



**New 64-bit servers help
service providers boost
on demand performance**

The opportunities offered by combining 64-bit servers and Carrier Grade Linux® could not have come at a better time for telecommunications companies looking to gain both the power and the platform with which to:

- Streamline business operations... and respond to new challenges and opportunities on demand
- Align business processes with information technology...and gain from higher operational efficiencies
- Increase customer satisfaction... and improve efficiency and customer retention
- Identify, understand and market to high-value customers...and help create new revenue streams

Contents

- 3 Introduction**
- 4 Advancing open standards in telecommunications**
- 5 Telecoms in the on demand era**
- 7 Adding the IBM edge to 64-bit computing**
- 9 Powerful choices in IBM 64-bit @server® systems**
- 11 For more information**

Introduction

As telecommunications service providers (SPs) look for new ways to both reduce costs and build revenues, many are turning to IBM for help in leveraging the numerous strengths of Linux®-based operating systems, including Carrier Grade Linux.

Simultaneously, many are looking to put 64-bit server power behind their move toward Next Generation networks. For these companies, as well as many thousands of other highly demanding users around the world, combining Linux with 64-bit servers is seen as the route to doing far more with far less – less money, less complexity and less time to market.

Because Linux is based on open standards, it offers a wealth of advantages in terms of cost, flexibility, deployment and, ultimately, return on investment. In addition to being a destination for UNIX® back-end applications, Linux can also support the consolidation of a full range of mission-critical telecom applications onto a common, open platform – freeing telecoms from the constraints and complexities imposed upon them by proprietary operating systems.

Now, with the advent of powerful new, Linux-ready 64-bit servers, consolidating telecommunications infrastructure elements with Linux has become an even more compelling strategy. IBM offers SPs a uniquely versatile range of Linux-optimized, 64-bit servers that reflect IBM's decades of work with telecommunications clients, leadership in developing next-generation network standards and protocols, and IBM's long-recognized stature in advancing server technology. With IBM, telecoms gain the flexibility to choose among a variety of server and processor configurations in their pursuit of lower costs, faster service deployments and increased customer revenues and loyalty.

IBM has been a long-term supporter of open standards... including Linux.

Advancing open standards in telecommunications

Companies around the world are moving to Linux and the open source, open standards paradigm at unprecedented speed. IBM has long been a leader in supporting open source technology and, in particular, Linux. To date, IBM has invested more than US\$1 billion in hundreds of Linux-based products and services. The IBM Linux Technology Center alone employs 600 people working in 43 locations worldwide.

IBM was also a founder of the Open Source Development Laboratory (OSDL), and a direct participant in the evolution of many Linux enhancements, including Carrier Grade Linux. And IBM teamed up with telecoms, network equipment providers and other key industry players to deliver the Carrier Grade Open Framework (CGOF) – a strategic platform designed to serve as a structure for the end-to-end integration of open, Next Generation telecommunications and enterprise solutions.

A brief review of the advantages that Linux offers SPs will help explain why so many companies in the telecommunications industry, as well as leading industry suppliers such as IBM, are showing so much interest in this revolutionary operating system:

- *Total cost of ownership (TCO):* As open source software, Linux enables users to profit from lower licensing costs, as well as the availability of applications from a broader range of developers whose pricing also reflects the inherent benefits of open-source software. And by simplifying the consolidation of applications and servers, Linux helps reduce the demands on data center staffs, space, cabling, utility budgets, maintenance and security. With a simpler infrastructure, resource utilization can improve. Plus, the skills needed to develop and administer Linux-based applications are similar to those for UNIX, thereby allowing customers to choose from a larger pool of available professionals at reasonable costs.

Linux offers SPs reduced TCO, flexibility, faster deployments and higher performance.

