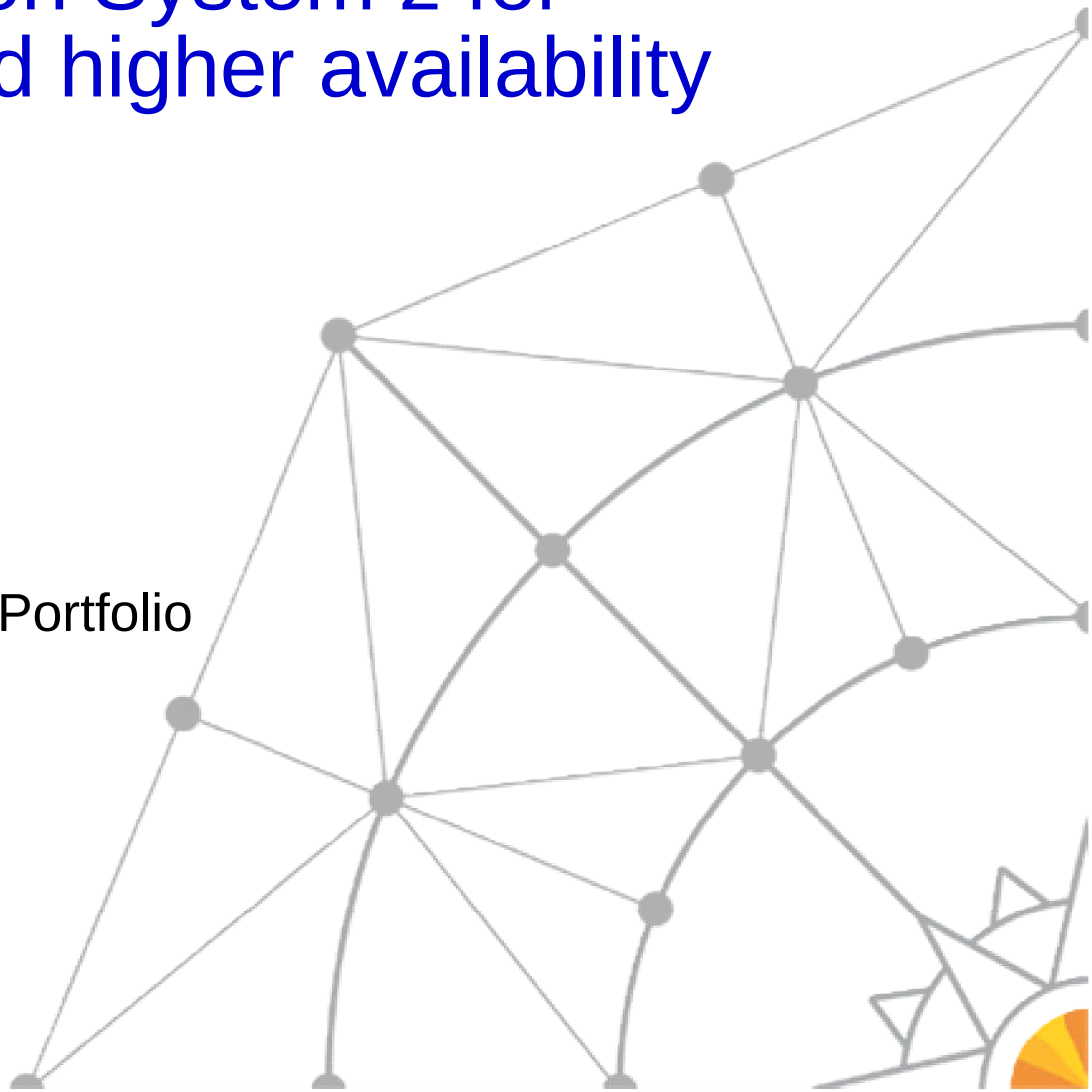
Increasing analytics on System z for improved visibility and higher availability

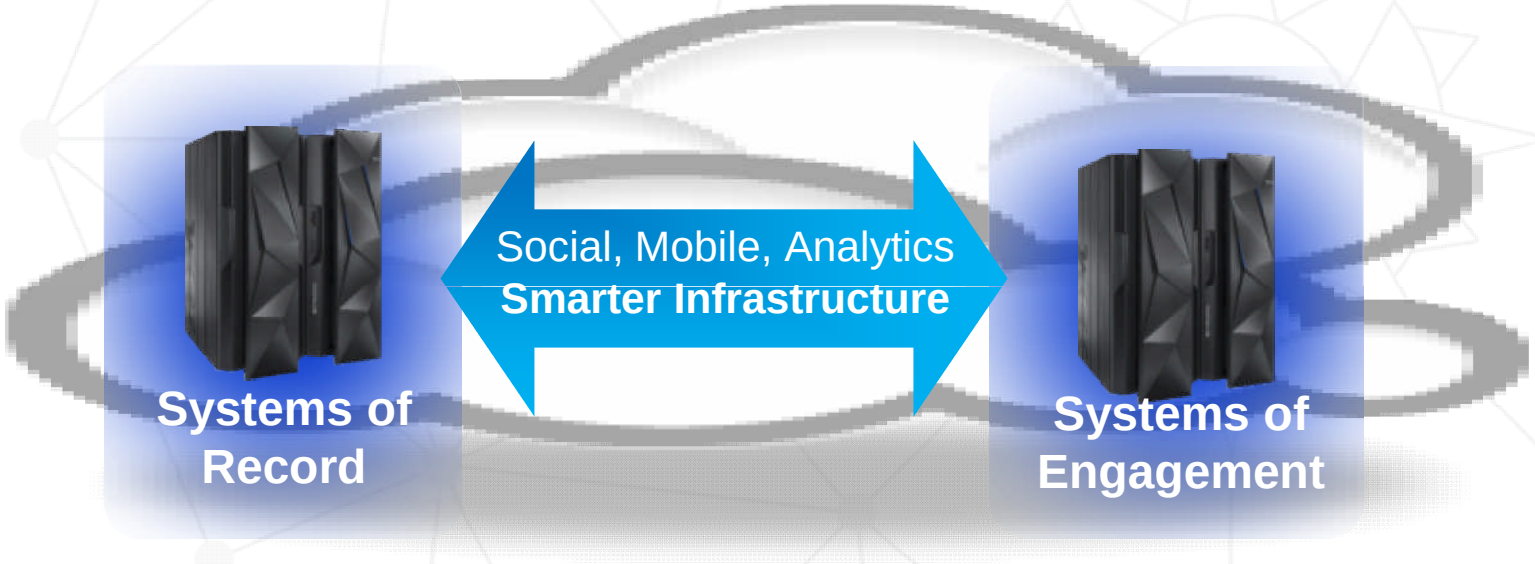


Paul Smith
STSM System z Architect - Tivoli Portfolio
Cloud & Smarter Infrastructure
IBM Software Group

