



IBM Power 770, Power 780 and Power 795 for Oracle Communications Billing and Revenue Management

High-performance flexible and efficient solutions for Oracle Communications Billing and Revenue Management deployments

IBM Power® Systems servers — proven technology for your Oracle Communications Billing and Revenue Management (BRM) implementations

IBM POWER7® processor technology delivering improved energy efficiency with unique features designed to support high availability

IBM PowerVM™ virtualization — allowing you to consolidate workloads and reduce operational costs

Record scalability with IBM Power servers and Oracle Communications BRM software together supporting 100 million subscribers

IBM Power 770

Designed for virtualized consolidation of business-critical workloads, the IBM Power 770 delivers on performance, availability, efficiency and virtualization in a way that is unique in the industry. PowerVM virtualization enables continuous, dynamic resource adjustments across all partitions and operating environments, independent of physical placement, to optimize performance while minimizing energy usage. Supported environments include AIX®, IBM i, and Linux® applications, all on the same system.

Now available in configurations up to 64 POWER7 processor cores, this new version of the popular modular design delivers more capacity with more efficiency than ever before. The result is more performance per system, more performance per footprint, and best of all, more performance per watt. This innovative design approach also enables near-linear scaling and nondisruptive growth while maximizing your investment. POWER7 technology, PowerVM virtualization and the Power 770—the ideal combination for your IT environment.



IBM Power 780

The Power 780 is similar in design and performance to the Power 770, but what makes the Power 780 truly unique is the ability to switch between its standard throughput optimized mode and its unique TurboCore mode, where performance per core is boosted with access to both additional cache and additional clock speed. Available only on IBM's largest systems, this approach to design allows users to decide how they wish to optimize their system, even after it is installed and operational. Based on the user's configuration option, any Power 780 system can be booted in standard mode, enabling up to 64 processor cores running at 3.8 GHz or in TurboCore mode, enabling up to 32 processor cores running at 4.1 GHz and twice the cache. Flexibility has once more been redefined.

IBM Power 795

The IBM Power 795 server is designed for enterprises to support large-scale transaction processing and database applications within a highly virtualized system infrastructure, enabling new levels of workload consolidation, resource utilization and efficiency. As the most powerful member of the IBM Power Systems family, this server provides exceptional performance, massive scalability and bandwidth to efficiently and concurrently support a full range of complex, mission-critical applications.

Equipped with up to 256 POWER7 processors the Power 795 server can scale rapidly and seamlessly to address the changing needs of today's business climate. Extensive mainframe-inspired reliability, availability and serviceability features in the Power 795 help ensure that mission-critical applications run reliably around the clock. With extensive scalability, a fundamentally reliable design and expansive growth potential, the Power 795 server provides a solid foundation on which to deploy the most important applications in today's large enterprise data centers.

Power your planet

New POWER7 processor-based systems represent a true leap forward to more intelligent systems that minimize complexity, automate processes, and reduce energy consumption, downtime and other operational costs. On a smarter planet these are the only benchmarks that matter. Featuring an innovative multi-core, 45 nanometer design, running at speeds of over 4.1 GHz, with up to 8-cores per socket, and four threads per core, POWER7 systems combined with IBM systems software, middleware and storage deliver unprecedented performance for both transactional and throughput computing.

Only IBM builds systems and systems software together, from the ground up

A totally integrated approach to the design, development, and testing of each and every Power server ensures the resiliency required for today's IT infrastructure. All POWER7 server models include innovative reliability, availability and serviceability features that help you avoid unplanned downtime. And, with Capacity on Demand, Hot-Node Add and Hot-Memory Add—Power Systems enterprise servers ensure you can keep your most important applications available, even as you add capacity to handle new business demands. Power Systems are also optimized with the ability to securely run multiple applications on AIX, IBM i and Linux operating systems on a single server—so you can manage fewer systems with lower cost and higher utilization. No longer do you need to manage complex and energy inefficient server farms with each server dedicated to a single application or operating environment. Now you can consolidate workloads and significantly reduce costs throughout your infrastructure, while dramatically improving your ability to meet changing processing demands.

Power Systems software™ options enable you to manage both physical and virtual environments, including the capability to control data center energy usage and orchestrate processing resources to better meet business goals. And, Power solutions are designed to provide you with a roadmap to continuous availability of mission-critical applications—even when an expected or unexpected interruption occurs.