- *Flexibility:* The wide availability of Linux-based applications enables users to quickly respond to fast-breaking opportunities with new solutions. And because Linux is open, companies have more freedom to customize it to their particular needs. And as service providers enter new markets and embrace new technologies, the broad compatibility of Linux can provide the fast traction companies need to reach their most ambitious goals.
- *Faster deployments:* From the day it is installed, Linux offers access to a wealth of off-the-shelf software. What's more, because of Linux's widespread support throughout the development and vendor communities, plus its inherently rapid development cycles, new Linux applications are never long in arriving once a market need arises.
- *Performance:* Carrier Grade Linux is ready to support the most demanding, most mission-critical requirements of SPs: consolidating disparate infrastructure elements, deploying powerful new offerings and fulfilling the requirements of an increasingly demanding marketplace to keep availability high, customers satisfied and the revenue stream flowing. New 64-bit servers can ramp up Linux performance even higher than the already impressive levels common to 32-bit systems.

Telecoms in the on demand era

To remain competitive, gain market share and enjoy higher levels of profitability, SPs are transforming their businesses to reflect the realities and demands of the on demand era. New services are being delivered to the marketplace more quickly. New customers are acquired, retained and cultivated for even closer relationships and higher revenues. And new technologies are integrated with legacy systems to extract maximum efficiencies from each.

SPs need the ability to channel Linux's strengths to make their networks more responsive, variable, focused and resilient.

For all of Linux's strengths, simply switching from a proprietary operating system to Linux will not on its own propel a service provider into the on demand era. For that to happen, SPs need the means to direct Linux's strengths at making their networks more:

- *Responsive:* An on demand telecom can respond to any customer demand, external threat or market opportunity by dynamically implementing and provisioning high-performance services. Using Linux, SPs gain easy access to a wide range of applications that can enable them to view and understand individual customers in greater detail than ever – and quickly act on that view with highly targeted, highly automated marketing and service initiatives.
- *Variable:* Linux can enable SPs to develop variable cost structures and processes to contain expense and reduce the total cost of ownership (TCO) of systems and solutions alike. Legacy technologies must be made to adapt to new initiatives, not the other way around. Linux-based systems, applications and infrastructures must also be available to answer demands across lines of business, and non-core activities must be free to be assigned to whatever resource can best handle them, whether inside or outside the organization.
- *Focused:* Telecoms in the on demand world concentrate on delivering services that precisely meet the needs of their customers – exploiting standards-based technologies such as Linux, along with plug-and-play architectures to expand their options and integrate with legacy systems. Self-configuring, self-optimizing, self-diagnosing and self-healing technologies can help SPs maintain their focus on serving customer needs, while increasing efficiency through improved utilization and management of resources.
- *Resilient:* Highly available, autonomic architectures enable a higher degree of resilience for applications and network services. The end result is potentially improved customer satisfaction, loyalty and retention. Security is approached holistically, leveraging Linux capabilities to extend comprehensive, integrated protections across the entire value chain. Advance planning and end-to-end safeguards result in strategies that help minimize the impact of *any* disruption, whether expected or unexpected.

IBM knows telecommunications

- IBM is a proven leader in working with telecoms worldwide to develop standards and solutions that accelerate the advent of Next-Generation networks. These include the CGOF standard (described on page 4) and SPDE (Service Provider Delivery Environment), a set of solutions that can help SPs reduce operational expenses, enhance revenues and improve efficiency.
- IBM helped found the Open Communications Architecture Forum (OCAF), another example of IBM helping the industry extend the benefits of open standards from enterprise to service delivery environments.
- IBM offers SPs a broad and deep selection of telecommunications-specific products, services and partnerships, including one of the first integrated platform for telecommunications consisting of carrier-ready, off-the-shelf technologies.
- The IBM Linux Service Provider Lab Environment provides telecoms with world-class facilities and technical assistance for testing Linux distributions, onsite or through highly secure, remote connections.

Thus, in today's on demand environment, new technologies do more than meet old requirements: Advances like Linux raise the performance bar. In the telecommunications industry, SPs driven to Linux's advantages are immediately challenged to exploit them better than their competition – a challenge that brings many to IBM and the powerful capabilities of its broad portfolio of 64-bit servers.

Adding the IBM edge to 64-bit computing

Once confined to the domain of supercomputers, 64-bit servers have, over the last few years, secured their place among mainstream servers. For example, IBM @server pSeries® systems were at one time the company's only readily available 64-bit servers. Today, 64-bit processors power systems throughout the extensive IBM @server portfolio, including many systems enhanced for Linux, such as the new IBM @server OpenPower™ servers.

