Successful Mobile, Big Data and Cloud implementations exploit System z

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Companies continue to exploit System z as platform to manage fast growing business critical workloads

- 90% of Fortune 500 companies continue to rely on mainframes

- 70% of Enterprise Customers indicate z will play part in **cloud initiatives**

- 85% of business transactions, including **mobile**, processed by mainframes

- 80% of Corporate data resides on mainframe, including **big data**

Why are customers continuing to use System z?

- *Secure mixed-workload management*

- *Best Practices Service Management*

- *99.999% availability and uptime*

Rapid growth of next generation technologies supported seamlessly on zEnterprise

System z scaling model and security to manage and optimize both

Social, Mobile, Analytics
Smarter Infrastructure

Systems of Record

Systems of Engagement

- Business Transactions
- Quality of Service
- Command & Control
- Facts and data "source of truth"
- z/OS

- Mobile and Social
- Dynamic
- Interactions and Collaboration
- Insight, trends, analytics
- Linux on System z

zEnterprise most efficient platform for Linux workloads

Consolidate 40 Oracle server cores onto 3 Linux cores on z114
Lower acquisition costs of hardware and software vs. distributed servers
– *up to 51% less in new footprint (**Enterprise Linux Server (ELS)**)*
– *or **up to 62% less** when adding to existing zLinux footprint*

Legend:
- Oracle
- OS
- VM SW
- HW MA
- HW

Chart y-axis: 0 to 1,200,000 (increments of 200,000)

Chart data points:
- -37%
- **-51%**
- **-62%**

X-axis categories:
- New x86
- z10 BC™ 4 IFL ELS
- z114 3 IFL ELS
- z114 3 IFL SEEL

* ELS – Enterprise Linux Servicers   SEEL – Solution Edition for Enterprise Linux (zEnterprise Installed)
* Based on US Enterprise Linux Server pricing. Pricing may vary by country. Model configuration included 10 IFL cores running a mixed workload averaging 31 virtual machines per core with varying degrees of activity. Includes zEnterprise hardware and z/VM virtualization software. Does not include Linux OS or middleware software.
2 Distributed server comparison is based on IBM cost modeling of Linux on zEnterprise vs. alternative distributed servers. Given there are multiple factors in this analysis such as utilization rates, application type, local pricing, etc., savings may vary by user.

Government agency modernizing to avoid cost and protect investment by moving to Linux on System z

Business Challenge:

- US Government agency wanted asset management solution for physical assets (e.g. vehicles, equipment)
- Needed to deploy environment to support 5000 users
- Would require several hundred blades for application server

IBM Solution:

- System z10 Server with 28 IFLs
- Oracle DB for Linux on System z Servers
- IBM Maximo Asset Management for System z

Benefits:

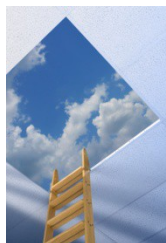- Leveraging unused processors on System z
- **Deploy in 1/3 time** of x86 servers and no additional energy costs
- Software license charges **saved $1 million** on System z
- **Included Disaster Recovery** on System z, to avoid doubling x86 costs for HADR

System z proven platform to seamlessly address challenges for Mobile, Cloud and Big Data workloads

Mobile

- Mobile Business workloads require security and high availability
- Increased mobile business data access and complexity
- Drives Scale-up and Scale-out Enterprise challenges

Cloud

- Performance, security, high availability and disaster recovery
- Data protection and regulatory compliance
- Ability to quickly and easily provision and orchestrate

Analytics/Big Data

- Complex, non-traditional data require enterprise-wide data management
- Analytics requires fast, easy heterogeneous data access

System z Service Management enhanced to focus on providing high availability for fast growing technologies

Ability to improve Time to Value

- Minimize manual intervention
  - IBM Workload and System Automation
- Keep all workloads meeting SLAs
  - IBM Monitoring, Analysis and Management
- Incorporate new technology data seamlessly
  - IBM Storage Management

Achieving agility, cost savings and high availability requires:

Visibility   Control   Automation

University of Florida (UF) keeps students on track with mobile applications built on zEnterprise

Client Challenges:

- Smartphone ownership at UF jumped from 27% (2009) to 69% (2012) and growing.

