pace, in total security.

Ambitious R&D program

The NovaScale 9000 series demonstrates Bull's desire to ensure that GCOS 8 applications benefit from the most up-to-date technologies, whilst also offering them complete integration with the world of industry standards.

The various stages of the Helios program and the developments based on FAME architecture will enable Bull to offer increasingly powerful servers, based on the latest Intel® processors, and offering price/performance levels to meet the demands of GCOS 8 users.

10 good reasons to upgrade to NovaScale 9000

1 > The most cost-effective solution

Upgrade your GCOS 8 infrastructure at minimal cost: GCOS 8 applications run on NovaScale 9000 servers without having to be recompiled, so there is no need for development or rewriting.

2 > The most secure solution

In contrast to a migration to a non-compatible platform - with no guarantee of results and uncertainty about the actual benefits - upgrading to NovaScale 9000 is a risk-free option: GCOS 8 applications run on NovaScale 9000 servers without having to make any modifications.

3 > The fastest solution

NovaScale 9000 servers are 100% compatible, enabling your GCOS 8 applications to be ported extremely rapidly to the new generation of open servers.

4 > Openness to industry-standard software and hardware solutions

Benefit from rapid access to native Windows applications or Linux standard solutions (Red Hat, Novell Suse...); make the most of high-performance data storage solutions by introducing the latest devices from the open systems world.

5 > Durability and cost reduction

Reduce your infrastructure costs by using NovaScale 9000 servers based on Intel processors, open software, industry-standard components... while at the same time ensuring that you have an infrastructure that will grow with your needs.

6 > Physical partitioning, enabling server consolidation and infrastructure simplification

Reduce the number of your servers by hosting GCOS, Windows® and Linux® applications on a single NovaScale 9000 server using 'watertight' physical partitioning, in the best possible operating and security conditions; get all the benefits of NovaScale Master, a high-performance solution for your systems administration.

7 > Mainframe-class robustness

NovaScale 9000 servers retain all the inherent robustness of GCOS 8 mainframes, so your applications can run in total security.

8 > All the power of NovaScale servers based on Intel® Itanium® 2 processors

The NovaScale family of servers is among the most powerful in the world: delivering record-breaking performances with SQL Server, Oracle, SAP and world-beating performance in scientific computing: you can be sure you've made the right decision.

9 > Well-established Competence centers, bringing together mainframe expertise and experience of the open systems world

Upgrade your GCOS 8 applications in total security, and reduce your costs by capitalizing on the resources available at Bull's Competence centers.

10 > NovaScale: a family of servers that has already proved itself in every major sector of the economy worldwide

In major research centers - like the French Atomic Energy Authority, which has chosen NovaScale as the basis for one of the world's biggest supercomputers - in the public sector and in the commercial and industrial world, in France, Germany, the Czech Republic, Taiwan, Brazil, Argentina, the USA, Italy and many other countries, NovaScale servers are at the heart of information systems infrastructures.



NovaScale 9000

Power comes as standard

New servers for GCOS 8, Microsoft®
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