April 17th, 2014

Rapid growth of data from next generation technologies can be supported seamlessly on System z

System z scaling model and security to manage and optimize both



- Business Transactions
- Quality of Service
- Command & Control
- Facts and data “source of truth”
- System z

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

© 2014 IBM Corporation

Analytics for System z addresses predict, search and optimize requirements on impact from new technology

- **Much greater amount of critical IT operational data** (SMF, log, journal) than distributed-only environments.
  - Focus on problem determination and time to resolution while placing premium on availability of services and applications**.**
- By 2016, **20% of Global 2000 enterprises will have IT operations analytics** architecture in place, up from < 1% today, looking to integrate across their enterprise to reduce outages (Gartner).
- **90% of the Fortune 1000 companies are running z** and have 'Systems of Record' dependencies for transactional processing and data serving applications .

© 2014 IBM Corporation

Analytics strategy is now mission critical and impact bottom line results across all industries and IT

Industries

Banking
- Increase account profitability

Insurance
- Retain policy holders with better service & marketing

Retail
- Understand sales patterns

Telecommunications
- Reduce churn with custom retention offers

Operations

Industrial
- Predict maintenance issues before occur

Retail
- Improve store performance with P&L reports

Telecommunications
- Understand & manage network traffic

Insurance
- Streamline claims process

Government
- Reduce fraud and waste

© 2014 IBM Corporation

New Technologies like cloud and big data already challenging current Enterprise tools

- **Too long to isolate, diagnose problems in applications and infrastructure.**
  - Complex application workloads span multiple platforms
  - Increasing amounts of IT data:
    - Performance metrics, events, infrastructure logs, application logs, configuration files, traces
- **Existing IT tools inappropriate for management of Systems of Engagement**
  - 100x to 1000x explosion in data flooding existing tools.
  - New runtimes, programming languages needing complex instrumentation.
- **Reactive analytics misses critical information leading to outages**
  - Analyzing all information better for predicting problems.

Is managing IT today like sipping from a fire hose?

© 2014 IBM Corporation

IBM focused on managing end-to-end analytics for Big Data and applications across all platforms

Gain Cloud Insights

Predict:
- Pro-Active Outage Avoidance
- Predict Problems before occurrence

Search:
- Quickly analysis large volume of log data
- Match Log-files with alerts and metrics

Optimize:
- Improve Performance across IT Infrastructure

IBM Analytics solutions for System z

Predict	Search	Optimize
• OMEGAMON & NetView w/ IBM zAware • IBM Cloud Analytics - Predictive Insights	IBM Cloud Analytics - Log Analysis z/OS Insight Packs	Capacity Management Analytics (CMA)

© 2014 IBM Corporation

Handle increased mobile workloads on z with improved data analytics for find and fix problems faster.

Performance Data

Avoid Outages and service degradation through early detection of abnormalities

Improve insight though the analytical discover of metric relationships and trends

Reduce root cause analysis by reducing time to isolate faulty components in complex infrastructure

Unstructured Data

Identify problems quicker with insight to large unstructured repositories

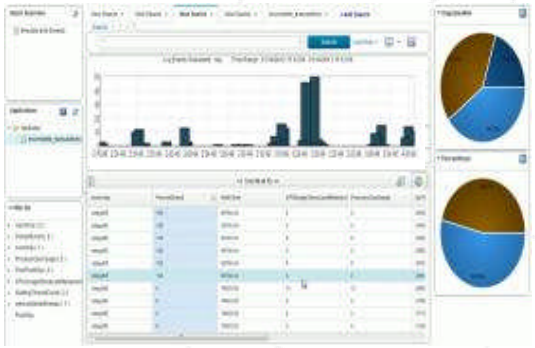
Isolate problems quicker by bringing relevant unstructured data into problem investigations

Repair problems quicker with the right details quickly to hand.

ibm.com/it-operations-analytics

© 2014 IBM Corporation

Search for and rapidly analyze unstructured data to assist in problem identification, isolation and repair



Faster Problem Identification and Isolation

- Search and indexing of logs and data
- Cross domain analysis

Faster Problem Repair

- Linking expert knowledge to log messages

Challenges

- No warnings before outages
- Reactive application resets to restore service.
- Root cause of outages unknown

Search

IBM Cloud Analytics - Log Analysis z/OS Insight Packs (DB2 and WAS)

Results

Internet Banking
Up to 3 day advance warning of outages, 10 major incidents in 4 weeks. Savings of $600K.