- Enable 50,000 students and 5,400 faculty members to access a rich selection of online features anytime and anywhere with mobile device

Solution:

- Created UF Mobile web with access to Integrated Student Information System for tracking

- CICS Server running on z114 with OMEGAMON XE for CICS monitoring & management

Benefits:

- Non-disruptive expansion of current applications to support Mobile

- Handling over one million Transactions per day at peak registration times

"The UF Mobile Web helps students navigate through this information overload and meet their responsibilities." Steve Ware, systems administrator/programmer, UF

System z Infrastructure Services manage high growth rates of Mobile applications and data requirements

- Dynamic scaling of Mobile workloads drives critical requirement for enhanced automation
  - 24/7 availability requires high degree of mainframe **System and Workload Automation**

- Network visibility and management important to keeping mobile apps available and performing
  - **End-to-end monitoring** with OMEGAMON

- Mobile as an extension of Cloud
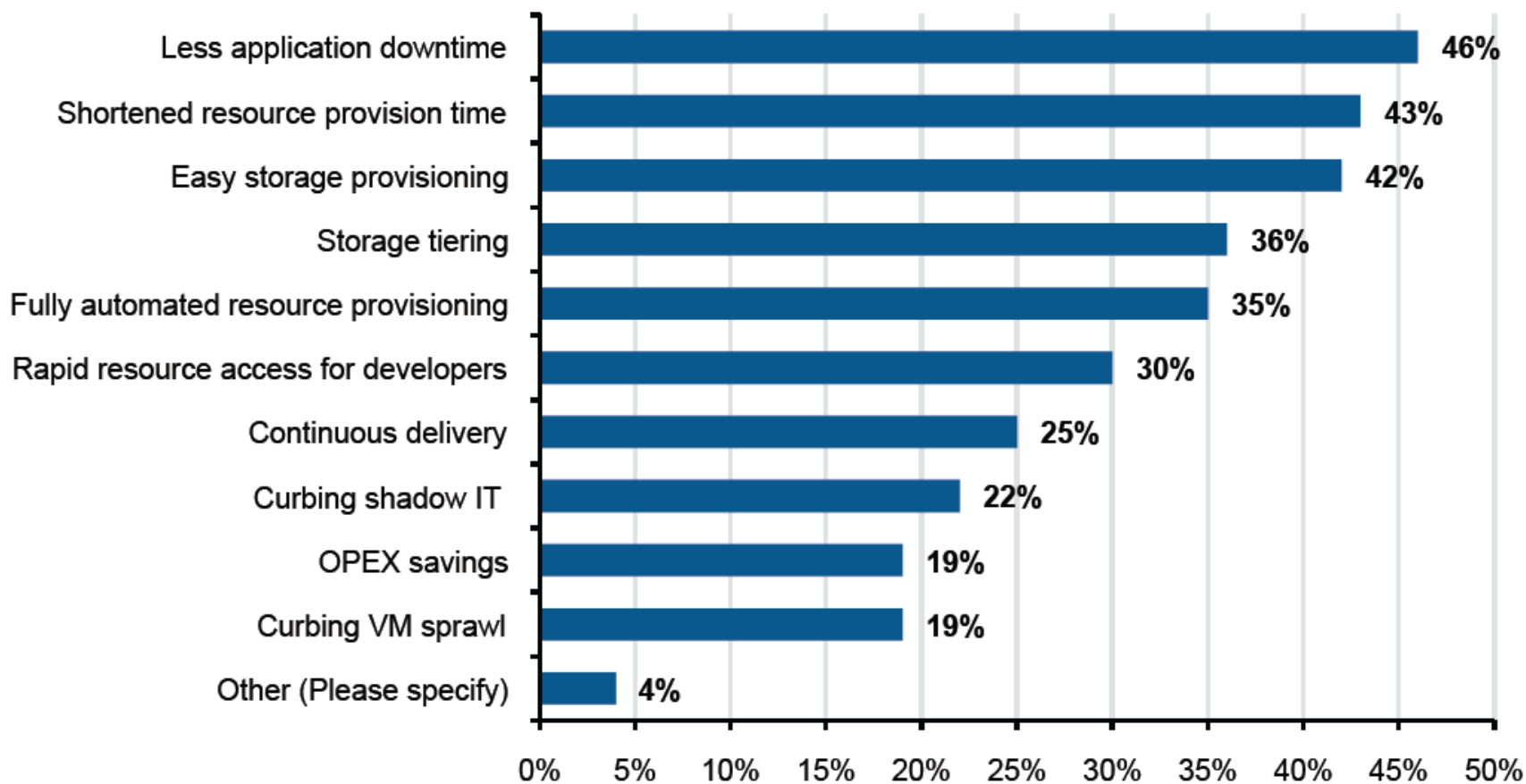 - Requires business critical asset and **end-point management** across distributed & System z

