



Infrastructure Matters

Because Business Outcomes Matter



Why Infrastructure Matters for Cloud, Big Data & Analytics, Mobile and Social

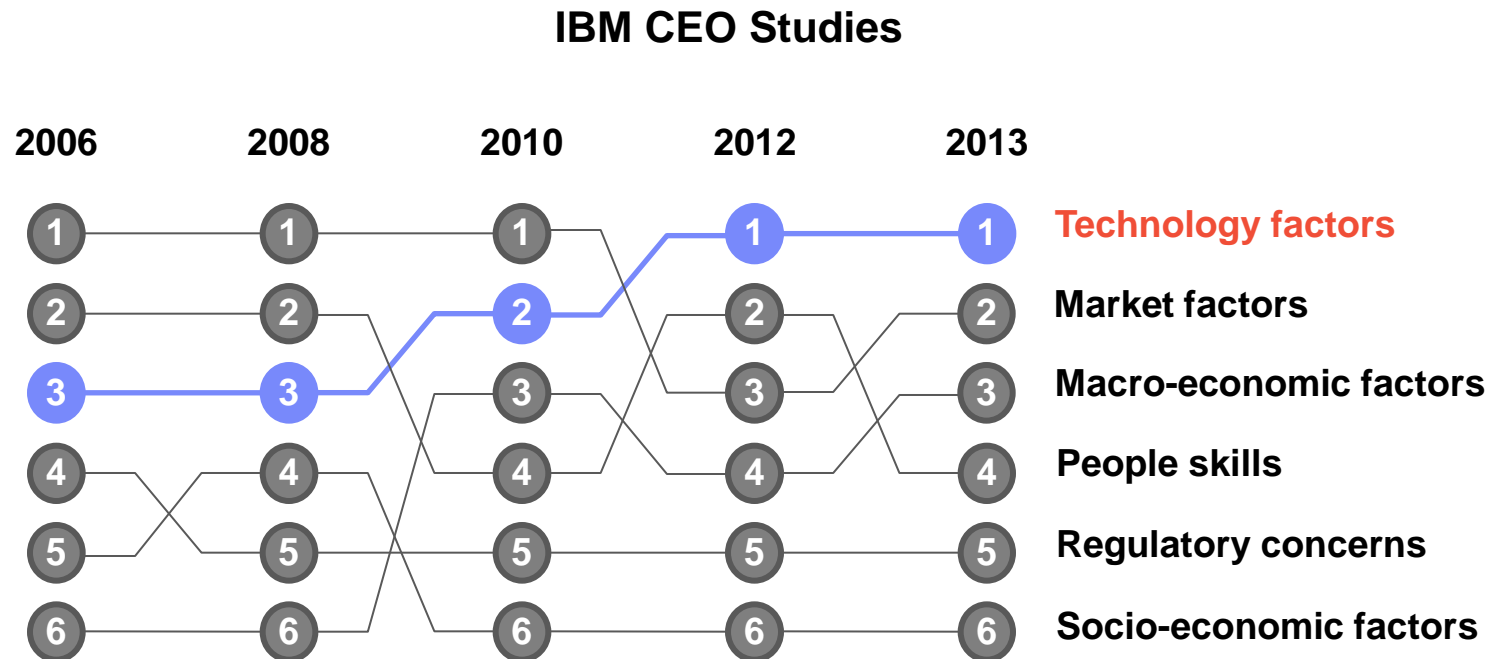
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Agenda

- Why Infrastructure Matters
- Why Infrastructure Matters for Cloud
- Why Infrastructure Matters for Big Data & Analytics
- Why Infrastructure Matters for Mobile
- Why Security Matters for Cloud, Big Data & Analytics, Mobile and Social

Today's leaders recognize the importance of technology



Source: IBM Institute for Business Value, Global C-Suite Study, 2013

Governments and industry leaders rely on infrastructure from IBM to drive real-time insights, share information and ensure secure transactions all while improving the economics of IT

Why wouldn't you?

