ransformation For Growth

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stem Integrators Interchange

Com
the
SM

hy Infrastructure Matters for CAMS

Gururaj Rao
M Fellow, VP, STG Labs India

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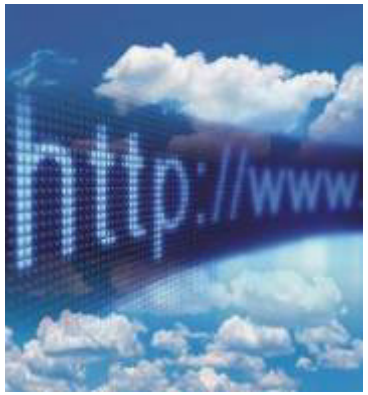
are in a New Era of Computing

Mobile

has supplanted the PC as the interface device and changing consumer behavior

Social networking

growing for interconnecting business users



Cloud

preferred platform fo applications

300x growth

digital content between 2005-2020

Big Data & Analytics

driving investments

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w and increasingly complex workloads are putting infrastructures overload

Monolithic Applications	Composable Services
Programmed Systems	Cognitive Systems
Stable Well-Defined Workloads	Unpredictable Workloads
Proprietary Standards	Open Innovation
Static Infrastructure	Dynamic Services, defined by Software
Structured Data At Rest	Unstructured Data in Motion
Standard Devices	A Variety of Devices
Corporate-owned IT	Infrastructure As-a-Service

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imperative to build an infrastructure that enables business growt

leeds

Apply IT infrastructure to optimize revenue & profit

Achieve competitive advantage

Challenges

- Support new business demands for Big Data & Analytics, Cloud, mobile and social
- ~70% of budget spent on maintenance and administration*
- Reduce Infrastructure costs

Solutions

- Big Data & Analytics: Accelerate high-performance data capabilities
- Cloud: Improve agility and capacity
- Mobile & Social: Increase custome engagement
- Open technologies: Enables integration and innovation
- Software Defined Environment

: IDC; Converged Systems: End-User Survey Results presentation; September 2012; Doc #236966

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l infrastructure study of 750 organizations

How does IT infrastructure impact business results?

What did we discuss?

- Infrastructure readiness for new era of IT
- Top business and organizational challenges
- Perception of IT and infrastructure
- Cross-organizational collaboration

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research revealed a significant gap in what enterprises know an prepared they are to act