Power is effortlessly balancing hundreds of workloads

POWER7 processor-based systems—the first generation of systems built for a smarter planet—offer balanced systems designs that automatically optimize workload performance and capacity at either a system or virtual machine level. Features include:

- TurboCore for maximum per core performance for databases
- MaxCore for incredible parallelization and high capacity throughput
- Intelligent threading technology to utilize more threads when workloads benefit
- Intelligent Cache technology to optimize cache utilization, flowing it from core to core
- Intelligent Energy to maximize performance dynamically when thermal conditions allow

Power is virtualization without limits

As businesses look for ways to maximize their IT infrastructure investment returns, they turn to PowerVM virtualization to consolidate multiple workloads onto fewer systems—increasing server utilization and reducing cost. PowerVM provides a secure and scalable virtualization environment for AIX, IBM i and Linux applications built upon the advanced RAS features and leading performance of the Power Systems platform.

PowerVM offers Micro-Partitioning™ with the ability to run up to 10 partitions per processor core, and dynamically move processor, memory, and I/O resources between partitions to support changing workload requirements. PowerVM Live Partition Mobility enables active partitions to be moved between servers, virtually eliminating planned downtime. Live partition mobility can also be used to upgrade workloads between POWER6® and POWER7 processor-based servers without an application outage. VMControl™ complements PowerVM by providing automated virtualization management that minimizes time to provision virtual machine images and enables management of system pools. With POWER7, PowerVM and VMControl virtualization software will support up to 1,000 virtual machines on a single system, providing massive consolidation capability for exceptional cost savings.

Power is management with automation

With platform management technologies on Power Systems, businesses not only get a complete picture of their systems and how well they are operating, but also the tools to deploy, optimize and maintain these systems at maximum effectiveness and efficiency. The result is optimized workload performance, energy efficiency and cost control. On Power Systems, server virtualization management is integrated with network and storage management for complete resource control.

IBM System Director Editions for Power are sized for every data center. It's now simpler than ever for a single operator to manage both physical assets and virtual resources. With IBM Systems Director for platform management and Tivoli® for enterprise service management solutions, Power Systems offer a unified systems management solution that can improve service delivery. VMControl provides automated virtualization management and minimizes the time it takes to provision virtual images and manage system pools.

Power is resiliency without downtime

Power Systems solutions benefit from decades of IBM experience in designing and deploying high availability hardware and software. PowerHA™ System Mirror disk clustering solutions are available to help keep your systems—and your business—running 24x7x365. PowerHA SystemMirror for AIX and IBM i Editions are datacenter and multisite resiliency solutions designed to help protect critical business applications from outages: planned or unplanned.

Power is dynamic energy optimization

Power Systems energy management solutions monitor and control energy usage to help you manage energy efficiency in your data center. Each Power server has EnergyScale™ technology built into the POWER7 processor. Through consolidation and virtualization with PowerVM, businesses have realized dramatic energy savings. And, with IBM Systems Director Active Energy Manager™, you can identify trends in your energy usage and thermal profile, turnoff processor cores or limit the energy draw across one or a group of Power servers, and track environmental data from applications used to monitor air conditioning units, Uninterruptible Power Supplies and Intelligent Power Distribution Units.

Oracle Communications Billing and Revenue Management

Oracle Communications is a premier provider of billing and revenue management solutions for the global communications and media markets. Oracle Communications Billing and Revenue Management empowers service providers to significantly improve time to market of new products and services, build stronger brands and lower operational costs. Oracle Communications BRM is service agnostic, allowing service providers to monetize and maximize each revenue stream for any customer type, service offering, partner relationship, payment method, business model or geography.

Oracle continues to deliver on the ever changing revenue management requirements of the global communications and media markets, by demonstrating the ability to:

- Deliver an industry leading, quality driven billing and revenue management platform that can provide business support requirements for any service on any device
- Evolve its platforms to meet customers' existing and future requirements for features and functionality
- Create tighter integration with both Oracle and non-Oracle enterprise applications to improve operational efficiency, reduce implementation times, and ensure consistency of data flows between related platforms
- Continually refine core functionality for billing, pricing, charging, payment and customer management to support a service provider's needs for ever evolving service offerings
- Lower total cost of ownership of the service provider's BSS infrastructure through tighter standards compliances, improved platform support and higher performance

Oracle Communications BRM delivers greater value to the service provider by offering significant value through an impressive set of product enhancements, many of which are in response to customer requirements. The release includes:

- Extended and new enterprise application integrations
- New and enhanced product functionality
- Enhancements to reduce total cost of ownership (TCO)

Oracle Communications Billing and Revenue Management architecture

The Oracle Communications BRM deployment architecture is designed to be flexible, scalable and capable of meeting the performance and availability requirements of the largest communications service providers. IBM Power Systems servers offer unique features that enhance this flexible and scalable design. Power Systems servers can be deployed as Oracle Communications BRM layer servers and as robust data management layer servers. And by leveraging the advanced virtualization features of the Power Systems servers, these application layers can be deployed within logical partitions of a single Power Systems platform.