Infrastructure Matters when



Cloud

Improving the economics of IT through efficiency and delivering new products and services faster



Big Data & Analytics

Handling large volumes of data and driving real-time insights



Mobile & Social

Revolutionizing information sharing and collaboration across the enterprise



Security

Ensuring secure transactions and interactions

Cloud



Improving the economics of IT through efficiency and delivering new products and services faster

Organizations and managed service providers rely on IBM infrastructure to build private & hybrid clouds to optimize their social, mobile, and big data workloads. We've helped over 10,000 clients deploy trusted cloud solutions based on open standards.

Today's organizations need to improve the economics of IT, seamlessly meet business requirements and deliver new products and services faster – without interruption or security breaches

76%

of IT decision makers are concerned or very concerned by the rising pressure to reduce costs

89%

of security professionals feel that more training is needed on how security applies to cloud

54%

of execs believe cloud represents enhanced revenue opportunities

200BN

intermittently connected devices by 2020

60K

cyber attacks are launched at large enterprise networks daily

62%

of workloads will be cloud based by 2014

Efficiency Matters



To lead, organizations must improve the economics of IT through efficiency.

New client services can be rapidly developed while operational costs decrease.

Resiliency Matters



As they struggle to become more agile, IT leaders know there can be no compromise on business operations.

Clients experience a rich, interactive experience, increasing revenue and user satisfaction.

Responsiveness Matters



In response, they are looking to cloud to take advantage of advanced technologies and enable new business outcomes.

A cost-competitive, highly responsive solution is quickly brought to the marketplace.

Efficiency Matters

Infrastructure must be consolidated, virtualized, and optimized and managed more effectively and simply



IBM offers industry leading capabilities to improve the economics of IT

- Cross Platform virtualization and management across multiple hypervisors and platforms
- Repeatable and deployable patterns of expertise
- Built on open standards, including Open Stack, for unparalleled interoperability
- Integrated management of physical and virtual infrastructures

55%

lower TCO vs. distributed systems

80%

reduction in cloud application deployment times, while lowering operations costs by 30%

Resiliency Matters

Infrastructure must dynamically scale up and down, be available 24x7, enable continuous workload optimization and be secure



IBM offers industry leading capabilities to seamlessly meet business requirements

- Near linear scalability and scalable resource management
- Ability to predict and mitigate failure through the stack
- On/Off Capacity on Demand
- Robust security and compliance tools

100%

utilization without
performance
degradation

10x

less reported
security complaints
than VMware

Responsiveness Matters

Infrastructure must be deeply integrated across computer, storage and networking.



IBM offers industry leading capabilities to seamlessly meet business requirements

- Integrated systems management and cloud-enabling technologies across choice of hypervisors and OS
- Self-service, automated provisioning
- Standardization and automation of cloud services through a flexible orchestration engine and a self-service portal
- Integration tools to integrate public and on premise applications quickly and simply
- Single view of files, across all sites regardless of their physical location

30 seconds

self-service capabilities
to provision storage
servers

months to weeks

reduce time to market
for new services

Building on the experience of thousands of client engagements, IBM offers unique infrastructure capabilities to rapidly create value

Enterprise Private and Hybrid

- Consolidate all workloads
 - Power Solution Editions for AIX, i, Linux
 - Linux on System z
- Automate Cloud and Enable Hybrid with SDE
 - SmartCloud Entry with OpenStack
 - Platform Computing and GPFS
 - Platform Computing Cloud Services
- Optimize Storage for Cloud Delivery
 - XIV for Cloud
 - Grid Scale File Storage Systems
- Speed Deployment and Simplify Management
 - PureFlex and PureApplication System