Thus, one important advantage that IBM brings to the 64-bit equation is choice. IBM gives telecommunications companies a wide range of servers, options and overall flexibility in leveraging 64-bit, Linux-tuned technology to streamline IT infrastructures and high-value service deployments, while providing outstanding scalability and maintaining reliability and affordability. By leveraging this flexibility SPs can generate new business models and accelerate business processes – all with greatly simplified infrastructure requirements.

Powerful, centralized system management tools, plus virtual sharing and workload management aids help lower IT costs even more. So does the flexibility on many platforms to run 32- and 64-bit applications concurrently and thus quickly and cost-effectively tap into even more of the industry-leading, off-the-shelf applications readily available from the Linux development community.

Offering one of the widest range of Linux-ready, 64-bit servers on the market today, IBM helps telecoms match their infrastructures to the rapidly changing dynamics of today's telecommunications industry.

But there's more to the IBM 64-bit server family than their cost efficiencies and revenue-enhancement capabilities. A wealth of features enable SPs to build infrastructures geared to the on demand environment, thereby enabling them to:

- *Become more responsive:* The outstanding performance capabilities of IBM 64-bit servers can help telecoms target services to individual customer preferences due to the extensive data-mining and automated up-sell/cross-sell initiatives that Linux and 64-bit technology support so superbly. SPs can also respond to new opportunities and stay on top of the growth curves they're generating, thanks to IBM architectures that scale internally as well as externally, allowing telecoms to run and manage multiple applications on the same system, thereby avoiding the need to install new hardware, cabling, utilities and other infrastructure. And with the rapidly accelerating pace of applications coming from the development community, any system that can accommodate new solutions so quickly can offer a telecom major strategic advantages.
- *Increase resiliency:* Using IBM 64-bit servers, telecoms can help avoid costly if not devastating service disruptions through built-in redundancies, memory mirroring and other high-availability design elements. They can also adjust and adapt to change via self-configuring, self-optimizing, self-protecting and self-healing features. Some platforms offer Capacity on Demand capabilities to enable telecoms to adjust workloads and increase capacity dynamically – even automatically – to meet constantly shifting demands and priorities. And by utilizing IBM's end-to-end availability services they can cut even more deeply into downtime to further protect revenue streams and improve customer satisfaction.
- *Sharpen business focus:* SPs can ease demands on resources with an open architecture, 32-bit compatibility, and extensive management tools and autonomic features. IBM Virtualization solutions can greatly simplify consolidation, management and utilization of multiple, disparate IT resources. Freed from constantly tending and tweaking the infrastructure, and able to quickly deploy robust new applications, SPs can use 64-bit power to create new, revenue-generating services that attract new customers and help retain existing ones.

Powerful choices in IBM 64-bit @server systems

No company makes the capabilities of 64-bit computing as accessible to telecoms as IBM does. Many IBM @server systems feature IBM's own advanced 64-bit, Power Architecture™-based processors, such as the POWER5™, which is specifically tuned for Linux. Others employ specially enhanced processors from market leaders such as Intel® and AMD that IBM has re-engineered to provide additional functionality unattainable from off-the-shelf chips. With this breadth of possibilities, an SP can select the IBM server that not only best meets its particular requirements but also exceeds the performance and reliability of other servers on the market. Among the choices are:

- *OpenPower systems:* Highly affordable, mainframe-inspired servers deliver the performance leadership, reliability features, high availability and computing power once only available on higher-end systems. IBM OpenPower systems feature IBM's most advanced Power Architecture-based 64-bit processor, the POWER5. OpenPower systems are tuned for Linux. Autonomic technologies can sense and correct for impending failures. Virtualization features enable telecoms to add, remove and share resources across multiple partitions on a single physical server – generating fast scalability, greater resource utilization and potentially lower operational costs.
- *xSeries® systems:* By engineering powerful new features onto them, IBM has made the 64-bit Intel processors at the heart of its @server xSeries systems perform even better. Thanks to IBM's Xtended Design Architecture™, telecoms using xSeries systems can handle the most mission-critical requirements with fewer, more powerful servers. Extra memory sockets make expansion easy and economical. And telecoms can evolve to 64-bit applications at their own pace, thanks to the capability of xSeries systems to run 32- and 64-bit applications concurrently. The industry's leading Intel-based Linux servers, these award-winning, NEBS-compliant, Linux-ready systems open the way to the streamlined, more easily managed and cost-effective application-serving that telecoms need.