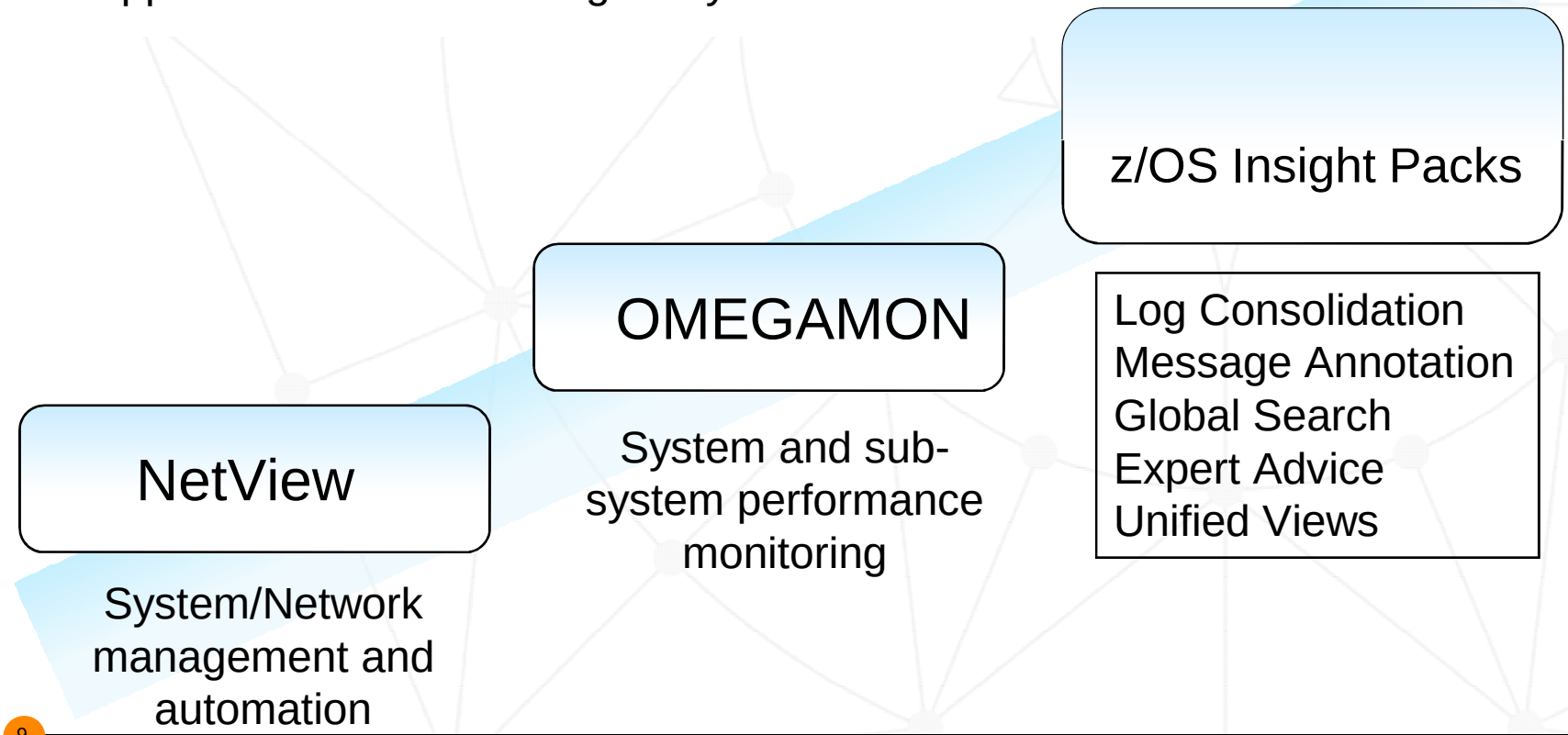
Communications Company
$300K of cost avoidance annually.

Traditional Banking
Outages reduced by 70%-80% due to problem isolation

© 2014 IBM Corporation

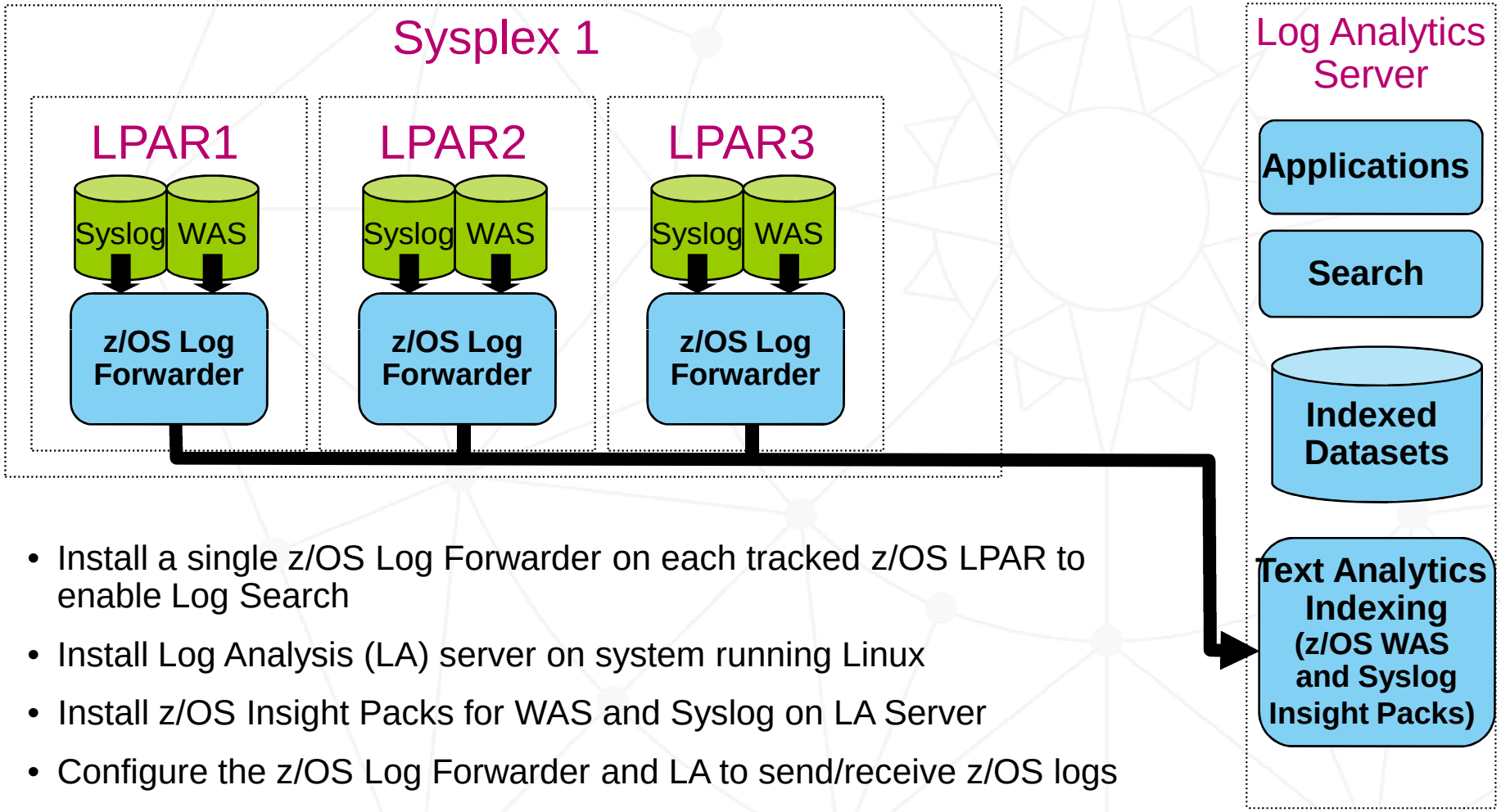
z/OS Log Analysis Insight Packs next step in IBM value add for zEnterprise performance and availability management