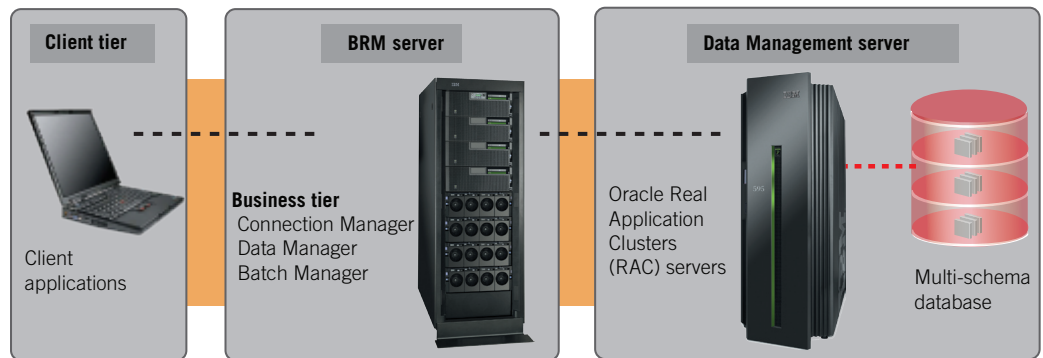


Figure 1. Oracle Communications Billing and Revenue Management architecture

Power 570 servers deliver outstanding scalability for Oracle Communications BRM

Working together IBM and Oracle have completed an extensive performance and scalability benchmark exercise for Oracle Communications Billing and Revenue Management that demonstrated its ability to support 100 million subscribers when deployed on an array of IBM Power servers. Scalability of this magnitude is vital to meeting the needs of tier-one communications service providers and those looking to consolidate multiple billing applications into a convergent platform.

The benchmark tests were conducted at IBM labs in Beaverton, Oregon. The benchmark included various workloads such as rating, billing, invoicing and customer service activities using a variety of plans modeled after real-life communications industry business processes.

The benchmark tested Oracle's application running on a database cluster of IBM POWER6 processor-based Power 570 servers, with IBM AIX version 6.1 operating system and IBM PowerVM virtualization technology, connected to an IBM DS8300 storage subsystem.

The benchmark results are summarized in Table 1, Figure 2 and Figure 3. These results demonstrate near-linear scalability from 33 million to 100 million subscribers. At 100 million subscribers the application processed 176 million call-detail records per hour. Further, the test proved that the application can bill all 100 million subscribers in approximately 14 hours – meeting the needs of even the world's largest service providers.

These results were four times higher than any achieved before and demonstrate the capability of the IBM Power 570 server and the Oracle Communications Billing and Revenue Management application running on the AIX 6.1 operating system to manage and deliver a real-life workload in a high-end production environment with excellent performance.

Measured throughput for different benchmark workloads

Benchmark workload	Number of subscribers			Details
	33 million	66 million	100 million	
Rating and discounting (end-to-end)	12451 call-detail records (CDRs) per second	23230 CDRs per second	34866 CDRs per second	For 100 million subscribers, the system setup can process 126 million CDRs per hour
Rating (end-to-end)	17810 CDRs per second	33713 CDRs per second	48896 CDRs per second	For 100 million subscribers, the system setup can process 176 million CDRs per hour
Billing	683 bills per second	1342 bills per second	2027 bills per second	For 100 million subscribers, the system setup can process 7.3 million bills per hour. Total time to process 100 million subscribers is 13.7 hrs.
Invoicing of 100 events per account	887 invoices per second	1742 invoices per second	2315 invoices per second	For 100M subscribers, the system setup can process 8.3 million invoices per hour

