

A decorative graphic in the top left corner features several overlapping circles of various colors (yellow, orange, red, purple, blue) that are divided into segments, resembling stylized data points or pie charts.

# Big Data and Analytics on System z for Proven Competitive Advantage

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*IBM Software Group*

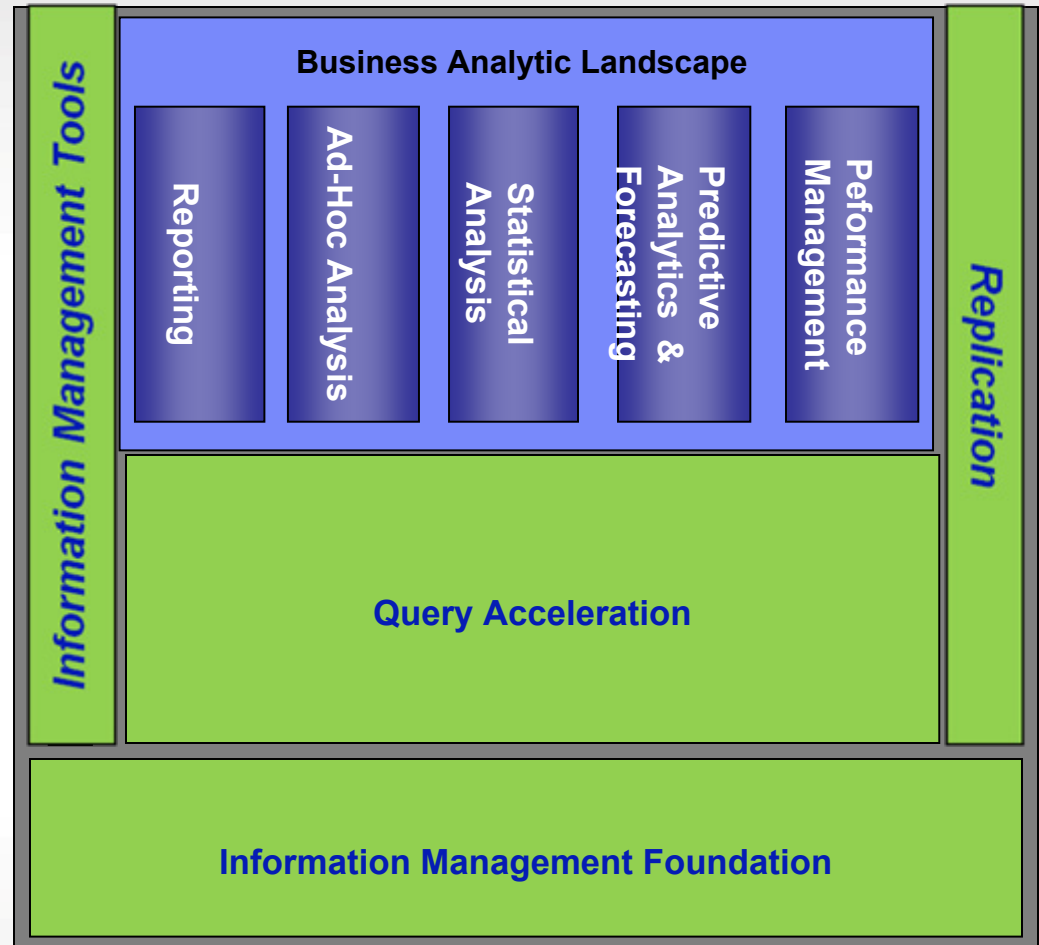


# Agenda

- Defining analytics and the impact of new paradigms
- Traditional approaches to analytics
- Modern hybrid transactional / analytics environments
  - Gartner's perspective
  - DB2 Analytics Accelerator for z/OS
  - Cognos BI, SPSS, Cognos TM1, CMA
- Leveraging all of your data assets
  - InfoSphere BigInsights, Veristorm
- Wrap up with Q&A

# What is Analytics?

- *Analytics derive insight from data*
- *Organizations use analytics to help optimize business performance*
- *Analytics are only as good as the underlying data foundation*





# What is Business Critical Analytics?

- An analytics application that is tightly integrated with transaction systems and critical to the optimal running of a business
- Make decisions and deliver business insight based on real time or near real time data
- Failure of these analytics applications for any length of time can result in lost business
- Typically support a large concurrent user population with high volume of requests