- Matching problem information across multiple logs
- Included in IBM SmartCloud Analytics – Log Analysis
- Supports DB2 and WAS log analysis



© 2014 IBM Corporation

Log Analytics running on its own server collects and reports on data from z/OS LPARs

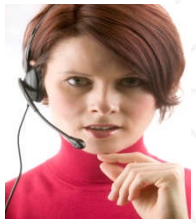


- Install a single z/OS Log Forwarder on each tracked z/OS LPAR to enable Log Search
- Install Log Analysis (LA) server on system running Linux
- Install z/OS Insight Packs for WAS and Syslog on LA Server
- Configure the z/OS Log Forwarder and LA to send/receive z/OS logs

© 2014 IBM Corporation

Simplify and accelerate diagnostics and analysis of problems, and resolve before outage occurs

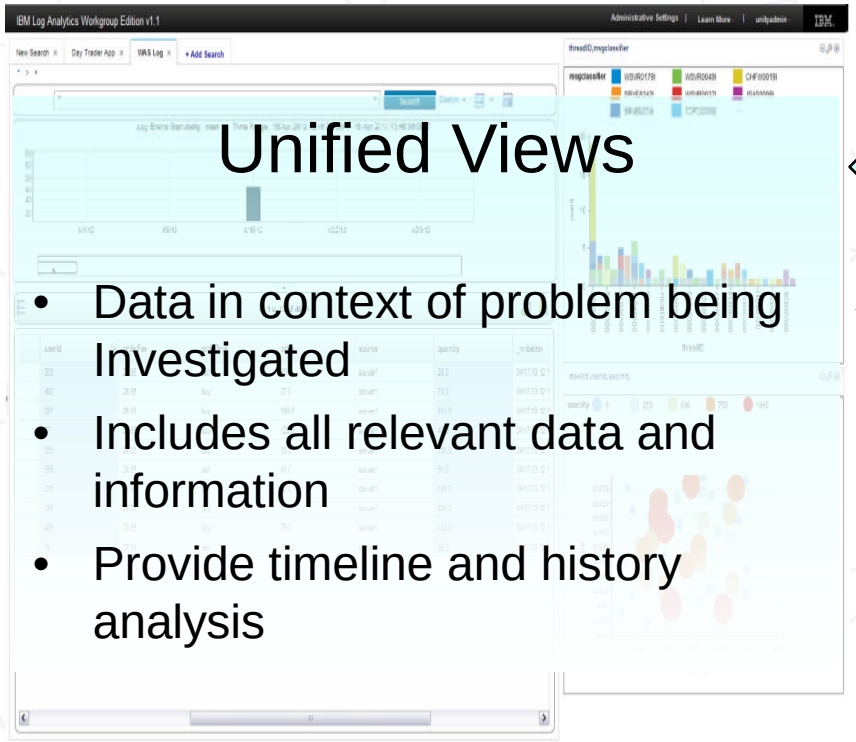
Log Analysis z/OS Insight Packs



Service desk user

App support Engineer, Developer

Operations



Unified Views

- Data in context of problem being Investigated
- Includes all relevant data and information
- Provide timeline and history analysis