>70%

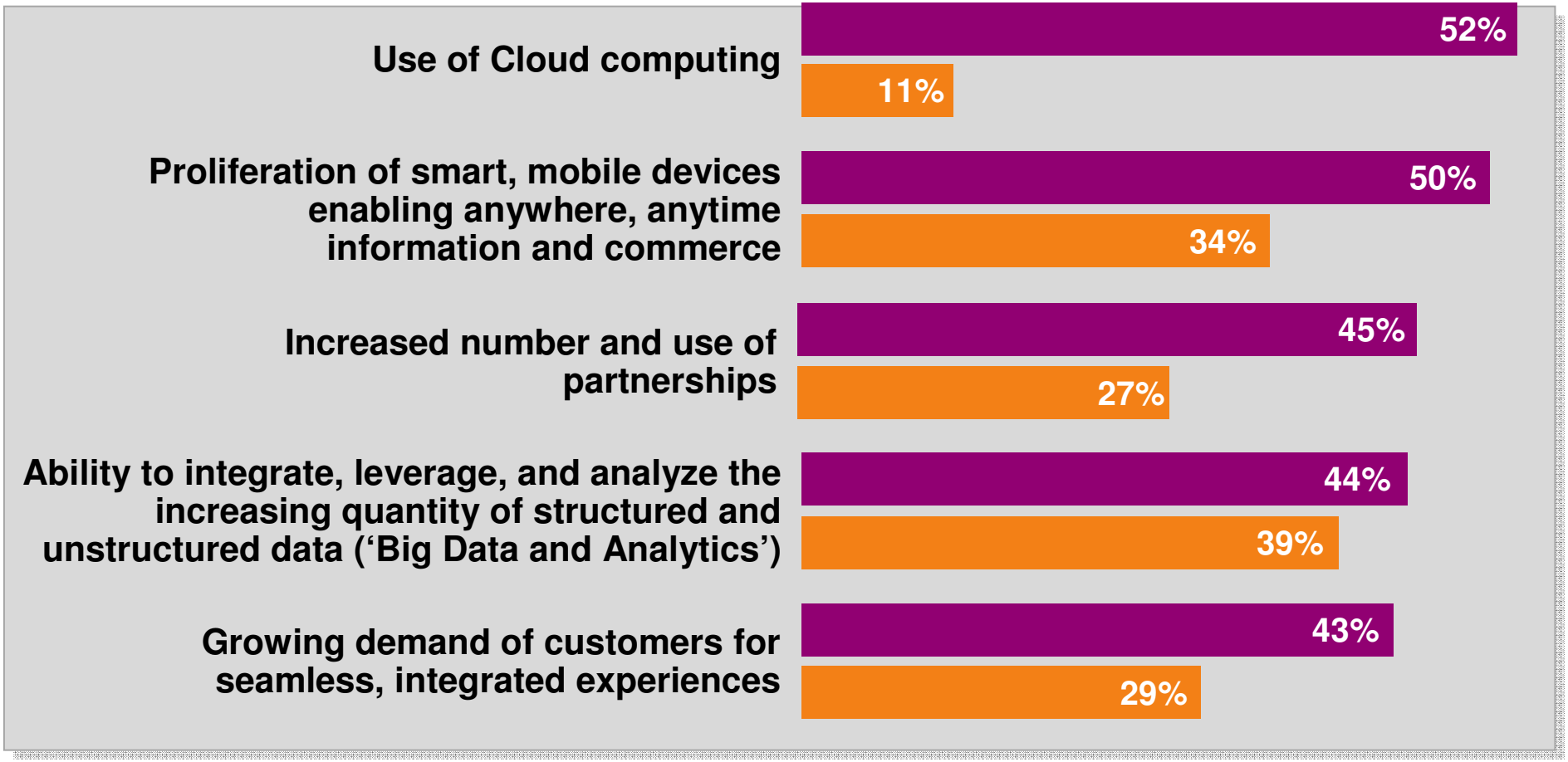
of organizations believe IT rastructure optimizes revenue d profit or is a **key enabler to competitive advantage***

<10%

of IT infrastructures **are fully prepared** to address Cloud, Big Data & Analytics, mobile and social**

*IBM Institute for Business Value, Infrastructure Matters Study. *Q22. Please select the statement that best describes how your organization views IT infrastructure. S 750, 1% said they 'Don't Know'); **Q2. How prepared is your existing IT infrastructure to address the following trends? (percent indicating fully prepared) (n=750)*

dentified “Visionaries,” who lead in “readiness” for emerging nology trends



BM Institute for Business Value, Infrastructure Matters Study. Q2. How prepared is your existing IT infrastructure to address the following trends? (percent indicating epared) (Strategic IT n=124, Tactical IT n=148)

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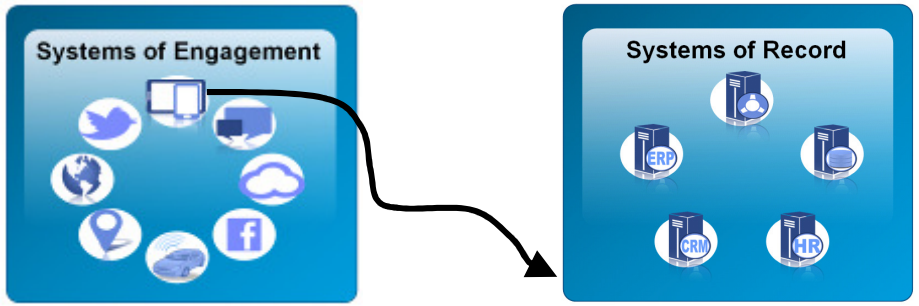
right infrastructure is essential for achieving business outcomes
ta-driven world

1. **Allows you to embrace new workloads**

2. **Ensures "right-time" decision-making**

3. **Seamlessly integrates the front and back office**



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For Cloud:

fficiency Matters

d, organizations must
ve the economics of
ough efficiency.

client services can be
developed while
onal **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 Matt