Top Mobile Adoption Concerns:

1. Security/privacy (53%)
2. Cost of developing for multiple mobile platforms (52%)
3. Integrating cloud services to mobile devices (51%)

To achieve cloud goals require improvements in workload monitoring, management and automation

What were the key strategic goals of your private cloud?

Goal	Percentage
Less application downtime	46%
Shortened resource provision time	43%
Easy storage provisioning	42%
Storage tiering	36%
Fully automated resource provisioning	35%
Rapid resource access for developers	30%
Continuous delivery	25%
Curbing shadow IT	22%
OPEX savings	19%
Curbing VM sprawl	19%
Other (Please specify)	4%

n = 2130 Respondents (EMA, IDC 2012 converged cloud study)

Credit Union Systems for Brazil (Sicoob) avoids $1.5M in annual costs with IBM mainframe cloud consolidation

Business Challenge:

- Goal of being primary provider of financial services to members
- Needed flexible, secure and scalable IT infrastructure to support reliable 24/7 service and mobile access.

Solution:

- Private System z cloud running 300 production environments
- Replacing distributed, Intel processor-based servers with Linux on z virtual servers

Business Results:

- Avoid $1.5m per year in energy costs, while growing 600%

"We grew by nearly 600 percent; Internet banking grew by 200 percent; for mobile solutions, growth was 600 percent. It would not have been possible to support this growth without IBM System z."

Quick and easy implementation of Private Cloud on zEnterprise with provisioning of images and applications

Cloud Ready for Linux on System z

Cloud Monitoring

Service Lifecycle Management

Cloud Backup/Recovery

Automated Provision/De-Provision

Cloud Automation
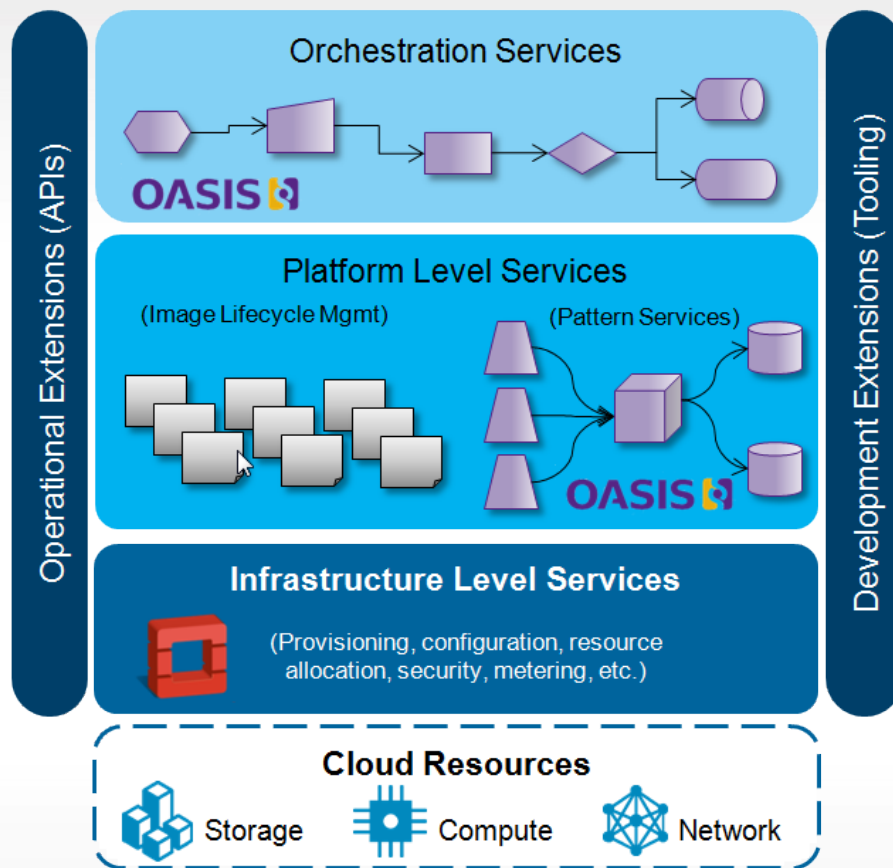
Installation/Configuration support