Logs

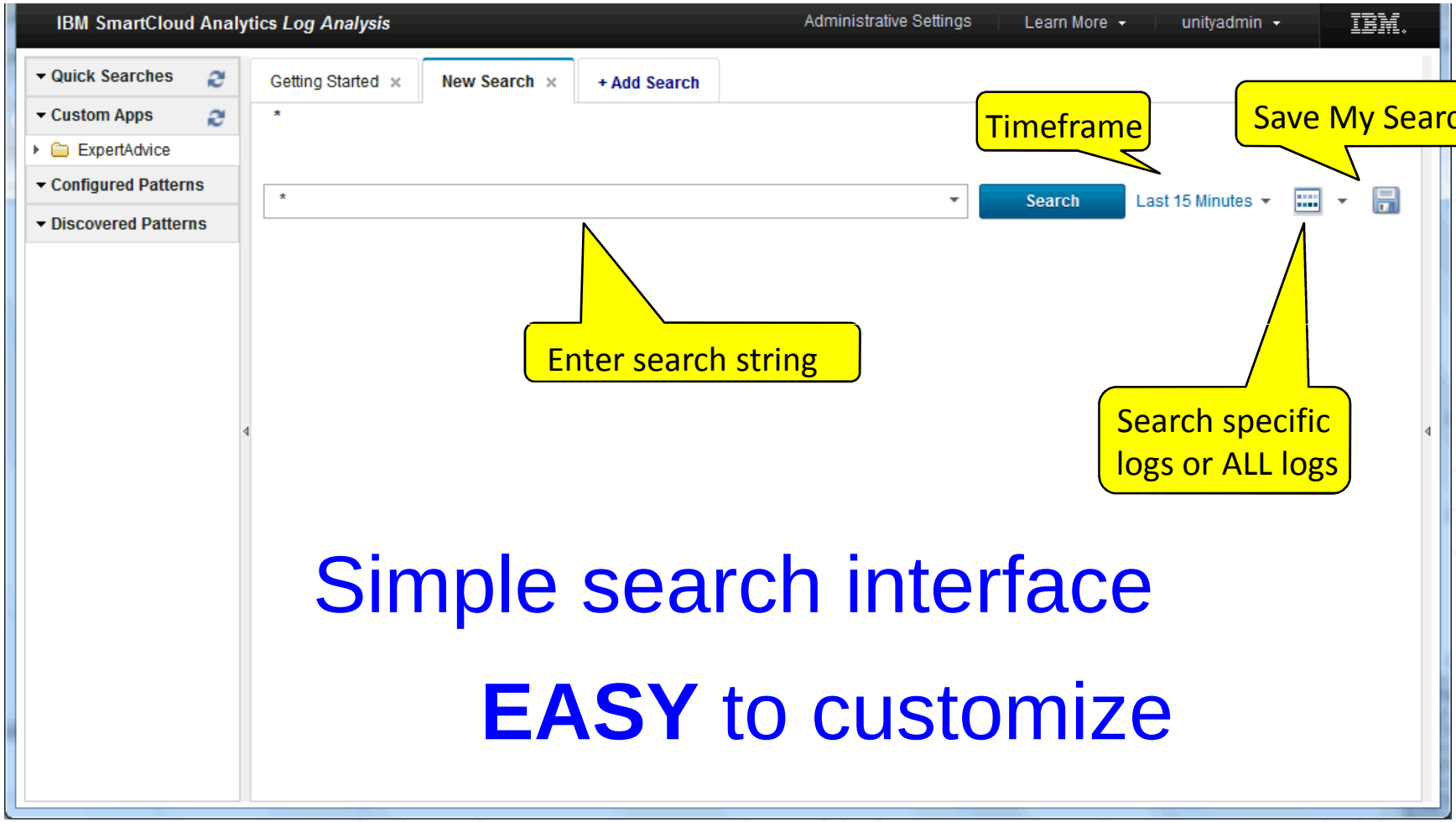
Metrics

Events

Support Information

© 2014 IBM Corporation

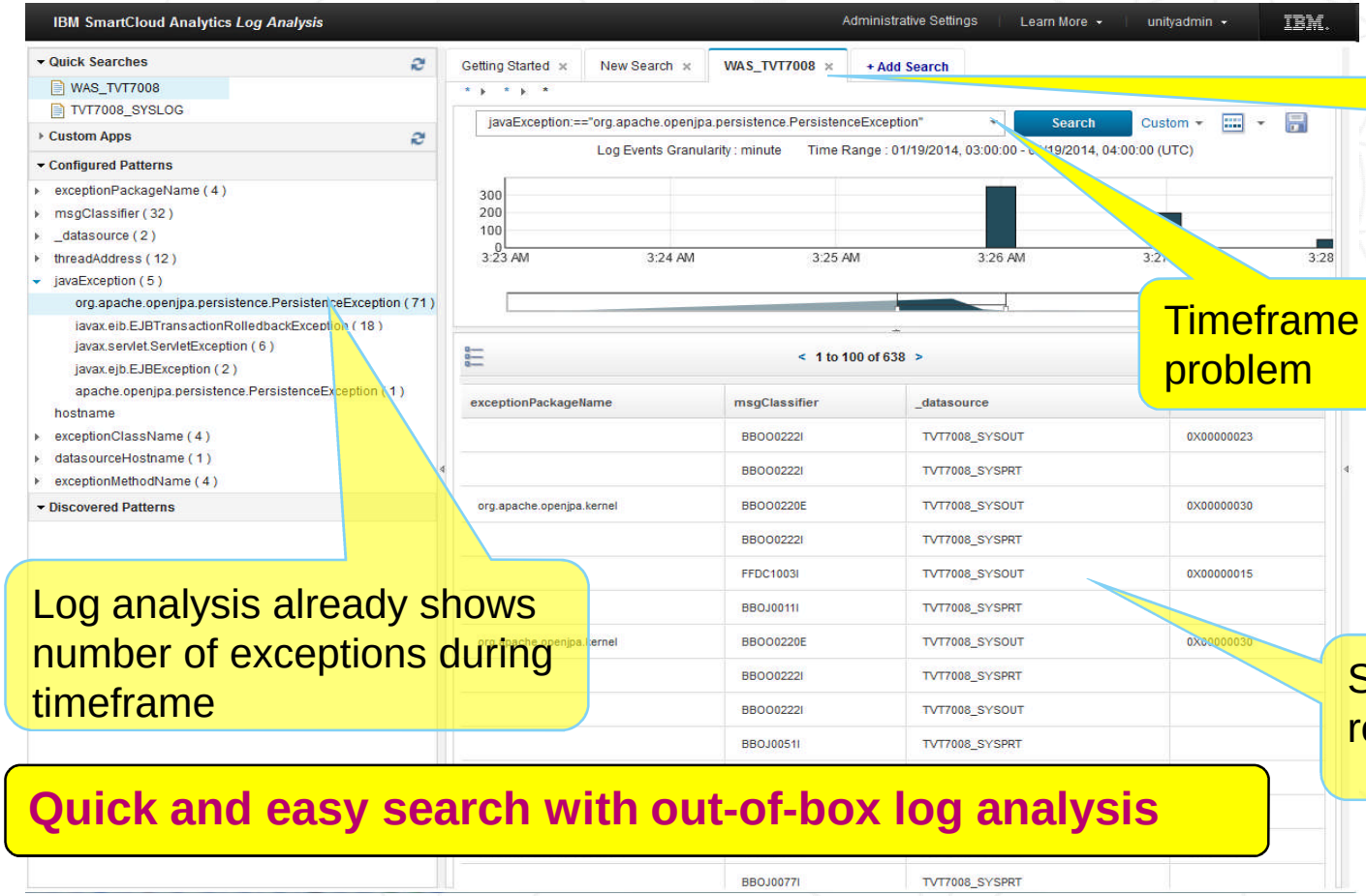
Log Data searchable with simple, easy to use interface