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

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

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For Cloud: Efficiency Matters

structure must be consolidated, virtualized, and optimized and aged more effectively and simply

ffers industry leading capabilities to improve the economics of IT

oss Platform virtualization and management across multiple pervisors and platforms

peatable and deployable patterns of expertise

ilt on open standards, including Open Stack, for unparalleled eroperability

egrated management of physical and virtual infrastructures

55%

lower TCO vs. dist systems

80%

reduction in cloud applicati deployment times, lowering operations by 30%

For Cloud: Resiliency Matters

structure must dynamically scale up and down, be available 24x7,
le continuous workload optimization and be secure

offers industry leading capabilities to meet business needs

- 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
- Software Defined Environment

100%

utilization with
performance degra

10x

less reported sec
complaints tha
VMware

For Cloud: Responsiveness Matters

structure must be deeply integrated across computer, storage and orking.

offers industry leading capabilities to meet business requirements

ntegrated systems management and cloud-enabling technologies across choice f hypervisors and OS

Self-service, automated provisioning

Standardization and automation of cloud services through a flexible rchestration engine and a self-service portal

ntegration tools to integrate public and on premise applications quickly and imply

Single view of files, across all sites regardless of their physical location

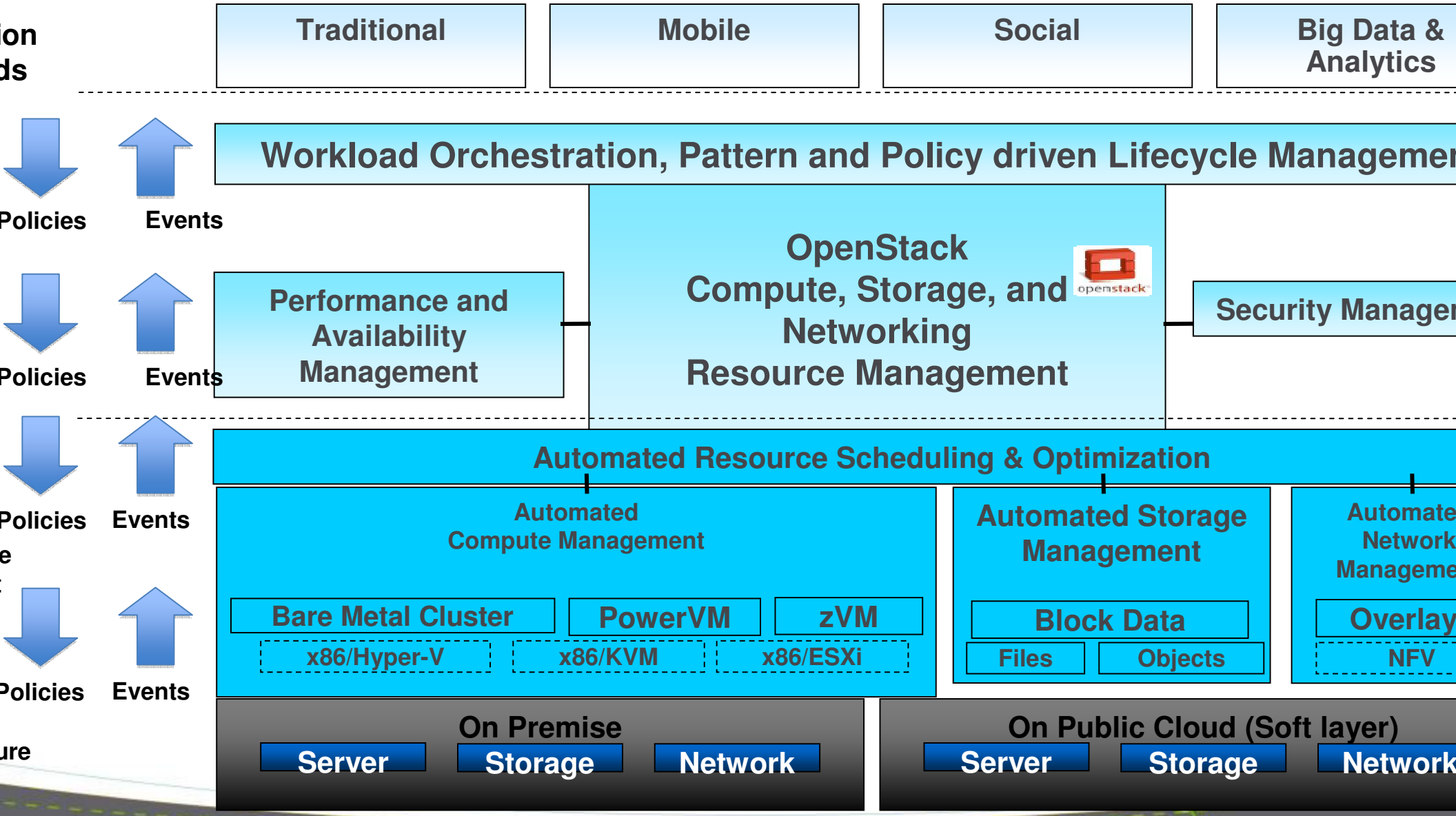
30 seconds

self-service capab
provision sto
servers

months to we

reduce time to m
for new servic

IBM Software Defined Environment and Cloud Platform



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axpay

orth American **financial services organization** needed a secure, reliable, scalable **cloud astructure** to **provide real-time financial transactions services for the B2B** market, enab panies to **optimize cash flows and drive new revenue streams**

ficiency Matters

this client action

d an infrastructure that could **small** and not require a large investment, yet could **scale y** to support a global customer rocessing billions of ctions securely, reliably and – all – fast.

Business outcome

Keeps pace with demand for its hugely popular financial transactions service and yet offers speed, security and reliability at **less than one tenth of the cost** of traditional.