Cloud Service Providers

- Differentiate Services with Power or z and Linux
 - Power Solution Edition for SPs
 - Cloud Management Suite for System z
- Deliver Big Data / Analytics Services
 - Platform Computing and GPFS
 - Platform Computing Cloud Services
- Deliver highly scalable Storage Services
 - XIV for Cloud
 - Grid Scale File Storage Systems
- Enable Low Cost / High Scale Clouds
 - OpenPower
 - NeXTScale
- Speed Deployment of Cloud Services
 - PureFlex MSP Editions

Enterprises are looking for dependable, scalable, flexible, resilient hardware and software on which to build their cloud



IBM delivers

- Rapid access to a security-rich, enterprise-class, virtual systems platform environment
- Highest levels of resource sharing, I/O bandwidth, and system availability
- Add hardware resources to an already running system with little to no disruption
- Consistent performance on a scalable server and storage platform
- Achieve nearly 100% utilization of system resources nearly 100% of the time
- Combine management functions into a single virtualization management tool across platforms
- Industry-leading Reliability, Availability and Serviceability

Big Data & Analytics



Handling all
relevant data and
driving real-time
insights

Transforming business with speed and conviction to achieve competitive advantage through new levels of insight at the point of impact with IBM Big Data and Analytics infrastructure

This is the age of insight – organizations must harness big data and analytics to know and act faster

1 in 2

business leaders don't
have access to data they
need¹

2/3

of CMOs want better
tools²

80%

Of CIOs are targeting
analytics for insights³

1 trillion

connected objects and
devices on the planet
generating data by 2015⁴

2.5 billion

Gigabytes of data generated
every day⁵

80%

of the world's data is
unstructured⁶

Access Matters

To get new levels of visibility into customers and operations



Obtain new levels of customer intimacy and differentiation with shared and secure access to all relevant information no matter what it is or where it resides.

Speed Matters

To accelerate insights in real-time at the point of impact



Optimize decisions in real-time by embedding intelligence into operational processes using integrated high performance infrastructure capabilities.

Availability Matters

To consistently deliver insights to the people and processes that need them



Empower employees with insights, when they need it, maximizing right-time availability to improve collaboration to solve problems and grow opportunities.

Access Matters

To get new levels of visibility into customers and operations.

Infrastructure must enable shared and secured access to all relevant data, no matter it's type or where it resides.



Obtain new levels of customer intimacy and differentiation with shared and secure access to all relevant information no matter what it is or where it resides.

IBM offers industry leading capabilities

- Scalability (-in, -out, -up)
- Efficient virtualization and resource management
- Optimized data storage and access
- Data tiering and compression
- Parallel processing
- Optimized compute

Supports up to **20**
petabytes of storage
in a single global file
systems¹

#1 for TPC, SAP, Spec
benchmarks²

The Bank of Quanzhou

Using analytics to identify trends to develop new products and services

Access Matters



Create a Customer Focused Enterprise

150%

increase in high-value business customers

New solution gives the bank a more holistic view into the banking and investment behavior of its customers, helping the company offer products that appeal to customers based on their preferences and needs.

Core Infrastructure Capabilities

Data
Optimization

Parallel
Processing

Speed Matters

To accelerate insights in real-time at the point of impact.

Infrastructure must build intelligence into operational events and transactions.



Optimize decisions in real-time by embedding intelligence into operational processes using integrated high performance infrastructure capabilities.

*Complex queries can now
be processed up to
2,000x faster¹*

IBM offers industry leading capabilities

- Parallel processing
- Low-latency resources, such as flash memory
- Ability to scale up, in and out rapidly
- Optimized systems brings analytics accelerators closer to systems of record
- Specialty workload engines

***20X** more data access
to deliver faster
insights²*

Coca Cola Bottling Co. Consolidated

Delivering deeper insight into customer demand four times faster

Speed Matters



Create responsive logistics planning

20x

More data faster for better insights

Delivers deeper demand insights four times faster; helps match manufacturing output with demand, reducing risk of over- or under-stocking; enables earlier logistics planning, increasing profitability.