© 2014 IBM Corporation

Easy to search for and find problems before they become major issues or outages

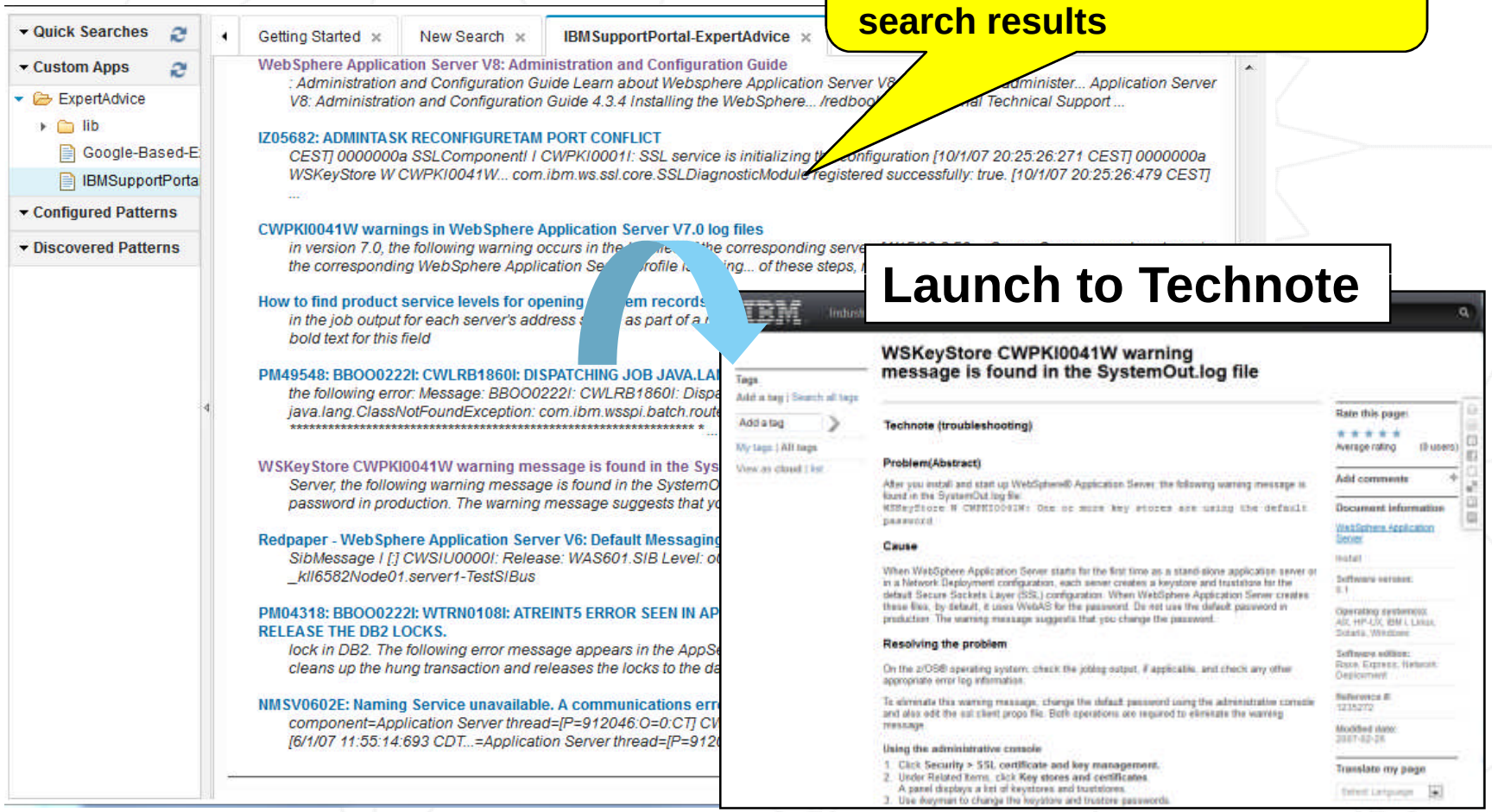
4pm - WAS application owner alerted to response time issue with WebSphere application



© 2014 IBM Corporation

Quickly and easily access IBM Support Portal based Expert Advice from Log Analysis

Search for expert advice with the click of a button



© 2014 IBM Corporation

Handle more complex workloads with increasing metrics for early prediction of problems

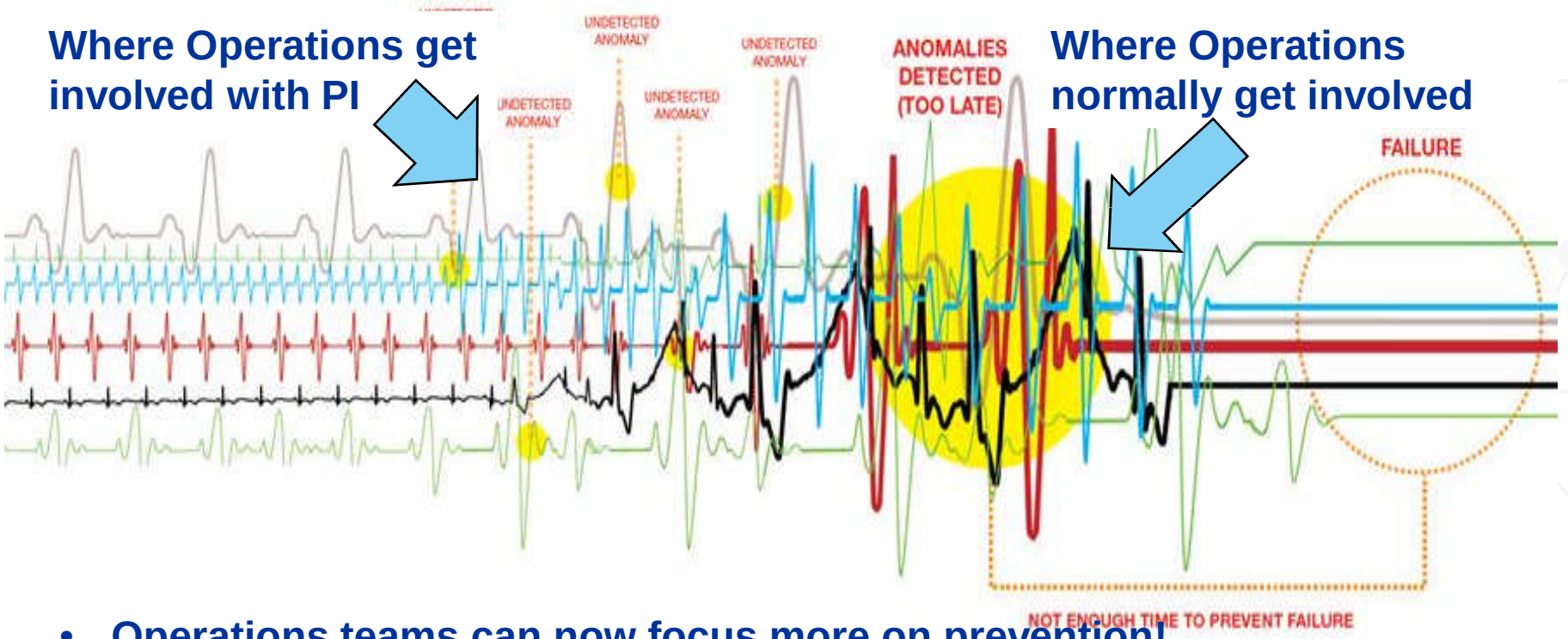
Predict

- New next-generation **behavioural learning** and predictive analytic solution.
- Discovers how IT and Network infrastructure related from **holistic viewpoint**.
- Maximizes **early detection** of problems manifest in performance and monitoring data before service or business is disrupted (enabling prevention)