<u>Benefits:</u>

- Bring up Cloud on Linux on System z in less then a week
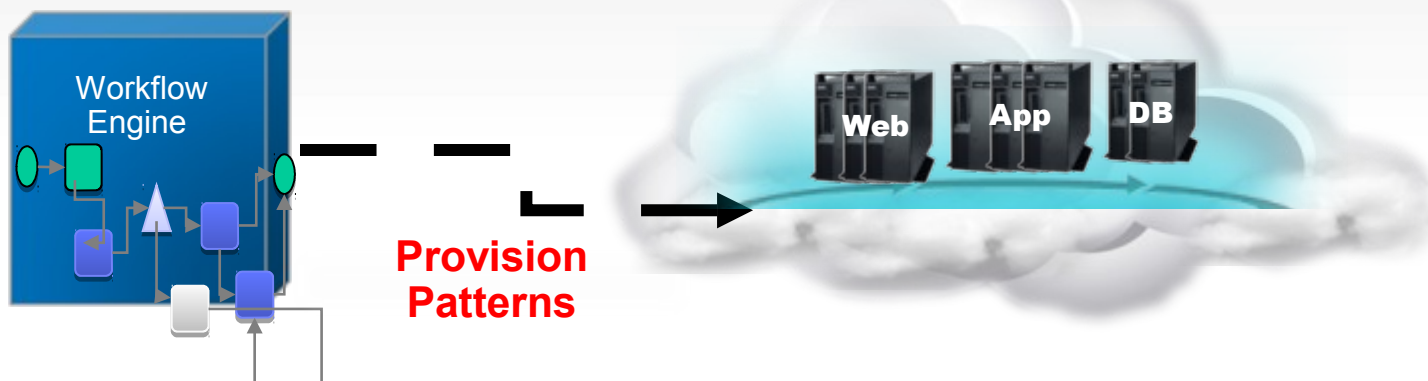- Improve productivity with user self-service portal

System z Service Management provides performance for critical Cloud workloads

- zEnterprise Cloud can host critical workloads only supported on System z
  - Based on **fit-for-purpose approach**

- IBM continues improvements of System z Systems of Record Cloud workloads
  - Enhanced **OMEGAMON** usability
  - Improved **Workload Automation**

- Create zEnterprise Private Cloud today with IBM **Cloud Ready for Linux on System z**
  - Add SmartCloud Orchestration

Manage all components of Data Center Lifecycle with Cloud based on open standards fit for purpose approach

SmartCloud Orchestration

Workflow Engine

Provision Patterns

Web   App   DB

OASIS

The Organization for the Advancement of Structured Information Standards

Resource Management
Onboard, provision, manage CPU, Storage and Network

Workload Management
Workload aware placement, optimization and operation

Service Management
Manage the lifecycle of business applications

City/County of Honolulu creates a customized cloud reducing licensing costs by up to 68 percent