Requirements

Processing payments took hou even days, and while cash was n cleared the corporations lost poss interest income. With the new sol transaction processing time is red **virtually zero**, and cleared funds available almost instantly, earning interest more quickly than before.

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England Lawn Tennis Club

mier tennis event needed to deliver innovative ways to share the excitement of the tournament and **ge millions of fans globally**. A **website that leveraged cloud with social and mobile bilities** was the answer.

iliency Matters

this client action

and mobile trends have driven **customer experience** ations, particularly at sporting . Failure to deliver a seamless tive experience can lead to satisfaction and loss of al revenue.

Business outcome

For **two weeks every year, 17 million** visitors enjoy an innovative, interactive web experience that satisfies an increasingly **sophisticated fan base**.

Requirements

In 2012, **40 percent of website visits were via mobile devic and downloads of a mobile a doubled** over the previous year. demands added pressure to the infrastructure, requiring continuou availability and security, while cos site-visit figures needed to go dow

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ark

opean **computer services** company needed a **cloud storage service** that could help differentiate it in the tplace and add value to its portfolio. The business needed a low-cost, scalable infrastructure to support this valua ffering and enable customers to share and synchronize data in a secure and convenient way.

ponsiveness Matters

this client action

ervice capabilities hinge on a sive infrastructure; slow mance can negatively affect the xperience and customer ction.

Business outcome

In less than **two months**, the company launched an innovative cloud storage service with **far lower energy costs per petabyte** than it had achieved previously. Customers can use **self-service** capabilities to **provision storage servers in just 30 seconds and access files in only 15 seconds**.

Requirements

These capabilities require a scala security-rich infrastructure that is and cost-effective to manage and supports granular billing.

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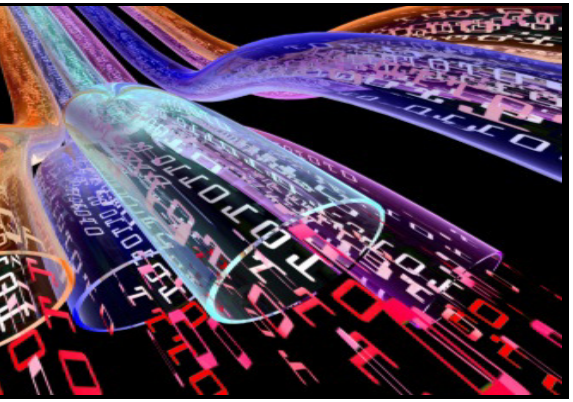
For Big Data & Analytics:

Access Matters

t new levels of visibility into stomers and operations



n new levels of **customer acy and differentiation** hared and secure access to **all ant information no matter 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 Matter