Table 1. Scalability benchmark results

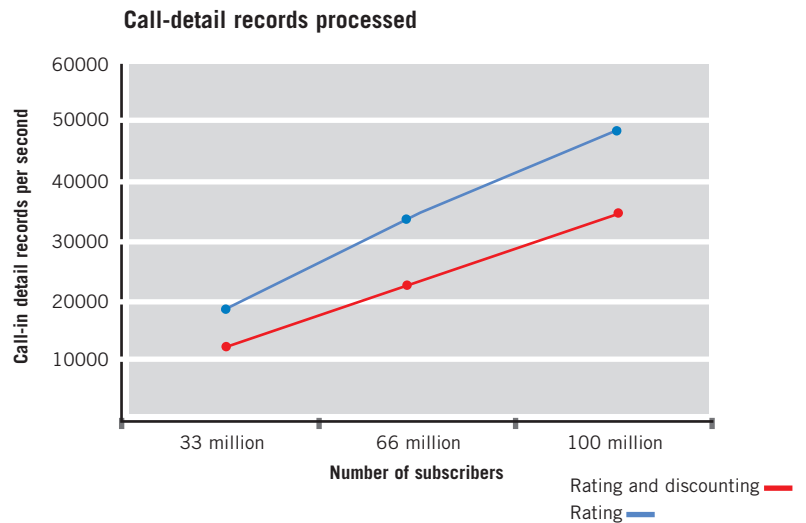


Figure 2. Scaling of call-detail record processing

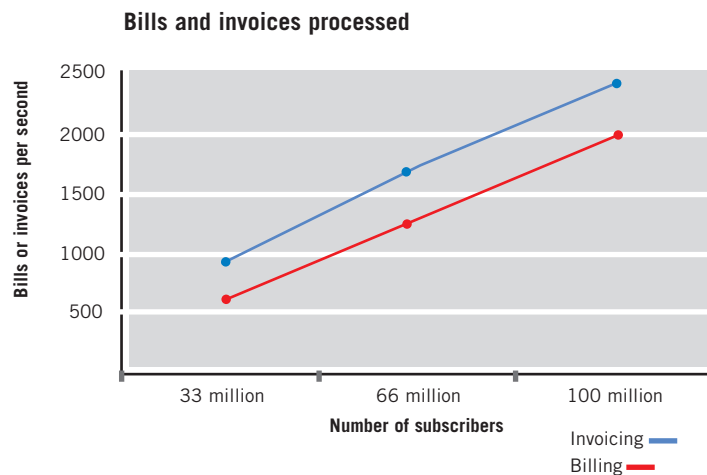


Figure 3. Scaling of bill and invoice processing

“By conducting this benchmark, IBM and Oracle have verified outstanding performance and scalability of both Oracle Communications Billing and Revenue Management and IBM Power 570 servers. Service providers benefit from IBM’s server technology, which uses PowerVM – IBM’s industry-leading virtualization technology – to allow optimal flexibility, server consolidation and cost reduction,”

— Scott Handy, vice president of worldwide marketing, strategy and sales support, IBM Power Systems.

These performance tests were completed with previous versions of the Oracle Communications BRM application and IBM Power Systems hardware. Both products have been recently enhanced and we expect that even better performance and throughput can be achieved today using the now-current versions of the hardware and application software.

Sizing Oracle Communications Billing and Revenue Management for the Power Systems platform

Oracle has an established sizing-estimation process for the Oracle Communications Billing and Revenue Management applications based on performance tests and experience with clients who are using the applications. IBM can help facilitate the sizing process and will work closely with Oracle to create a properly designed architecture. For more information about requesting a sizing estimate for an Oracle Communications Billing and Revenue Management deployment, please visit:

ibm.com/erp/sizing

The IBM and Oracle alliance

Since 1986, IBM and Oracle have partnered to create smart, serious innovation that’s helping to shift the world. More than 140 000 joint clients benefit from the strength and stability of the Oracle and IBM alliance, which offers technology, applications, services, and hardware solutions that mitigate risk, boost efficiency, and lower total cost of ownership.

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For more information

To find out more about joint solutions from IBM and Oracle, please contact an IBM sales representative at 1-866-426-9989, or visit us at:

ibm.com/solutions/oracle

For more information about IBM and Oracle solutions for Telecommunications, visit:

www.youtube.com/watch?v=_WjHUVH806w

For more information about the IBM Power Systems family, visit:

ibm.com/systems/power

For more information about the Oracle Communications Billing and Revenue Management on IBM Power Systems 570 benchmark, visit:

www.oracle.com/us/industries/communications/045555.pdf

For more information about Oracle Communications Billing and Revenue Management, visit:

www.oracle.com/us/industries/communications/046791.html



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