Cover Head: **Reduce TCO and Boost Performance with HP Carrier-Grade Servers**

Head: **Open Standards Are the Key**

Text:

To succeed in today's challenging marketplace, service and equipment providers are looking for ways to reduce costs—both their own hardware and software development costs and the cost of the products they offer their customers. That means moving away from proprietary platforms, which are expensive to build and support, and towards cost-effective, flexible, standards-based platforms. Such platforms can easily integrate with other standards-based elements in their networks, be quickly reconfigured to meet new needs, and be readily upgraded as technology advances. With this approach, service and equipment providers can move away from platform development and focus their efforts on creating differentiated products and services that bring them new business—while also helping their customers generate new revenue streams.

HP's carrier-grade servers, based on Intel architecture (IA) and the Linux operating system, are designed to meet the needs of the telecommunications industry. Powered by either 32-bit IA processors or the new 64-bit Intel Itanium processor, these servers offer the high performance and reliability that telecom customers need, together with a low TCO (total cost of ownership).

The Linux operating system further strengthens the platform. Enhanced by HP with carrier-grade features, it offers increased robustness—and since it has no up-front purchase cost, it further lowers TCO. In addition, a thriving worldwide community of thousands of open source developers is available to further enhance the operating system's functionality and performance.

HP's telecom offerings also encompass a broad range of other products, from middleware to a suite of OpenCall-based software. With its extensive telecommunications expertise, strong consulting and integration services, and worldwide 24 x 7 service and support, HP can supply service and equipment providers with everything they need to successfully roll out next-generation telecom services.

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Head: **Why HP for Carrier-Grade Servers?**

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HP is the ideal choice for carrier-grade servers for many reasons:

- **Platform based on open standards.** Open-standards platforms enable service and equipment providers to rapidly design, develop, and deploy new solutions for demanding central-office environments, taking their products to market—and to revenue—in much less time than is possible with proprietary systems. For network operators, open-standards platforms reduce maintenance costs, simplify the task of integrating the servers with other network elements, and provide the flexibility to reconfigure the servers as needs change. They also protect IT investments by making it easier to upgrade as new technology is introduced.

- **Breadth of product offerings.** HP offers servers to meet a wide range of operator requirements at a variety of price points. Carrier-grade servers range from entry-level IA-32 servers to high-end servers based on IA-64 or RISC technology. All are NEBS (Network Equipment Building System) certified, and servers are available in both rack-mount and blade form factors. For less demanding applications, HP also offers commercial-grade servers at a lower price point.

- **Life-cycle management.** HP protects its customers' investment by providing platform stability. The company guarantees that there will be no major platform changes for three years and that it will support the servers for an additional five years. With these guarantees, service and equipment providers have the confidence of knowing that the servers they purchase today can remain in service for many years to come.

- **Migration path.** HP provides a smooth migration path from its HP-UX-based legacy products to the new Linux-based systems. This approach enables customers to take advantage of newer technology as it is introduced without losing their investment in older systems.

- **New Linux features to meet telecom needs.** Linux is the fastest-growing operating system in the world—but the mainstream version lacks certain features necessary for demanding central-office applications. To bridge this gap, HP worked with service and equipment providers to learn which additional features they needed and then wrote enhancements that meet these needs, hardening the platform and ensuring a higher level of stability. HP has made these enhancements available to the open-source community so that eventually they can become part of mainstream Linux.

- **Extensive Linux experience.** As a founding member of OSDL (Open Source Development Labs—the central body dedicated to accelerating the use of Linux for enterprise computing), HP has played a key role in the growth of Linux as a mainstream operating system. HP's Linux experience also includes serving as:

    - Charter member of Linux International

- Co-chair of the Linux globalization project
- Founding sponsor of the Free Standards Organization
- Leader in driving the Linux Standards Base (LSB)—a movement to set standards for Linux so that common software applications will be able to run on all LSB-compliant distributions
- Active member of the Free Software Foundation, Free Standards Group, Open Source Software Institute, and Service Availability Forum
- Founding member of the carrier-grade Linux project

In addition, according to Gartner. HP is the world leader in Linux server shipments, whether measured in units or revenue. From 2003 to 2004, the company's Linux server units shipped have grown by 42 percent year-over-year, and its Linux revenues have grown by 52 percent.

- **In-depth telecommunications expertise.** With an involvement in the telecommunications business that spans more than 25 years, HP has a deeper understanding of telecom infrastructure requirements than any other vendor. Having participated in the development of both first- and second-generation telecom equipment, HP today is leading the development of the third-generation equipment that operators are just starting to deploy. More than 200 communications companies, including the largest 50 in the world, now depend on HP hardware and software. Customers include not only top equipment manufacturers and value-added resellers, but also systems integrators, wholesale/service bureau operators, service providers, cable operators, and Internet service providers. In addition, HP is the world leader in SS7 stack software, where it has a 45 percent market share; in SMS (Short Message System) processing, where its OpenCall systems process 70 percent of the world's of SMS traffic; and in billing systems, where it offers the highest-performing billing engine available today (319,000 invoices per hour).

- **Complete telecommunications solution.** HP offers the most extensive suite of telecommunications technologies available today. In addition to commercial and carrier-grade servers, HP provides communications middleware, OpenCall signaling software, integration services, consulting, and worldwide, 24 x 7 service and support. In short, it serves as a one-stop shopping source for all the information technology needs of service and equipment providers, enabling them to focus on developing new, value-added services for their customers.

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Head: **Carrier-Grade Servers Designed to Meet Demanding Central-Office Requirements**

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For central office operations, telecom companies need robust, carrier-grade servers. Not only are such servers hardened against disasters such as fire and earthquake, but they also have a smaller footprint, than commercial-grade servers, require less maintenance, and run on a highly stable operating system—features that make them attractive choices for critical enterprise applications as well as central-office operations.