To consistently deliver in to the people and proce that need them

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

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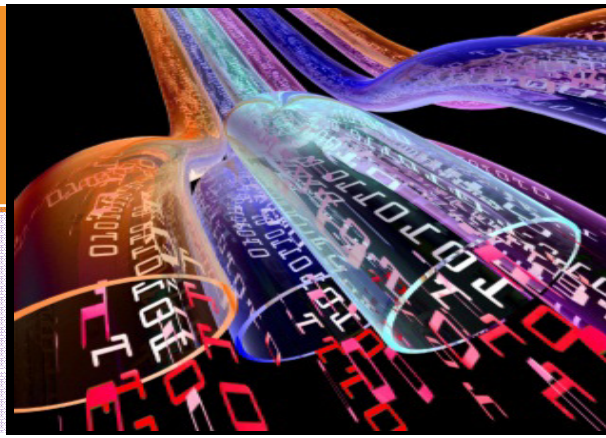
or Big Data & Analytics: Access Matters

To get new levels of visibility into customers and operations.

ucture must enable shared and secured access to all relevant data, no t's type or where it resides to obtain new levels of intimacy and tiation



ffers industry leading capabilities

ability (-in, -out, -up)
ient virtualization and resource management
mized data storage and access
tiering and compression
llel processing
mized compute: threads, I/O, acceleration
le view of data: Master Data Management

Supports up to 20 petabytes of storage i single global file syste

#1 for TPC, SAP, Sp benchmarks[2]

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or Big Data & Analytics: Speed Matters

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

tructure must build intelligence into operational events and ctions.

Complex queries can r be processed up to 2,0 faster[1]

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

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 – "scoring"
- Specialty workload engines

20X more data acces deliver faster insigh

sformation For Growth
ultants &
egrators Interchange

For Big Data & Analytics: Availability Matters

onsistently deliver insights to the people and processes that need them.

tructure must maximize the availability of information
nsights 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.

IBM offers industry leading capabilities

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

43% faster analytics wit
99.99% uptimes[1]

Resilient storage architectures –
99.999% uptir

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e Bank of Quanzhou

g analytics to identify trends to develop **new products and services**

Access Matters

泉州银行
BANK OF QUANZHOU

Create a Customer Focused Enterprise

150%

increase in high-value business custom

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

Core Infrastructure Capabilities

- **Data Optimization**
- **Parallel Processing**

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ca Cola Bottling Co. Consolidated

vering **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; match manufacturing output with demand, **reduci of over- or under-stocking**; enables earlier lo planning, increasing profitability.

Core Infrastructure Capabilities

- **Data Optimization**
- **Low Latency**

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i Southern Gas Company Limited

ng **user-driven reporting with real-time updates**

Availability Matters

SSGC

ness users now have the power to run forecasts, to test new ideas, and to see the impact of changes almost immediately."

ashif Qadeer, Deputy General Manager (Business Systems), Sui Southern Gas Company Limited

Core Infrastructure Capabilities

- Data Optimization
- Scalability

Create a Customer Focused Enterprise

Unprecedented visibility of company operations for improved decision-ma

The solution overlays digital maps with real-time operation financial data, enabling SSGC to visualize and analyze da real-world context

The use of Data Analytics helps ensure better, effective a usage of gas and helps **curtail the growing gap betw gas supply and demand.**

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For Mobile:

ilability Matters

power engagement and
-informed decisions,
ed a highly secure and
e infrastructure.

expect information and
s to be delivered where and
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 **acce**
time between informatio
access, analysis and ac
enable better decisions, faste

This is the era of mobile insig

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Availability Matters

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

**offers industry leading capabilities to empower engagement and better
ion-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 applicatio
a mainframe sys

50%

reduction in TCO wi
button data mob

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Security Matters

structure must provide security-rich mobile access to critical
ess information

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 compa
solutions requi
added-on secu

10x

less reported sec
complaints tha
VMware

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Speed Matters

structure must accelerate the flow of data and process the data
r for real-time decisions.

