

# HP ProLiant G7 Servers: HP ProLiant Servers Drive Efficiencies in the Data Center



Over the years, the price performance of four-processor servers and server blades has been a sticking point for many enterprise IT executives looking to shift certain applications and workloads to higher-end systems.

The problem was this: While a 4P server would give them twice as much performance as a 2P server, they couldn't justify its premium price tag. Proportionately, the 4P price went up faster than performance.

The issue stemmed from historical pricing models that placed higher dollar values on processors destined for 4P servers. Because the 4P-capable processors carried higher price tags, 4P servers were costlier to build than their 2P counterparts. And those higher costs, of course, manifested themselves in premium pricing on 4P servers.

But for HP, that pricing story is history.

HP delivers high-performance 4P servers at a 2P value. This stems from its decision to build its latest ProLiant G7 servers using the groundbreaking New AMD Opteron™ 6200 Series processors.





HP ProLiant DL585 G7 Server

AMD broke away from the historical “4P tax” when it delivered its AMD Opteron™ 6000 Series platform in March 2010. In November 2011 AMD introduced a new server platform that features the world’s first 16-core x86 processors for high-volume 2P and value 4P servers. In other words, AMD no longer distinguishes its platform pricing based on the number of processors in the destination server. (Previously, AMD supported 2P and 4P servers with distinct processors, the AMD Opteron 2000 Series and 8000 Series, respectively.)

AMD has redefined server value by eliminating the tax associated with socket-based processor pricing models of the past. With prices consistent across both 2P and 4P processors, AMD’s new roadmap allows customers to choose the right server, based on their application/workload needs.

“Now as you move from 2P to 4P servers, your price-performance scales in a linear fashion instead of taking a big hit on 4P systems,” says John Fruehe, Director of Server and Embedded Product Marketing at AMD. “What this does is give IT managers a lot of headroom and flexibility in how they deploy servers. They now have the ability to right-size their applications. They no longer have to say, ‘I really need this

4P server but my budget only allows for that 2P one.’”

The AMD Opteron 6000 Series platform addresses enterprise IT’s need to deliver workload-specific performance, power efficiency and overall value. It does so by delivering more cores and more memory for less money. Let’s look at some of the highlights of this new AMD processor platform.

### Inside the AMD Opteron™ Processors

For enterprise IT managers, perhaps the most noteworthy highlight of the AMD Opteron™ 6000 Series platform is its heavy-duty processing capacity. When loaded with a 16-core AMD Opteron™ 6200 Series processor, for example, 4P HP ProLiant DL585 G7 server offers up to 64 physical processing cores. That sort of processing power gives enterprises the ability to handle today’s increasingly scalable and virtualized server workloads with ease, Fruehe says.

In fact, he adds, enterprises over the past year have been disproportionately favoring the 12-core processor over the eight-core version. “Customers want more cores. They can take advantage of more cores and, given the choice, they would prefer more cores over fewer cores. So we’re giving customers a greater number of cores inside the pro-

cessor because today’s workloads really demand that. And with the new 16-core models we expect that to continue.”

Secondly, the AMD Opteron™ 6000 Series platform features massive memory bandwidth. It uses an enhanced integrated memory controller that supports four channels of DDR3 memory for up to 39% improvement in overall memory bandwidth over AMD’s 12-core processor.

“Not having enough memory happens to be one of the biggest reasons servers can get bottlenecked. So having enough memory and a wide path, or a large number of channels for accessing that memory will help drive the best memory efficiency,” Fruehe says.

Additionally, AMD has integrated its AMD-P suite of power management features into the AMD Opteron 6000 Series. The AMD-P technologies dynamically enable reduced power usage of the overall processor, individual cores and the logic within each core, depending on application needs and server workloads.

“In other words, the processors can deliver great performance without breaking the power bank,” Fruehe says. “For example, our new 16-core processors draw the same power as 2009-era six-core processors. We’re wringing extra performance and more cores out of the same power and thermal envelope.”

These power-management features are particularly beneficial for enterprises using blade servers such as the HP ProLiant BL685c G7, Fruehe says. “Server blades take advantage of very high-performance processors but do so with very low power consumption, which is important in tight environments.”

Undoubtedly, with the AMD Opteron™ 6000 Series, “AMD is bringing a lot of goodness to the table,” says Stephanie

**“They [HP ProLiant BL685c G7] let server blades take advantage of very high-performance processors but do so with very low power consumption, which is important in tight environments.”**

— John Fruehe, Director of Server and Embedded Product Marketing, AMD

Whalen, Worldwide 500 Series Product Marketing Manager at HP. And, naturally, HP has used the AMD Opteron 6200 Series processor, the first processor for the 6000 Series platform, to create some goodness of its own.

### HP's 4P G7 Servers

HP's latest-generation servers, the 4P HP ProLiant DL585 G7 server and ProLiant BL685c G7 server blade, boost unprecedented levels of processing power and memory while enabling extreme flexibility and management ease without blowing the IT budget. They make the perfect foundation for many of enterprise IT's most pressing projects, including server consolidation, server virtualization, database transactions, multi-tiered enterprise applications and corporate infrastructure applications.

#### The HP ProLiant DL585 G7 Server

The HP ProLiant DL585 G7 server, a four-processor, multicore, rack-mount server, delivers better performance than competitive and predecessor models — at an affordable price.