HP's carrier-grade servers are an extension of the company's world-class, market-leading server family. Certified at Bellcore NEBS Level 3, these servers:

- Are based on industry-standard IA-32 and IA-64 technology, resulting in reduced time to market for new solutions, a more flexible infrastructure, and lower operating and support costs
- Run carrier-grade Linux, featuring kernel-hardening enhancements that HP developed in conjunction with the open source community
- Run on both AC and DC power, enabling them to be used by a wider range of telecom facilities
- Offer enhanced reliability, with high mean time between failures (for example, the HP cx2600 has 99.9999 percent uptime) and N+1 components, providing redundancy in the event of a problem
- Are easy to service, with field-replaceable units that can quickly be removed and replaced—and cables that do not obstruct access
- Can scale quickly and cost-effectively as a company's needs grow
- Provide investment protection through extended product life and a smooth migration path as technology advances

In addition to offering the robustness and high availability required for central office operations and mission-critical enterprise applications, HP's carrier-grade servers also deliver twice the performance of comparable proprietary systems—at about half the price.

Another key benefit of HP's carrier-grade servers is life-cycle management. HP manages the component vendors to ensure that components will be available for at least three years and also guarantees that it will support the servers for another five years. Consequently, service and equipment providers can be assured that their investment in HP carrier-grade servers will be protected for many years to come.

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Head: **Rack-Mount and Blade Form Factors**

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HP's carrier-grade servers are available in two form factors: the traditional rack-mount server, a high-density form factor designed to fit telecom racks; and the new blade server, which has an even smaller footprint. Rack-mount servers are ideal for situations requiring more server power and less I/O—and where space requirements are not as limited. Blade servers are the best choice for situations requiring more I/O and less server power, or those requiring a particularly small footprint. For example, operators are beginning to choose blade servers for IP networking in data centers. With a variety of HP rack-mount servers available now and blade servers soon to follow, service and equipment providers will easily be able to find a server that meets their specific needs.

Rack-mount servers. The two latest additions to HP's family of rack-mount carrier-grade servers are:

- **cc3310**. Based on IA-32 architecture, the cc3310 is designed to meet the specific needs of service and equipment providers and independent software vendors that supply fixed and mobile operators. It offers strong I/O, memory, and performance expandability and excellent price/performance. In fact, the Tolly Group has found that the cc3310 delivers the industry's best 2U carrier-grade performance, at a lower cost than competitive servers.

- **cx2600**. The HP Integrity cx2600 server is the first Itanium-based server specifically designed to meet the intense demands of the telecommunications industry. Based on HP's performance-benchmark-leading rx2600, it meets the strict durability and reliability requirements of central-office computing while delivering the highest levels of performance in the industry.[1]

Both the cc3310 and the cx2600 are designed to be used in telecommunications central offices and data centers and are ideally suited for network elements such as media gateways, signaling gateways, media severs, and softswitches. Their flexible architecture makes them optimal platforms for both existing and next-generation services.

Blade servers. Blade servers are the next logical evolution of scale-out computing and are emerging as the telecommunications architecture of the future. Highly flexible, blade servers are capable of being easily repurposed to support any application and any workload at any time. In addition, they are cost effective, reducing both acquisition and operational costs.

For example, installing, provisioning, and repurposing rack-mount servers typically requires four hours per server. The same tasks with blade servers require only 10 to 30 minutes per blade—an 85 to 95 percent reduction in time. Similarly, rack-mount servers typically require a 15-to-1 ratio of devices to administrator, while blades can be administered with a 30-to-1 ratio or higher. Since up to 75 percent of IT costs are personnel or services costs—with hardware, software, and infrastructure accounting

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[1] See http://www.hp.com/products1/servers/integrity/entry_level/rx2600/performance.html for benchmark numbers.

for only 25 percent of the budget—these operational savings can make a significant difference.

HP's carrier-grade blade servers are currently under development, with evaluation units expected to be available in the first half of 2005 and production units in the first half of 2006.. These blade servers comply with the **Advanced Telecom Computing Architecture** (AdvancedTCA), a set of specifications developed by a consortium of more than 100 telecommunications companies. The AdvancedTCA specifications incorporate the latest trends in high-speed interconnect technologies, next-generation processors, and improved reliability, manageability, and service-ability, providing an ideal platform for launching next-generation services.

Built on the IA-32 and IA-64 hardware platforms, HP blade servers are designed and optimized for business change. They will be available in 6U and 13U form factors; will be capable of instant provisioning; and will be able to deliver utility-like service, significantly reducing the time required to develop new solutions. As a result, they will enable service and equipment providers to focus more of their resources on innovation.

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Head: **The HP Advantage**

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Communications solutions are highly complex, and service and equipment providers must deliver ever more innovative services while keeping customers loyal and insulated from the complexities behind the services. In order to achieve these goals, service and equipment providers need strategic partners who can provide a wide variety of services.

HP offers a range of targeted, seamless products, solutions, and services that can be delivered quickly and efficiently. HP systems are open and flexible, empowering customers to customize or create value-added services. Our service capabilities provide the expertise to develop, integrate, test, install, and support the most complex service launches. This one-stop shopping approach lets service and equipment providers concentrate on their customers—not their suppliers.

HP has focused its more than 25 years of telecommunications expertise into a powerful integrated team, the Network Service Provider Business Unit (NSPBU). The NSPBU, along with 500 valued solutions partners, assists the world's top 200 service and equipment providers and meets the voice and data needs of hundreds of millions of wireless and wireline subscribers.

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