Business Challenge:

- Increase government transparency by providing useful, timely data to citizens.
- Improve citizen involvement and efficiency of city operations

Software Solution:

- System z customized cloud with Linux on IFLs
  - Maximo Asset Management, OMEGAMON for z/OS and CICS , Workload Scheduler and Tivoli Storage Manager

Business Results:

- Reduced application deployment time from one week to only hours
- Lowered licensing costs for one database by 68 percent
- Enabled creation of new property tax appraisal system **and increased tax revenue by USD$1.4 million in just three months**

"Working with IBM enabled us to take an innovative approach. We were able to get things up and running quickly." - Gordon J. Bruce, CIO of IT, City/County of Honolulu

IBM focused on managing end-to-end analytics for Big Data across all platforms
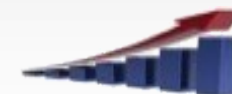
Business value

Plan and optimize

Faster problem detection and resolution

Failure Risk Estimation and Avoidance

Insight & Care

Breadth of Analytics

Search
Relate Log-file search with alerts and metrics

SmartCloud Analytics

Predict
Predict anomalies based on events & logs

OMEGAMON and NetView with zEnterprise zAware

Optimize
Track applications & provide options on how to improve performance

Capacity Management Analytics (CMA)

Search for and rapidly analyze unstructured data to assist in problem identification, isolation and repair
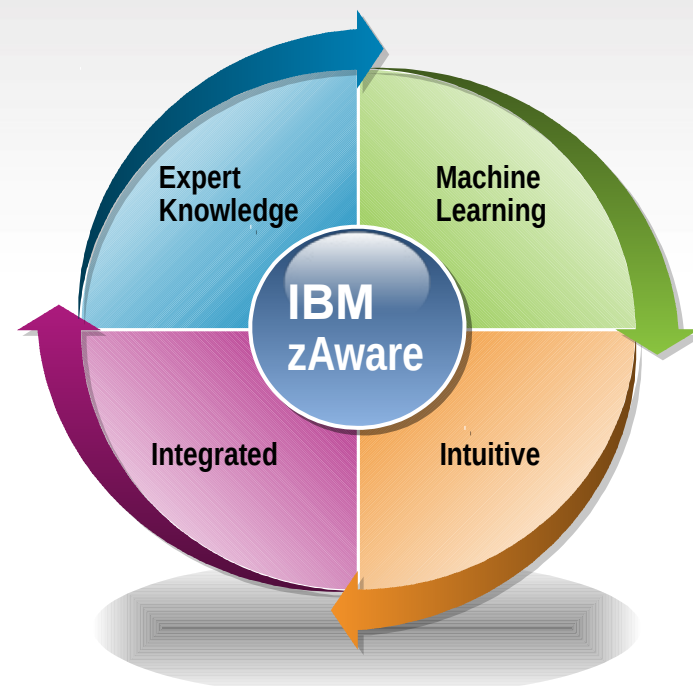
SmartCloud Analytics – Log Analysis

- Faster Problem Identification and Isolation
    - Search and indexing of logs and data
    - Cross domain analysis

- Faster Problem Repair
    - Linking expert knowledge to log error/warning messages

- Improved Service Availability and Maintainability
    - Provide users with advanced insights into custom applications

Predictive analysis for improved availability with enhanced monitoring and management in OMEGAMON

OMEGAMON V5 family

- Predictive Analytics capability for anomaly detection
  - OMEGAMON for z/OS V5.1.1 support for zAware
  - zEnterprise zAware allows outage predictions

- Improved productivity with enhanced install/config
  - 490 fewer parameters to customize
  - 75% reduction in refresh steps

Benefits:

- Save up to 75% of time needed to find problems
- Up to 73% of CICS SLA processing off-loaded
- Reduce fix times from 90 minutes to 2 minutes

Analytics from OMEGAMON works with System Automation to improve availablity and simplify operations