For example, the DL585 G7 server offers unprecedented processing power in a 4P server. Using the AMD Opteron™ 6200 Series processors with up to 16 cores per CPU, the server can deliver up to 64 cores. “This resonates with customers who are really core-driven — the more cores, the better,” Whalen says.

In the DL585 G7 server, these cores are

matched with AMD's next-generation Direct Connect Architecture 2.0, which provides four memory channels per CPU and HyperTransport 3.0 technology to deliver up to double the performance for core and virtualization, database and other memory-intensive workloads.

The DL585 G7 server features up to 48 DIMMs, providing up to 1TB of DDR3 expandable memory.

In addition, the server features 11 PCIe 2.0 expansion slots — full length, full height, Whalen says — providing more I/O and network bandwidth than competitive models. “This is like a candy store for enterprise IT administrators, if you will. They can plug anything they want to into this box,” she adds.

On top of all these robust features, HP also provides industry-leading server management software that helps deploy servers quickly, proactively manages the health of virtual and physical servers, improves power consumption and takes remote control of the server.

For example, Whalen points to HP Integrated Lights Out-3 (iLO-3) technology, a standard component of the DL585 G7 server that facilitates server health and remote server manageability.

#### The HP ProLiant BL685c G7 Server Blade

Like the DL585 G7 server, the HP ProLiant BL685c G7 server blade takes advantage of the 16-core

AMD Opteron™ 6200 Series processors to deliver the best performance opportunities for virtualization and compute-intensive database workloads.

This 4P full-height blade, part of the HP BladeSystem portfolio, is the first blade to use four of the new AMD Opteron™ processors per blade, says Andrew Hawthorn, HP Product Line Manager. As such, the BL685c G7 provides unprecedented density on a 4P blade.

The BL685c G7 server features a large memory footprint, with up to 32 DIMMs for 1TB of memory, as well as four 10 Gigabit Ethernet ports with converged network support. For the latter, HP has embedded its new Virtual Connect FlexFabric converged networking technology in the BL685c G7, Hawthorn says.

The server delivers improved performance and cost savings of converged network connectivity via two HP NC551i Dual-Port FlexFabric 10Gb Ethernet converged network adapters. With FlexFabric support, the BL685c will be able to help enterprise IT sustain sufficient bandwidth for network-intensive applications, optimize network and storage traffic with hardware acceleration and stateless TCP/IP offload, TCP offload engine, Fibre Channel over Ethernet and iSCSI protocols, plus reduce infrastructure costs and simplify management by converging data and storage traffic over the same flexible 10Gb Ethernet connection.

“The key benefits are lower power draw, fewer parts to purchase and manage,

**“This [DL585 G7 64-slot server] is like a candy store for enterprise IT administrators, if you will. They can plug anything they want to in this box.”**

— Stephanie Whalen, Worldwide 500 Series Product Marketing Manager, HP

the ability to converge data and storage within the server, and lots of connectivity,” Hawthorn says.

### Delivering Business Value

Enterprise servers today are destined for increasingly virtualized, compute-intensive and transaction-heavy environments. IT sprawl has become rampant, with legacy servers not up to the task required of current-generation workloads. Until the introduction of the value 4P in 2010, AMD Opteron™ processor-based HP ProLiant DL585 and BL685c servers, processing power, memory capacity, I/O slots and management flexibility have lagged behind workload requirements.

But with these latest-generation HP servers, enterprise IT managers can support workloads that demand more processor cores, larger memory footprints and greater I/O bandwidth — without requiring special spending approvals. In fact, enterprises can realize a return on their 4P DL585 and BL685c G7 server investments, which deliver three times the performance for demanding workloads, in as little as 30 days.

For example, enterprise IT managers who embrace the AMD Opteron™ 6200

Series processor-based value 4P G7 servers have immense opportunities to consolidate workloads. This, in turn, not only reduces hardware procurement and power costs but also enables greater virtualization, Whalen adds. In internal configurations, for example, HP has been able to consolidate 91 legacy ProLiant DL360 G4 servers to a single DL585 G7 server or BL685c server blade, she says.

“We’re able to tell customers, ‘Look, not only can you consolidate up to 91 servers into one, but with that one server you can support a huge number of virtual machines,’” Whalen says.

Fewer more powerful servers also deliver a great business value in scale-out database scenarios, adds AMD’s Fruehe. Being able to divide large databases across the CPU-, memory- and I/O-intensive DL585 or BL685c G7 servers will enable Web organizations, for example, to finesse situations where hundreds or even thousands of users are accessing the same data simultaneously, he said.

Value 4P servers even give organizations that have high-performance computing requirements a chance to use cost-friendly AMD Opteron™ processor-

based G7 servers versus more expensive MP systems, Fruehe says. These are the organizations running workloads such as crash-test simulations, nuclear-weapons modeling or deep financial analysis — applications that require a mainframe system, hundreds, or thousands of servers working in a cluster.

In a nutshell, “customers are able to get more performance, additional features and additional memory footprint, which drives more virtual machines, faster applications and bigger databases. And this they do while capital costs are significantly reduced,” Hawthorn says.

No doubt, as enterprises look to get more out of their IT infrastructures, investing in HP’s value 4P ProLiant DL585 and BL685c G7 servers will enable them to continue virtualizing their environments while running ever larger databases and faster applications. In other words, this new generation of servers affords IT the ability to meet business demands and deliver business value with newfound flexibility and scalability.

Make no mistake, the HP ProLiant DL585 and ProLiant BL685c G7 servers, complete with the new AMD Opteron™ 6200 Series processors, provide the only no-compromise option today. ■