© 2014 IBM Corporation

Predictive Insights (PI) Analytics reports on events and anomalies that could cause future problems

Using SmartCloud Analytics – Predictive Insights



- Operations teams can now focus more on prevention!
- Predictive Insights can consume data from distributed and mainframe systems

© 2014 IBM Corporation

Predictive Analysis with IBM zAware – Log Analytics on System z using Anomaly Detection

- Save money by ensuring z/OS availability (decrease time to perform problem determination and lower Mean time to Repair)
- Problem isolation and management (NetView/OMEGAMON) and event visibility (OMNIbus)

Predict

Event Management OMNIbus

Problem Determination NetView CANSLOG

Performance Monitoring OMEGAMON

IBM zAware

Surface Anomalies

© 2014 IBM Corporation

Optimize Big Data and Cloud workloads to create knowledge for better business and IT planning

Capacity Management Analytics (CMA) solution

- Analytics, monitoring and management across Big Data on System z environment including CICS, DB2, IMS, WAS
  - Operations Insights with TDSz, SPSS and Cognos
- Focuses on data related to System and Workload Characteristics, Performance and Trending
- Provides recommendation to optimize Systems and Workloads based on Predictions and Forecasting

Optimize

© 2014 IBM Corporation

IBM Capacity Management Analytics provides cost effective, optimal use of zEnterprise capacity

A single, integrated cost effective solution

System Management:
Problem Identification & Resolution
Capacity Forecasting & Monitoring

Manage the complete time horizons

Historical reporting of past performance
Forecasting future requirements
Right-time optimal decision making

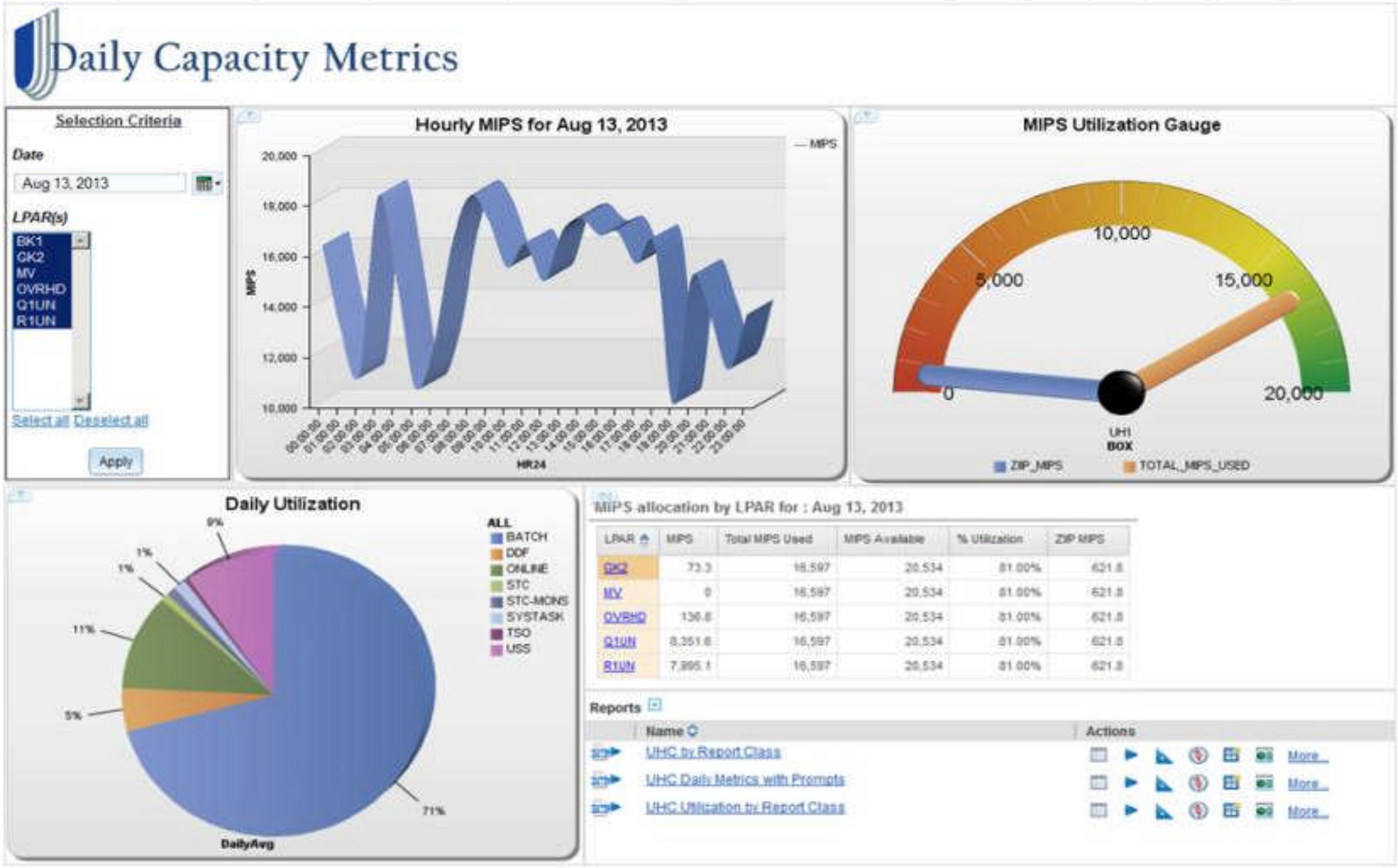
Jumpstart your time to value & ease implementation.