SA for z/OS

System Automation

NetView

OMEGAMON Monitoring

z/OS	IMS	DB2	z/VM
Linux	CICS	WebSphere	

- Active or passive performance monitoring
  - Managed by automation
  - Integrated with monitor products
- Determine health state or exceeded tresholds
- Send a notification to event receiver or owner
- Start/stop/move resources
- Expert level: Cure performance problem
  - Using performance monitor, system or affected subsystem

Optimization of Big Data and applications to create knowledge with Capacity Management Analytics

Capacity Management Analytics (CMA) solution

- Analytics, monitoring and management across Big Data on System z environment including CICS, DB2, IMS, WAS
  - Insights into operations with TDSz, SPSS and Cognos

Additionally:

- Improved availability of Big Data storage with enhanced System z storage management portfolio
  - OMEGAMON XE for Storage V5
  - Updated zStorage Management Suite

IDC forecast projected worldwide big data technology and services market will grow at 31.7% CAGR - 21.1% services and 53.4% storage.
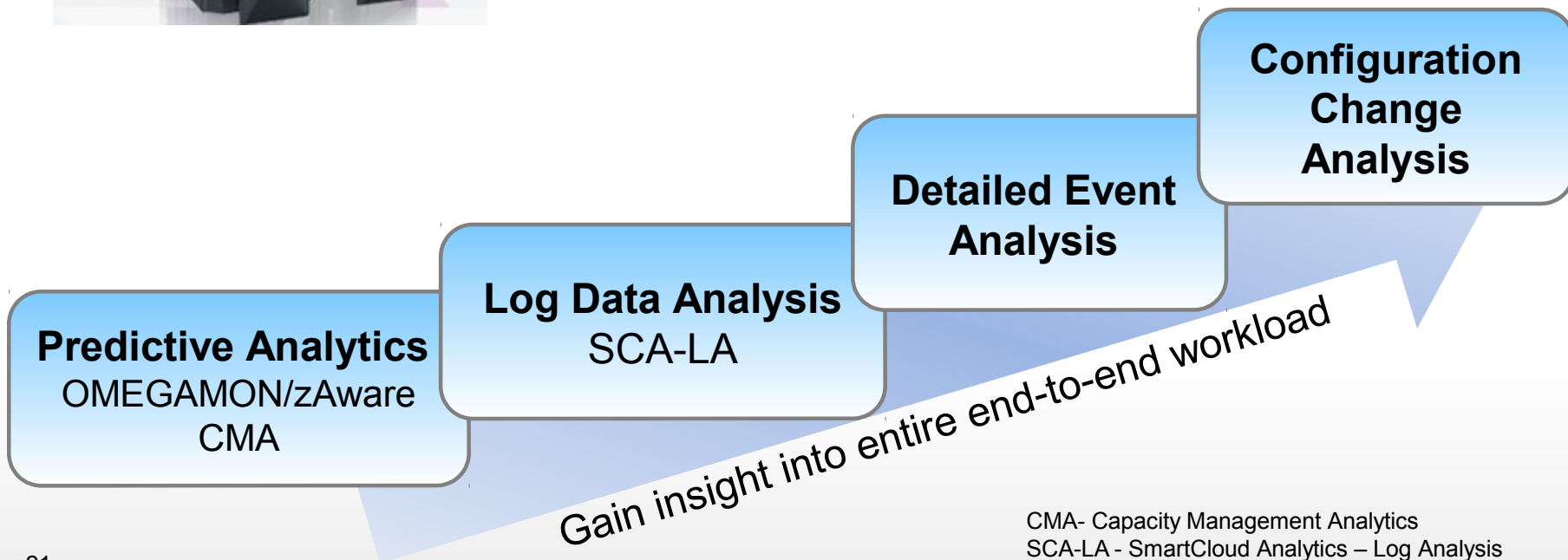
IBM System z analytics improving ability to reduce risks by adding capability over time
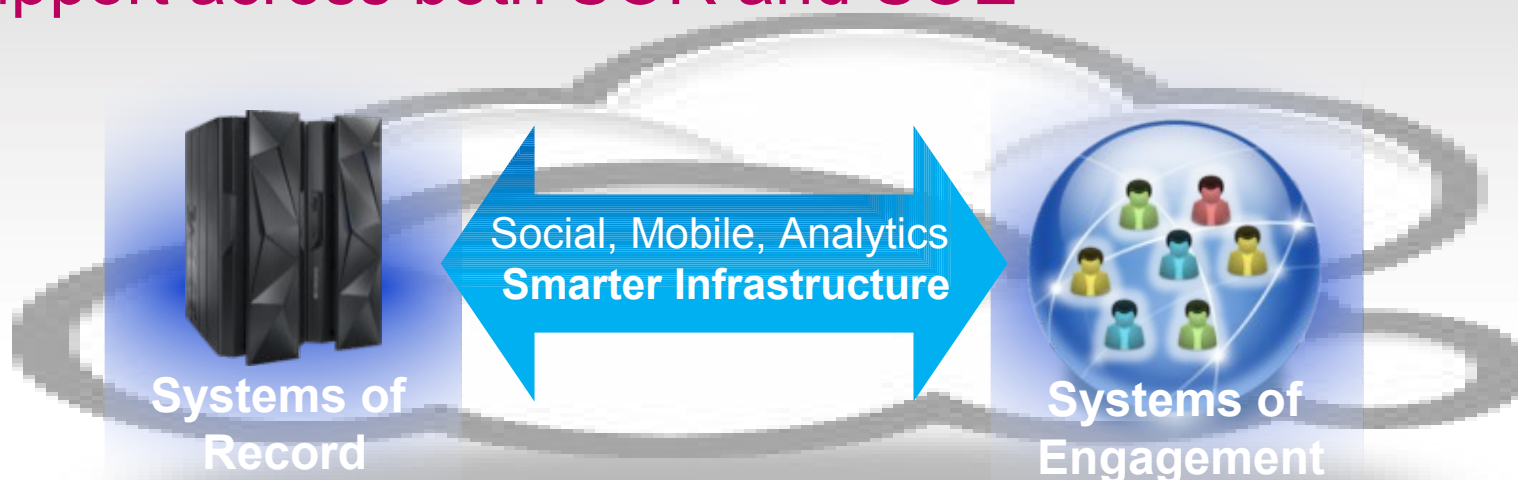
- Operators and subject matter experts overwhelmed with volumes of data to be manually processed
- Enhance current tools with analytics for more efficiency and productivity
- Add additional analysis capability over time