Core Infrastructure Capabilities

Data
Optimization

Low Latency

Availability Matters

To consistently deliver insights to the people and processes that need them.

Infrastructure must maximize the availability of information and insights at the point of impact.



Empower employees with insights, when they need it, maximizing right-time availability to improve collaboration to solve problems and grow opportunities.

*43% faster analytics
with 99.99% uptimes¹*

IBM offers industry leading capabilities

- Low latency resources
- Scalability (-in, -out, -up)
- Self-healing capabilities
- Enterprise-grade systems software that provides continuous management and access
- Single-site and multisite clustering solutions

*Resilient storage
architectures –
99.999% uptime²*

Building on the experience of thousands of client engagements, IBM offers unique infrastructure capabilities to rapidly create value

Optimized capabilities designed for big data and analytics workloads

- DB2 BLU on Power – 7-10X lower TCO
- Reference Architectures for Hadoop and Streams – faster TTV
- IBM GPFSTM – worlds only proven enterprise-grade scale out file system
- Platform Symphony – record setting benchmark for Hadoop workloads

Innovation in scale-out computing –x86

- x3650 M4 HD performance, flexibility, reliability & customer satisfaction that's better than competitive offerings
- Consolidate all workloads



Storage Innovation for big data & analytics

- Real-time compression – 5X more data no performance hit
- IBM MicroLatency™ - 100x performance improvement
- FlashSystem storage can drive down costs by 50%

Analytics closer to the data – System z

- Much of the worlds transactional data sits on z – integrate advanced analytics with IDAA;
- Enterprise Linux Server, SPSS/Cognos on z; enhanced Hadoop integration.

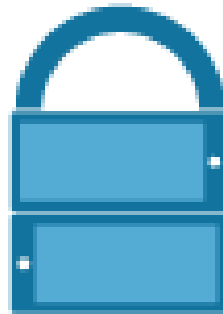
Why IBM Big Data and Analytics infrastructure technologies?



IBM delivers

- One of industry's broadest solution portfolios
- IBM Systems is a market leader in support of analytics workloads
- Ability to embed analytics as part of the business solutions
- Hardware and software integration and optimization to speed time to value
- Leadership in advanced predictive analytics
- Broad coverage of unstructured information sources
- More than \$14B in Acquisitions since 2005
- More than 10,000 Technical Professionals
- More than 7,700 Dedicated Consultants
- Largest Math Department in Private Industry
- More than 27,000 Business Partner Certifications

Mobile



Connecting the mobile enterprise

IBM Mobile solutions help you attract new customers, transform your business and IT infrastructure, develop mobile apps to boost enterprise efficiency, and improve customer service and interactions. Put your business in motion. Become a mobile enterprise.

Today's organizations need to improve the economics of IT, seamlessly meet business requirements and deliver new products and services faster – without interruption or security breaches

5PB

of data generated every day
by mobile phone
subscribers

50%

of companies will require
employees to provide their
own device by 2017

54%

of companies struggle to
integrate mobile applications
with existing systems

200BN

intermittently connected
devices by 2020

79%

of companies had a mobile
security incident in the past
year

150x

how often the average
mobile user checks their
phone each day

Availability Matters



To empower engagement and better-informed decisions, you need a highly secure and scalable infrastructure.

Clients expect information and insights to be delivered where and when needed.

Security Matters



From app development to deployment, security of transactional and operational data is paramount.

Safeguard your enterprise with confidence with integrated security.

Speed Matters



The right infrastructure accelerates time between information access, analysis and action to enable better decisions, faster.

This is the era of mobile insights.