Built on IBM's easy of use analytics
Includes prepackaged, interactive reports
Optional services and education

© 2014 IBM Corporation

IBM Capacity Management Analytics: Systems Management

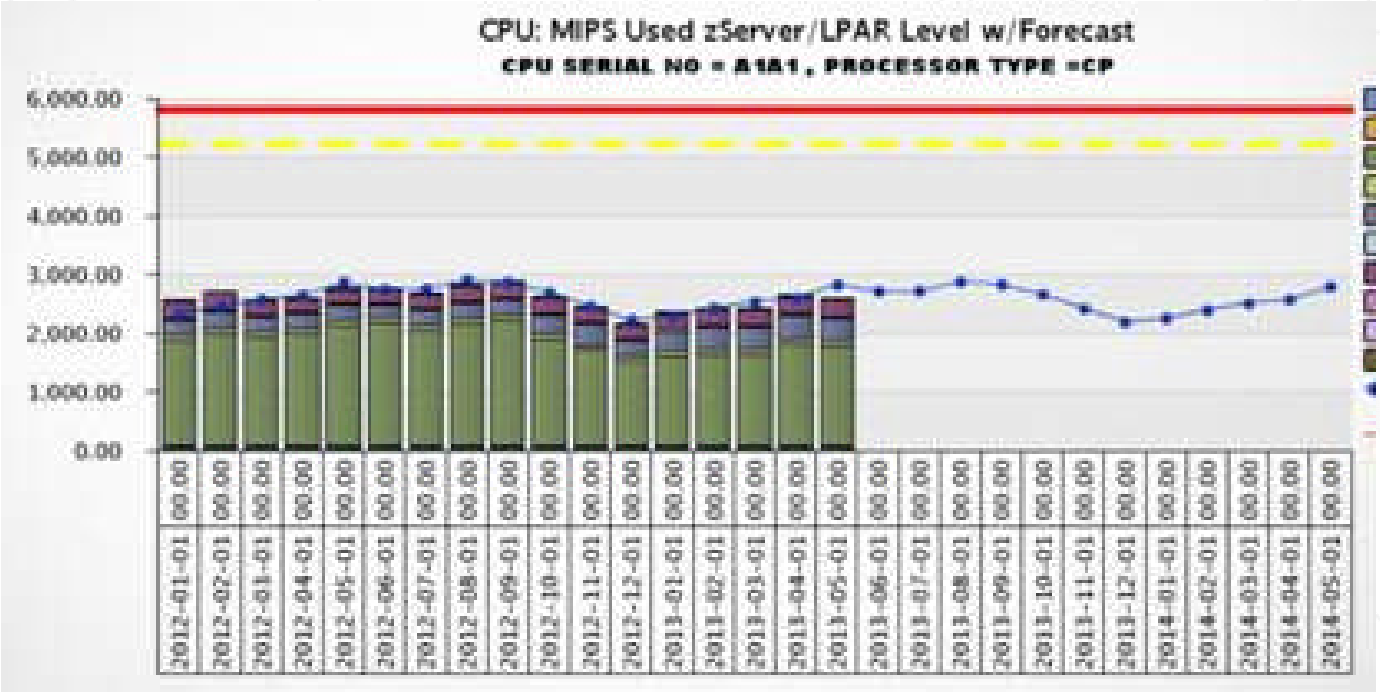
Dashboard & report capabilities provide executives, managers, capacity & performance specialists with custom views



© 2014 IBM Corporation

IBM Capacity Management Analytics: Predictive Analytics, Capacity Forecasting & Real-time Scoring

- Predictive analytics helps organizations use data to make better decisions
  - Draw reliable, data-driven conclusions about current conditions and future events.
- Requirements forecasted to ensure sufficient capacity available when business needs it.
- Real-time scoring of transactions performed enabling comparison to forecast.



© 2014 IBM Corporation

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
Predictive Insights
OMEGAMON/IBM zAware
CMA

Log Data Analysis
Log Analytics

Detailed Event Analysis

Configuration Change Analysis

Gain insight into entire end-to-end workload

CMA- Capacity Management Analytics

© 2014 IBM Corporation

IBM Analytics next step in ability to better manage and support business workloads on zEnterprise

Key Takeaways

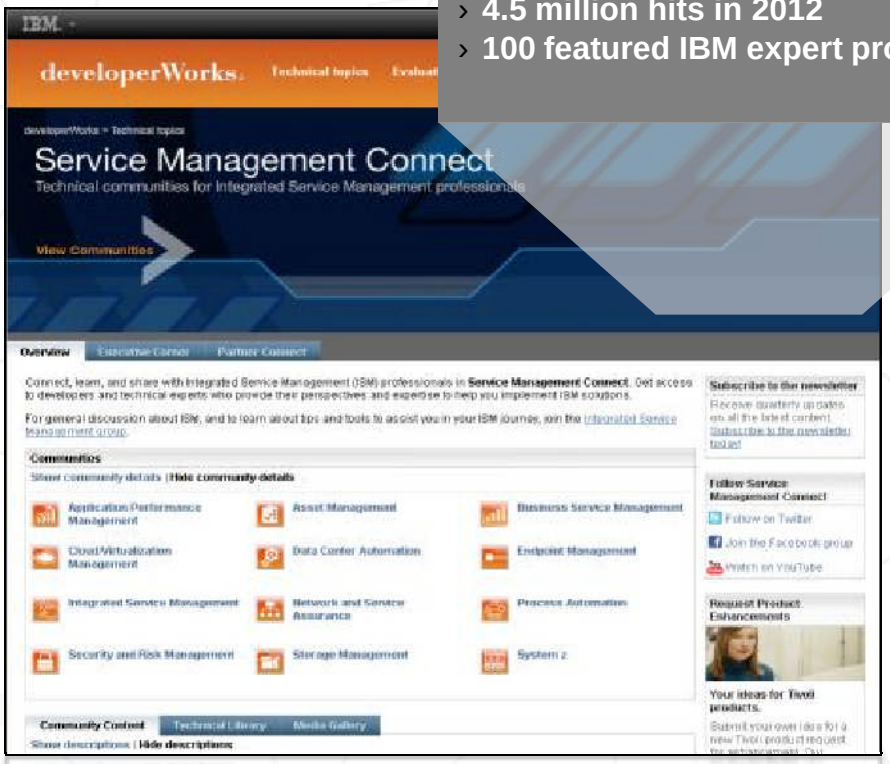
- IBM continues to enhance Service Management Analytics supporting new zEnterprise technology
- Improved analytics key to supporting new technologies running on System z, like Cloud, Mobile and Big Data
- IBM's complete analytics solutions support IT, log and Capacity Management requirements on System z

© 2014 IBM Corporation

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**

http://www.ibm.com/developerworks/servicemanagement/z/index.html

© 2014 IBM Corporation

Thank You for Joining Us today!

Go to **www.ibm.com/software/systemz/events/calendar** to:

- Replay this teleconference
- Replay previously broadcast teleconferences
- Register for upcoming events

Learn More:
http://www.ibm.com/software/products/en/ibm-smartcloud-analytics---log-analysis/

© 2014 IBM Corporation