Predictive Analytics
OMEGAMON/zAware
CMA

Log Data Analysis
SCA-LA

Detailed Event Analysis

Configuration Change Analysis

Gain insight into entire end-to-end workload

CMA- Capacity Management Analytics
SCA-LA - SmartCloud Analytics – Log Analysis

IBM provides System z enterprise management support across both SOR and SOE

Social, Mobile, Analytics
Smarter Infrastructure

Systems of Record

Systems of Engagement

Systems of Record		Systems of Engagement
OMEGAMON XE Family	Monitoring	**OMEGAMON for zVM/Linux**
OMEGAMON, TADz, TDSz	Performance Management	**SmartCloud Application Performance Management**
Systems/Workload Automation	Automation	**Systems/Workload Automation SmartCloud Orchestration**
Capacity Management Analytics (CMA)	Analytics	**SmartCloud Log Analytics, Predictive Insights**

zEnterprise continues to provide value in implementing growing Mobile, Big Data and Cloud workloads

Key Takeaways

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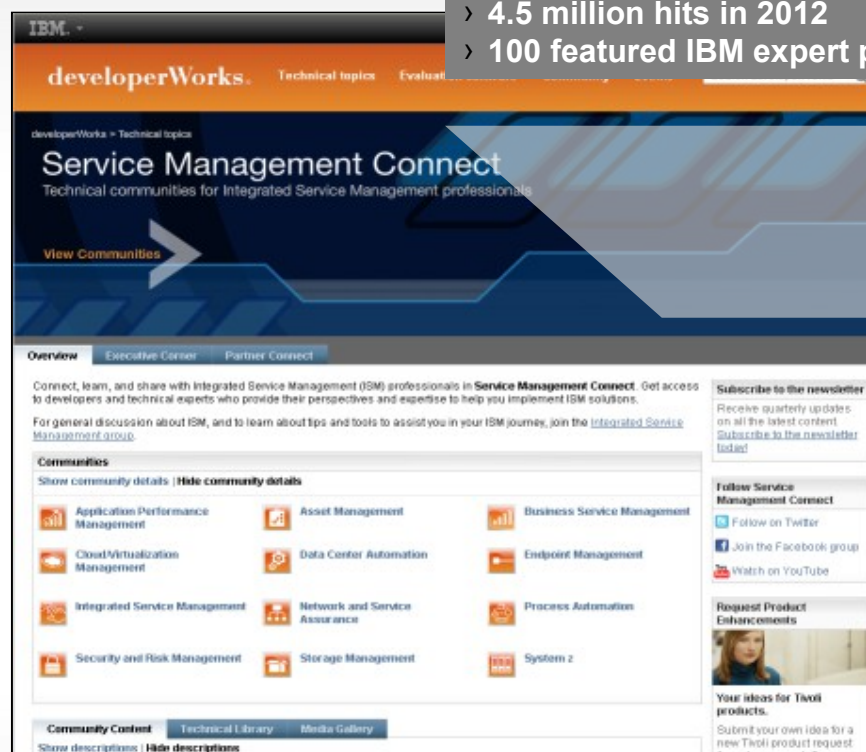
1. IBM strategy and tools support reliably running Mobile, Big Data and Cloud workloads on System z cost effectively

2. IBM can orchestrate across Systems of Record and Systems of Engagement for workload aware performance, analytics and monitoring

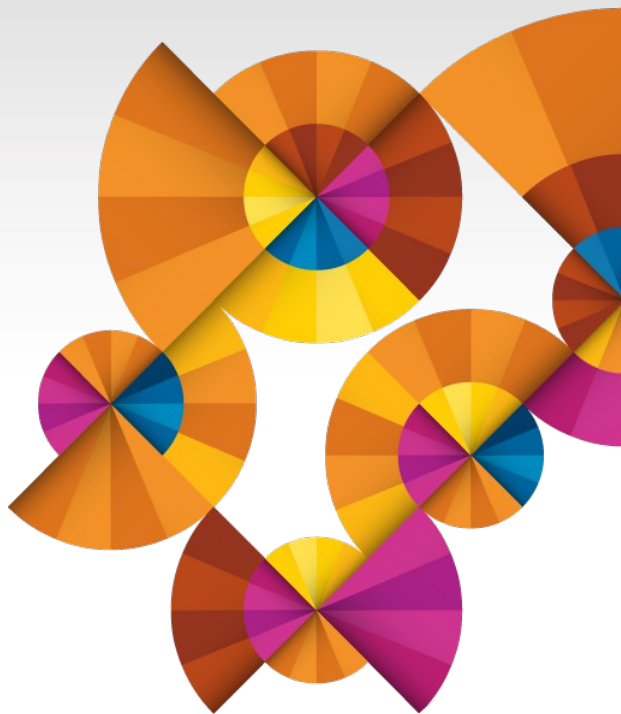3. IBM only vendor who can tie technologies together with Visibility, Control and Automation to meet end-to-end SLA

Service Management Connect

Connecting future of service management

- Transparent development

- Product roadmaps

- Code downloads and demos

- Access to the System z experts

  - Forums

  - Blogs

  - Wikis

- Best practices

- Submit requirements

> › **250+ System z blog entries from the IBM experts**
> › **4.5 million hits in 2012**
> › **100 featured IBM expert profiles**

Thank You

Executive presentation are available for downloading at

http://www-01.ibm.com/software/os/systemz/itsm/