Availability Matters

Infrastructure must seamlessly connect with mobile applications and scale-in, -out, and –up on-demand

IBM offers industry leading capabilities to empower engagement and better decision-making

- Development tools that seamless integrate data and transactions
- Scale-out to support mobile analytics, scale-up to optimize performance and scale-in to process data at point of impact
- Multi-site geo-mirroring delivers best-in-class mobile computing data platform
- Workload Management ensures service levels of crucial applications during sharp spikes in demand



70%

Of mobile applications touch a mainframe system

50%

reduction in TCO with push button data mobility

Security Matters

Infrastructure must provide security-rich mobile access to critical business information



IBM offers industry leading capabilities to safeguard your enterprise

- Built-in cryptography with the highest level of security
- Exploit data and transaction co-location – no SSL required
- Consistent data security from the datacenter to the personal devices
- Properly authenticate mobile users

96%

lower costs compared to solutions requiring added-on security

10x

less reported security complaints than VMware

Rizal Commercial Banking Corporation

Retail banks in the Philippines must meet the requirements of customers who expect anywhere, anytime mobile access to banking products and services.

Security Matters.



Why this client took action

The bank set a goal of adding 10 million new customers to its existing base. The bank's customer data and applications, however, ran on siloed IT systems that made information sharing difficult, slowing decision making.

Business outcome

RCBC implemented a mobile banking solution on an IBM System z mainframe that effectively brings the branch to the client and enables personalized services to help the organization reach 10 million new customers by 2016.

Requirements

RCBC sought a solution that would allow the bank to seamlessly integrate new mobile service with its existing banking services and scale to support 10 million new customers by 2016.

Speed Matters

Infrastructure must accelerate the flow of data and process the data faster for real-time decisions.



IBM offers industry leading capabilities to accelerate action

- Instant provisioning of new services and environments to accelerate the application lifecycle
- Parallel processing to handle high-volume, reliable transactions and data loads
- Low latency, fast access to operational data for maximum response times
- Easily consumable mobile access to System of Record data

30 milliseconds

average end-to-end response times to ensure low latency mobile banking

50%

reduction in new product launch times

Building on the experience of thousands of client engagements, IBM offers unique infrastructure capabilities to rapidly create value

- Seamlessly integrate infrastructure with mobile applications
 - IBM Power Systems, IBM PowerVM, IBM PowerHA
 - IBM System z
- Keep pace with rapid demand cycles with scale-in, -out, and -up
 - IBM System z
 - IBM GPFS
- Provide security-rich mobile access to critical business information
 - IBM System z
 - IBM Power Systems, IBM PowerVM, IBM PowerHA
 - IBM System Storage DS8000



- Provide a highly secure environment to analyze and store mobile data
 - IBM FlashSystem storage
 - IBM System Storage Easy Tier
 - IBM Real-time Compression software
 - IBM Storwize V7000 Unified disk system
 - IBM GPFS
- Accelerate flow of data to intelligence
 - IBM System Networking
 - IBM Platform Computing software
- Process data faster while handling more users
 - IBM System z
 - IBM Power System
 - IBM PureSystem

Organizations are looking for highly available, secure, and fast IT infrastructures to enable their mobile enterprise

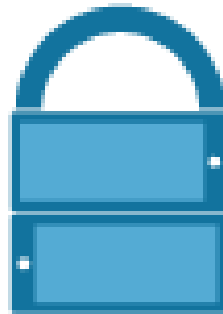


IBM delivers

- The ability to leverage your existing IT infrastructure investment to quickly add a mobile channel
- Massive and simple scalability to handle the workload of millions of devices and sensors
- End-to-end security and data privacy for mobile applications
- Low latency for fast access to operational data to increase mobile application performance
- Workload management to maintain business critical application SLAs during sharp spikes in demand
- Industry-leading Reliability, Availability and Serviceability

Security Matters for Cloud, Big Data & Analytics, Mobile and Social

Security



Ensure secure
transactions and
interactions

IBM has a comprehensive and innovative portfolio of security ready systems and solutions to address data and asset protection needs across every industry in all global markets. That is why 96 out of 100 banks worldwide trust IBM to secure their financial information.

