



## Making your information system simple again

In a market driven by a central promise: to regain control over the proliferation of servers; bullion<sup>(R)</sup>, a Bull designed system, goes a step further in virtualizing business critical applications. Based on a modular architecture, and natively embedding the VMware ESXi virtualization hypervisor, bullion is the answer to enabling IT departments to consolidate Xeon-based business applications while providing reliability and simplicity.

### Specifically designed for the virtualization of critical applications

bullion is the reliable solution that IT departments have been waiting for to consolidate their business critical applications. Fruit of the largest reservoir of expertise in Europe for the design, development and implementation of business critical systems, bullion possesses all the attributes required by these types of systems: hardware failure isolation with no impact on production, firmware upgrades on the fly, and a maintenance processor for remote control. Its modular architecture of up to four building blocks of 3U each, together with native virtualization, provides optimum flexibility. Moreover, its magnitude of system resources is unequalled for scalable infrastructure deployment, especially for Windows business applications. True expandability and scalability become reality.

### Unsurpassed Quality of Service even while improving the TCO

For a typical infrastructure, the deployment of bullion systems divide, on average, the number of managed objects by a factor of 10. Added to this is another key function: the dynamic allocation of resources. This approach provides a major financial benefit by optimizing the number of software licenses. At the operations level, Quality of Service is also improved through integrated management and simplified high availability architecture.

In addition, the stability and coherence of the modular bullion architecture, from 4 to 16 sockets, allows a "pay as you grow" type of approach, with a view towards drastic reduction of acquisition and ownership costs.

### A new equation for optimum energy efficiency

bullion improves energy efficiency up to 40%, thanks to its native virtualization hypervisor providing: consolidation without the "threshold effect" of n to n VM systems; the reduction in power consumption of n systems through moving them to bullion; and the rapid start-up and inactivation of the VM. This system has many green components developed by Bull engineers, such as the Bull patented active/passive power solution. Wherever possible, low power consumption components have been chosen, the power supplies with 99% efficiency being but one example. Finally, Bull System Manager, the Bull developed management and monitoring system, reduces the power consumption as a function of load (CPU, fans, memory) and inactivates idle resources. With this set of features, bullion has the best performance per watt versus comparable competitive systems.

### A complete catalog of dedicated services

Bull has put in place a full catalog of services for bullion, to ensure the maximum Quality of Service for this type of high-end server. These services cover implementation, deployment, maintenance and support, as well as consulting services for virtualization, high availability, performance management and architecture optimization. All these services benefit from Bull's expertise in mission critical servers.



# bullion<sup>(R)</sup> technical specifications

## DESIGN

Form factor	19" 3U per "building block" • Max 4 building blocks per system
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## PROCESSORS

Number of processors	2-16 sockets, max 160x cores.
Type	Intel® Xeon® series E7-4800, supports 6, 8 or 10 cores
L2 cache	up to 30MB of Shared Cache
CPU/QPI RAS	<ul style="list-style-type: none"> <li>• QPI Self-Healing</li> <li>• QPI on/off-lining</li> <li>• Cores Ex-/Included</li> <li>• Processor sockets Ex-/Included</li> </ul>

## ARCHITECTURE

Chipset	Intel® E7 Series Chipset <ul style="list-style-type: none"> <li>• Bull Coherence Switch (BCS) for extension from 2 to 16x sockets</li> <li>• BCS uses X-QPI protocol between BCS modules</li> <li>• Intel QPI protocol between CPU sockets</li> </ul>
Quick Path Interconnect	max Quick Path Interconnect at 6.4GT/s. Max BCS speed at 8GT/s

## MEMORY

Min/Max	min: 64GB, max: 4TB (with 16GB DIMM's) in max configuration
Type	DDR3-1066MHz, DIMM 256x slots (max)
Memory slots (number, type)	128x slots in max configuration 64xslots per building block
Memory RAS	<ul style="list-style-type: none"> <li>• Memory controller sparing</li> <li>• DIMM sparing</li> <li>• Memory rank sparing</li> <li>• Memory mirroring</li> <li>• Memory on-lining</li> <li>• FBD Lane Failover (self-healing)</li> <li>• Demand and Patrol scrubbing</li> <li>• DIMM Hot Plug</li> <li>• DIMMs can be ex-/included</li> </ul>

## I/O SLOTS

Bus slots	<ul style="list-style-type: none"> <li>• 4x PCIe gen2 x16 and 20x PCIeGen2 x8, in max configuration</li> <li>• 1x PCIe gen2 x16 and 5x PCIe Gen2 x8, per module</li> </ul>
Bus slots free	6x
IO RAS	<ul style="list-style-type: none"> <li>• 8x hot plug PCIe slots in max configuration, 2x per module</li> <li>• PCIe hot plug slots can be Excluded/Included</li> </ul>

## STORAGE DEVICES

2.5" HDD SAS 10Krpm	146GB, 300GB
2.5" HDD SAS 15Krpm	73GB, 146GB
Maximum Internal Storage capacity	9.6TB in max configuration, 2.4TB per module (8x 300GB)
Storage Expansion Unit	EMC, Netapp SAN connected storage support

## STORAGE CONTROLLERS

PCI board controller - SAS/SATA RAID	In Option: SAS RAID 0,1,5,10, 512MB cache & BBU
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## MEDIA

2.5" Hot swap HDD (SAS)/SATA	Up to 8 hard disk drives SATA & 6 SAS per module
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## VIDEO

Video controller	Through iBMC
Video memory	8MB

## NETWORK

Network interface controller	Optional NIC
Number of Network Ports	8x dual ports, 16x ports in a max configuration, 4x ports per building block)

## SECURITY

2-level password	Yes
Front door / Intrusion protection	Yes
Trusted Platform Module	Yes

## I/O PORTS

USB ports	2
PS/2 port (mouse/ keyboard)	through USB or iBMC
Ethernet port	1x Ethernet port for system management, with -remote KVM over IP, -remote redirect CD/DVD over IP -control over system at any state.

## POWER SUPPLY

Hot-Plug PSU	1+1 standard
Power supply numbers	2, redundant optional passive/active power-supply solution with ultra-capacitor
Power type	80+ Platinum up to 96% efficient
Power consumption	1600watt w/PFC
Auto-sensing	110/220V 60/50Hz

## VENTILATION

Fan specifications	8 x Hot plug redundant fans in standard per building block
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## PHYSICAL SPECIFICATIONS

Size (HxWxD)	520 (12U) x 40mm (19" wide for 750mm deep max configuration
Weight	400lbs for max configuration (100lbs per module)
Operating constraints	59°F to 86°F, gradient 27°F/h, 35% to 60%, gradient 5%/h

## OS AND SOFTWARE

Management software	Bull System Manager and iCare maintenance software
Supported OS	VMware ESXi, RedHat, Microsoft

## SYSTEM MANAGEMENT

BMC	IPMI 2.0
Remote Management	standard through on-board iBMC

## WARRANTY & SERVICES

Standard warranty	3 year next business day
Warranty (Gold Service)	24/7 four hour response

Partner Provided Services	<ul style="list-style-type: none"> <li>• Installation</li> <li>• Server consolidation, HA &amp; DRS services, SAN Integration Services</li> <li>• HA, Performance &amp; capacity mgt;</li> <li>• Integration services</li> </ul>
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## REGULATORY & SAFETY

Regulatory compliance	CE (FCC, UL)
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