30 millisecon

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

average end-to
response times to
low latency mo
banking

50%

reduction in new p
launch time

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iversity of Florida

University of Florida rolled out an **integrated mobile application** running on an IBM System z® nframe, which enables its 50,000 students, 5,400 faculty members and staff to **access university ources virtually anytime, anywhere to enrich the student experience.**

this client action

end of 2013, there will be imately 1.4 billion hones in use. The University da sought to improve campus ences for students and faculty king resources available n smartphones.

Business outcome

A mobile-enabled mainframe delivers "anytime, anywhere" access to university resources, helping students meet their academic responsibilities.

Requirements

The University of Florida sought t maintain its ranking among the na top universities by providing stude with information that would help th navigate campus life and meet ac responsibilities.

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al Commercial Banking Corporation

l banks in the Philippines must meet the requirements of customers who expect **anywhe**
time mobile access to banking products and services.

urity Matters.

this client action

nk set a goal of adding 10 new customers to its existing The bank's customer data and tions, however, ran on siloed ems that made information g difficult, slowing decision g.

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 woul the bank to seamlessly integrate r mobile service with its existing ba services and scale to support 10 r new customers by 2016.

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hony Squires

ustralian men's **luxury apparel retailer** needed a solution that allowed the retailer to ove productivity at headquarters and in retail stores.

ed Matters.

this client action

ny Squires needed to be able to stock and transfer garments ore to store in real time to ze customer wait time.

Business outcome

Anthony Squires rolled out a security-rich mobile solution that provided access to stock in other locations and allowed the retailer to **transfer garments from store to store while the customer waits**. Within six months of rollout, Anthony Squires recorded **a16 percent increase in sales.**

Requirements

Anthony Squires needed a highly **mobile** solution that facilitated ac to **stock on hand between its concession outlets and headquarters** —without sacrific customer service times.

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

ata Integrity Matters

confident that critical
nd information is safe.

Access Matters

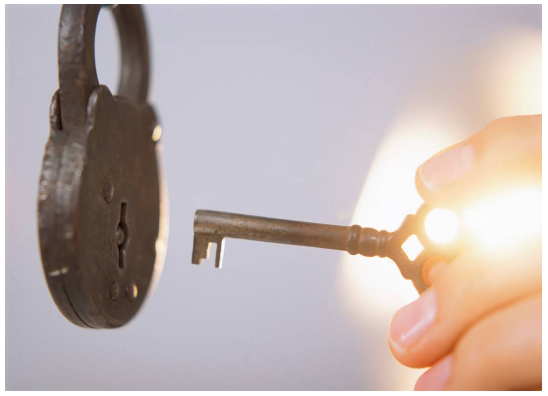
To ensure the right people have access to the right information

Speed Matters

To bring applications to market at a lower cost

Resiliency Ma

To protect against breaches by safeg the integrity infrastructur



Data

ecting today's precedented e and variety of data

People

Managing identities and access to information, applications and systems

Applications

Securing the software that businesses rely on

Infrastructu

Securing the ne servers, virtual s mainframes a endpoints

Data Integrity Matters

To be confident that critical data and information is safe.

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

*96 out of the top 100 worldw
banks use systems from IBM
secure their sensitive finan
information.[1]*

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

*IBM offers the world's onl
commercial platform with Eval
Assurance Level (EAL) 5+ se
classification for protectin
business-critical workload*

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Access Matters

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

tructure must manage and audit user access, detect fraud in me and provide preemptive automated threat detection.

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 securi
administration co
by up to 52%[1]

Zero setup time t
achieve trusted
protection form t
hardware to the

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Speed Matters

To bring applications to market at a lower cost.

tructure must protect against application vulnerabilities from
pment to production.

M offers industry leading capabilities

Advanced application vulnerability detection

Granular application access controls

Comprehensive and consistent centralized policy based security
ntelligence

100x reduction in
cost of fixing secu
defects by findin
vulnerabilities earl
the application
development cyc