Constant change makes security a constant business challenge - the need to protect data, cloud and a business' reputation has elevated to a boardroom issue

30%

of IT leaders are unable to properly record user access privileges to cloud-based applications¹

56%

of cloud or big data initiatives stalled due to security concerns²

71%

of CIOs and IT Managers identified security as their most significant challenge in adopting mobility³

\$5.5 M

Is the average cost of a data breach in the United States⁴

4,400

New security risks were identified in the first half of 2012⁵

19%

increase in number of tools available to attack mobile devices⁶

Data Integrity Matters

To be confident that critical data and information is safe.



Data

Protecting today's unprecedented volume and variety of data

Access Matters

To ensure the right people have access to the right information

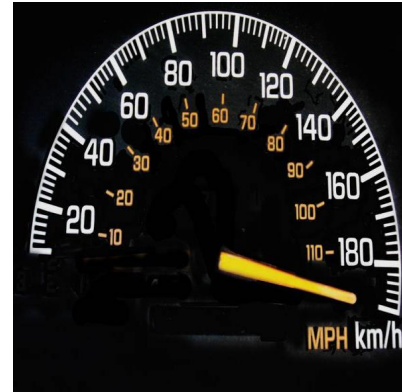


People

Managing identities and access to information, applications and systems

Speed Matters

To bring applications to market at a lower cost

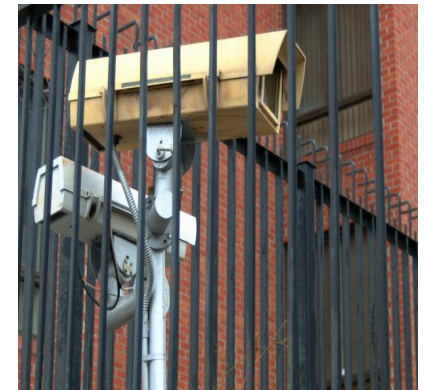


Applications

Securing the software that businesses rely on

Resiliency Matters

To protect against security breaches by safeguarding the integrity of infrastructure



Infrastructure

Securing the network, servers, virtual servers, mainframes and endpoints

Data Integrity Matters

To be confident that critical data and information is safe.

Infrastructure must verify and encrypt data at every stage of the data lifecycle, whether at rest or in motion.



IBM offers industry leading capabilities

- End-to-end encryption
- Real-time database monitoring with console alerts
- Sensitive data transformation and masking
- Secure and automated key management

96 out of the top 100 worldwide banks use systems from IBM to secure their sensitive financial information.¹

IBM offers the world's only commercial platform with Evaluation Assurance Level (EAL) 5+ security classification for protecting business-critical workloads²

Bankia enables the real-time integration of data seamlessly and securely to provide trusted information for critical analysis



Data Integrity Matters

**Bankia**

The need

Founded in 2011 as a joint venture of seven Spanish banks, Bankia wants to become one of the most competitive and trusted financial groups in Spain. Bankia's strategy is to win the information war to improve business operational decisions and provide superior customer service.

The solution

To analyze huge quantities of business, market and customer data in near-real time, Bankia chose to implement IBM InfoSphere Information Server and InfoSphere DataStage running on System z and Smarter Storage to collect, integrate and secure data from multiple sources. These enable Bankia to perform accurate analysis and generate trusted reports to help executives develop more profitable future business actions.

Benefits

- Enables the real-time integration of data seamlessly and securely to provide trusted information for crucial analysis on ever-increasing and rapidly changing data
- Facilitates monitoring and mitigates risk
- Boosts productivity by an estimated 400%

Access Matters

To ensure the right people have access to the right information.

Infrastructure must manage and audit user access, detect fraud in real-time and provide preemptive automated threat detection.