- *BladeCenter™ systems:* The exceptional flexibility and scalability of these servers can help telecoms respond to the diverse, intense demands of today's marketplace without incurring major new costs and complexity. The IBM @server BladeCenter T is a high-performance, highly dense, scalable, industry-standard computing platform ready to help SPs accelerate revenue generation, reduce costs and improve customer loyalty. With comparable space and utility efficiencies, the JS20 Blade offers the advantages of IBM POWER™ for running highly demanding applications on a single server – simplifying infrastructure while greatly expanding its capabilities. Standby Capacity on Demand enables “pay as you go” scalability to keep costs from outpacing revenues.
- *iSeries™ systems:* These midrange servers help simplify consolidation and convergence of disparate infrastructures by enabling telecoms to integrate and manage heterogeneous, multi-operating system environments within a single server. iSeries systems also feature IBM's most advanced Power Architecture-based 64-bit processor, the POWER5. They offer numerous growth options as well as dynamic workload management features to help keep costs under control now and into the future as applications are added. iSeries systems can also be used to integrate Intel processor-based servers to support Microsoft® Windows® environments, and they can integrate storage resources to improve resource utilization even more.
- *pSeries systems:* Among the most powerful, versatile, reliable and secure servers in the world, pSeries systems are designed to help reduce the complexities of network convergence with IBM mainframe-inspired reliability, availability and serviceability (RAS). Another option for securing the advantages of IBM's POWER5 processor, IBM pSeries systems can power telecoms into the on demand environment by handling extremely diverse processing requirements simultaneously and then scaling internally or externally to take on more. Options include ultra-dense models for packing more processing power into less data center space, Virtualization Engine™ technology to accommodate greater solution diversity, and Capacity on Demand features to allow fast, cost-effective scalability as the needs warrant.

- *zSeries® systems*: Mainframes made all the more powerful with 64-bit processors, zSeries systems can provide the ultimate remedy to organizational silos and server sprawl. Telecoms can standardize around the flexibility, efficiency and self-manageability of the zSeries and gain a wealth of powerful business advantages. These include extending the value of legacy solutions while simplifying their management. At the same time, zSeries systems create a foundation for extensive new functionalities. Data-serving and business-integration middleware can be used with zSeries to help provide comprehensive, unified views of customer activity in support of exciting new marketing initiatives for today's – and tomorrow's – on demand environments.

Summary

Telecommunications companies can now combine two powerful technologies to help increase revenues, reduce costs and spark new growth as on demand enterprises. By pairing Linux with IBM 64-bit @server systems, service providers can become more responsive to fast-breaking market demands, more focused on critical business needs, more in step with variable cost/value structures, and more resilient to both expected and unexpected changes in their service environment. With IBM, SPs can select from a broad line of Linux-optimized platforms to find the system best-equipped to meet their needs today and far into the future.

To learn more about the advantages of IBM 64-bit @server system and how to match them to your needs and opportunities, please contact your IBM representative, or go to:

ibm.com/industries/telecom



© Copyright IBM Corporation 2004

IBM Corporation
1133 Westchester Avenue
White Plains, NY 10604
U.S.A.

Produced in the United States of America
10-04
All Rights Reserved

IBM, the IBM logo, the eServer logo, the On Demand business logo, BladeCenter, iSeries, OpenPower, POWER, POWER5, Power Architecture, pSeries, Virtualization Engine, xSeries, Xtended Design Architecture and zSeries are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both.

Intel is a registered trademark of Intel Corporation in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product and service names may be trademarks or service marks of others.

References in this publication to IBM products or services do not imply that IBM intends to make them available in all countries in which IBM operates.



GC10-4055-00