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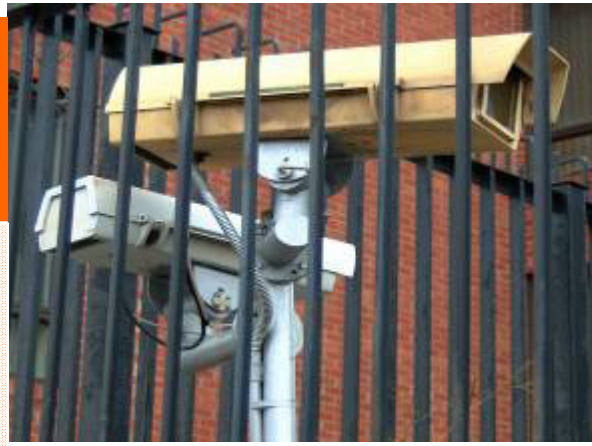
Resiliency Matters

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



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

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 handshake be processed befor reaching 100% utiliza

Protect 100% of yo data with high performance encryp on any media[2]

Save up to 70% r security audit and compliance overhea

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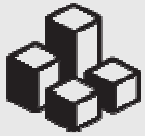
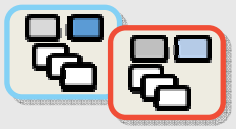
e right infrastructure is ‘Made with IBM,’ helping clients optimize enue, profit and margin

Designed for Big Data



Continuous data load

Massive IO bandwidth



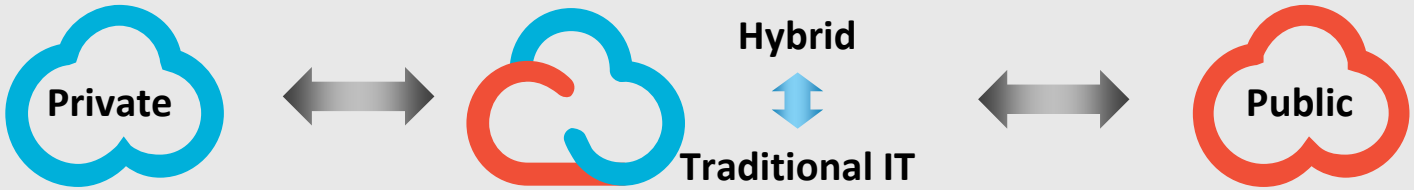
Grid-scale storage

Flash for extreme performance

Cognitive capabilities

Low laten

ined by Software for the Cloud



uilt for Optimized Engagement

Open & Collaborative

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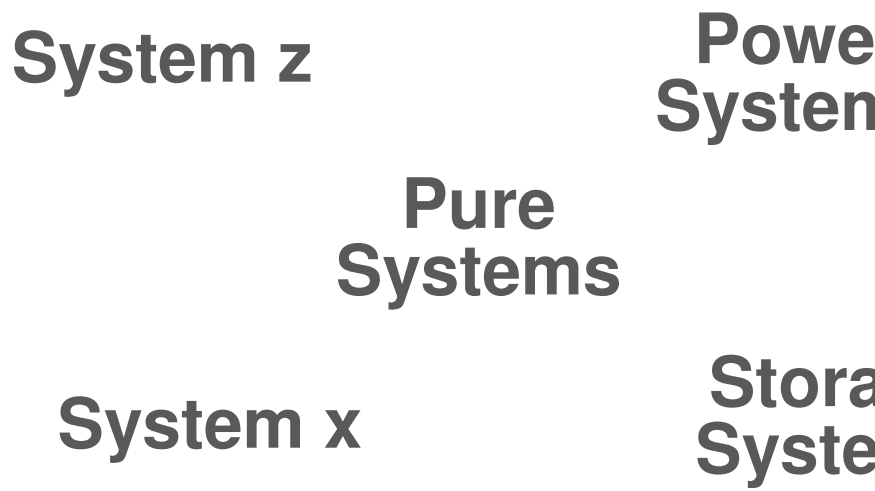
to Action - How can you:

- **Leverage infrastructure to optimize Client revenue, profit and competitive advantage ?**
- **Define an End-to-End Infrastructure strategy ?**
- **Collaborate and Partner with IBM ?**

Deploy cloud infrastructures to embrace new workloads and support changing business needs

Build an analytics infrastructure that ensures "right-time" decisions

Integrate devices, applications, and back-end systems to drive engagement



INFRASTRUCTURE **MATTE**

Thank you!

y Infrastructure Matters: Going Beyond Traditional Architectures

Gururaj Rao, VP, IBM Fellow, Systems & Technology Lab