IBM offers industry leading capabilities

- Trusted identity and access management
- Extremely granular auditing & key management
- Automated fraud detection
- Automated user provisioning, role-based access control, user authentication, single sign-on and compliance reporting
- Isolation of applications and their associated data

*Lower user security
administration costs
by up to 52%¹*

*Zero setup time to
achieve trusted
protection from the
hardware to the OS*

Speed Matters

To bring applications to market at a lower cost.

Infrastructure must protect against application vulnerabilities from development to production.



IBM offers industry leading capabilities

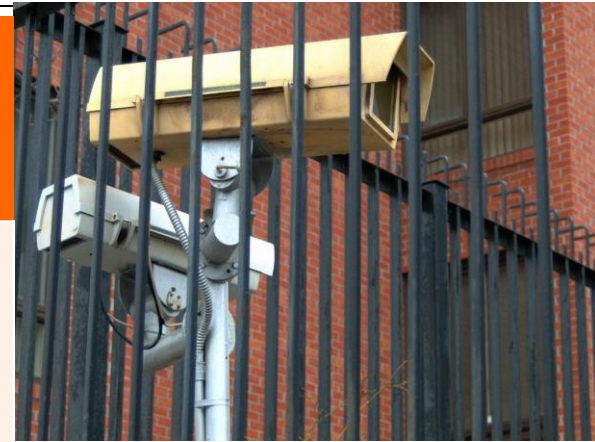
- Advanced application vulnerability detection
- Granular application access controls
- Comprehensive and consistent centralized policy based security intelligence

100x reduction in the cost of fixing security defects by finding vulnerabilities early in the application development cycle¹

Resiliency Matters

To protect against security breaches by safeguarding the integrity of infrastructure.

Infrastructure must deliver security solutions optimized for all environments, ensure secure isolation of workloads and protect against security breaches.



IBM offers industry leading capabilities

- Defense in-depth architecture and security solutions optimized for physical and virtual environments
- Secure isolation of workloads & multi-tenancy isolation
- Maximize uptime with endpoint patch management
- Automated compliance monitoring and reporting
- Security intelligence
- Embedded digital certificates
- Console and audit reporting

*17,500 SSL
handshakes can be
processed before
reaching 100%
utilization¹*

*Protect 100% of your
data with high
performance
encryption on any
media²*

*Save up to 70% in
security audit and
compliance overhead³*

The Australian Open handled 15 million unique users and 360 million page views with watertight protection, without affecting website speed or accessibility

Resiliency Matters



The need

Tennis Australia offering one of the leading live event websites needed to deliver round-the-clock 100 percent availability, simultaneously screen threats and ensure a great user experience.

The solution

To help provide real-time, flexible, and scalable access to the tennis action, IBM provides a secure and self-managing infrastructure based on service-oriented architecture (SOA), and multiple geographically dispersed servers, virtualized as one, to scale up to support a massive increase in traffic more than 100 times its typical volume.

Benefits

- 100% secure tournament website availability
- Ability to remain interactive for fans while securing the site from fraudulent activity
- IBM's infrastructure supporting Tennis Australia and other tennis events has resulted in
 - Since 2008 users have increased by 45% while cost per user has decreased by 35%.
 - Page views have increased by 42% while cost per page view has decreased by 34%.

Building on the experience of thousands of client engagements, IBM offers unique infrastructure capabilities to rapidly create value

The systems choices

- IBM System z mainframes with zSecure
- IBM Power Systems servers with IBM Power SC tools
- IBM System x servers and appliances
- IBM PureSystems family
- IBM Smarter Storage
- IBM Crypto Express card

Why IBM

- More than 850 software developers focused on security, 70 dedicated researchers in nine security centers around the world and more than 15 billion security events managed every day
- More than 1,000 security patents, 160 resiliency centers across 52 countries and 200 IBM researchers working exclusively on cloud security and privacy
- World's only commercial platform with EAL 5+ security classification
- Ability to quickly deploy highly secure, integrated cloud environments
- Protect data without adding complexity or sacrificing performance with self-encrypting drives

Thank you!



ibm.com/systems