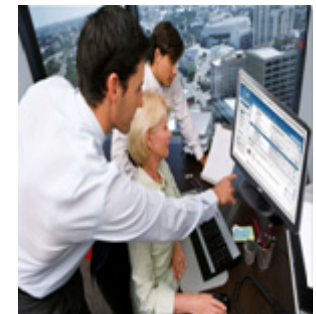
**Preventing Fraud**



**Reducing Customer Churn**



**Cross-selling, up-selling customers**

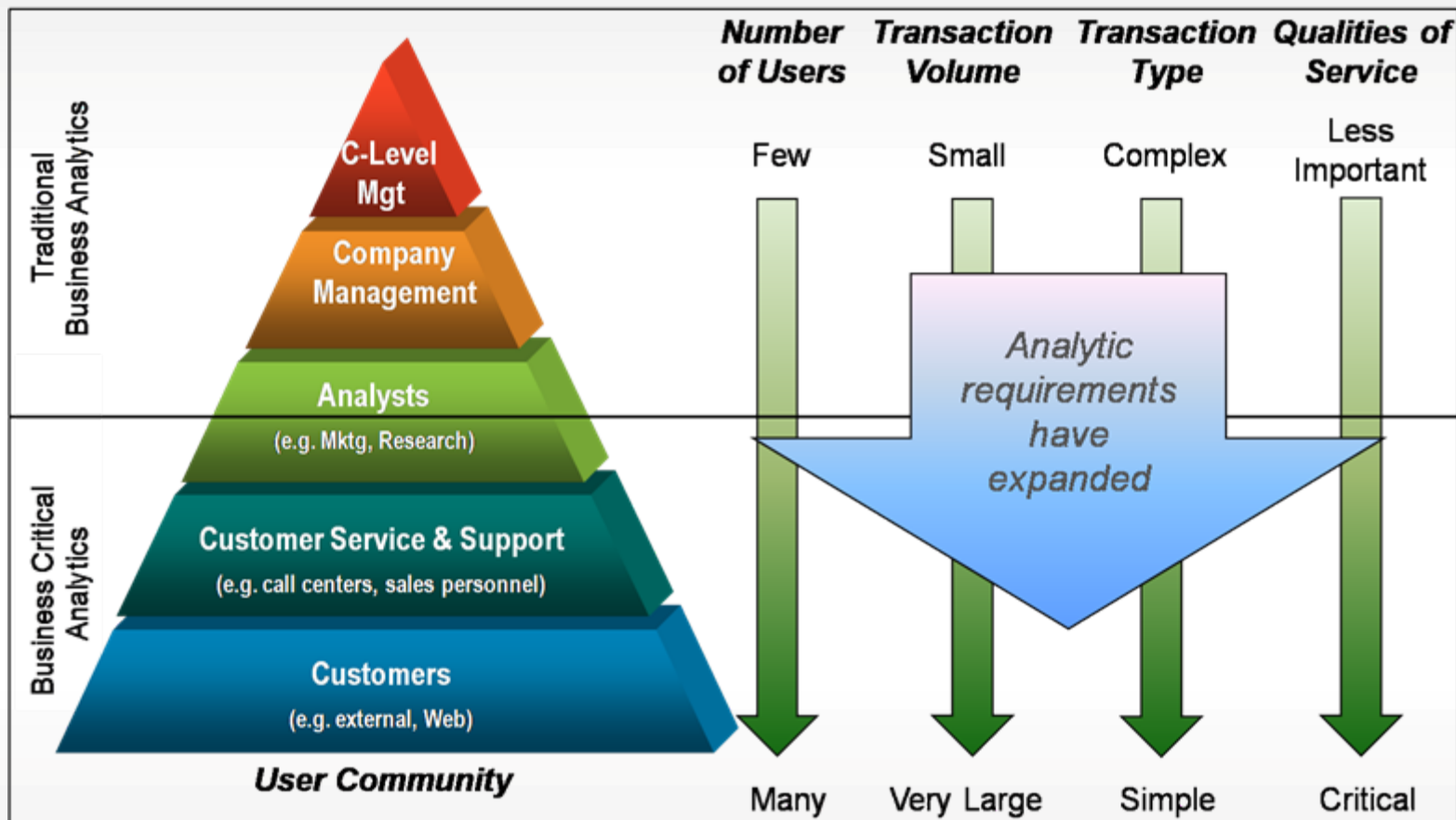


**Realtime Operational Reporting**

***These applications require high degree of reliability, availability, scalability and low data latency***



# More users across the organization want access to analytics



# New paradigms impacting Big Data & Analytics



ZBs of transaction data

Cloud

Big Data

Social

Mobile

Internet of Things

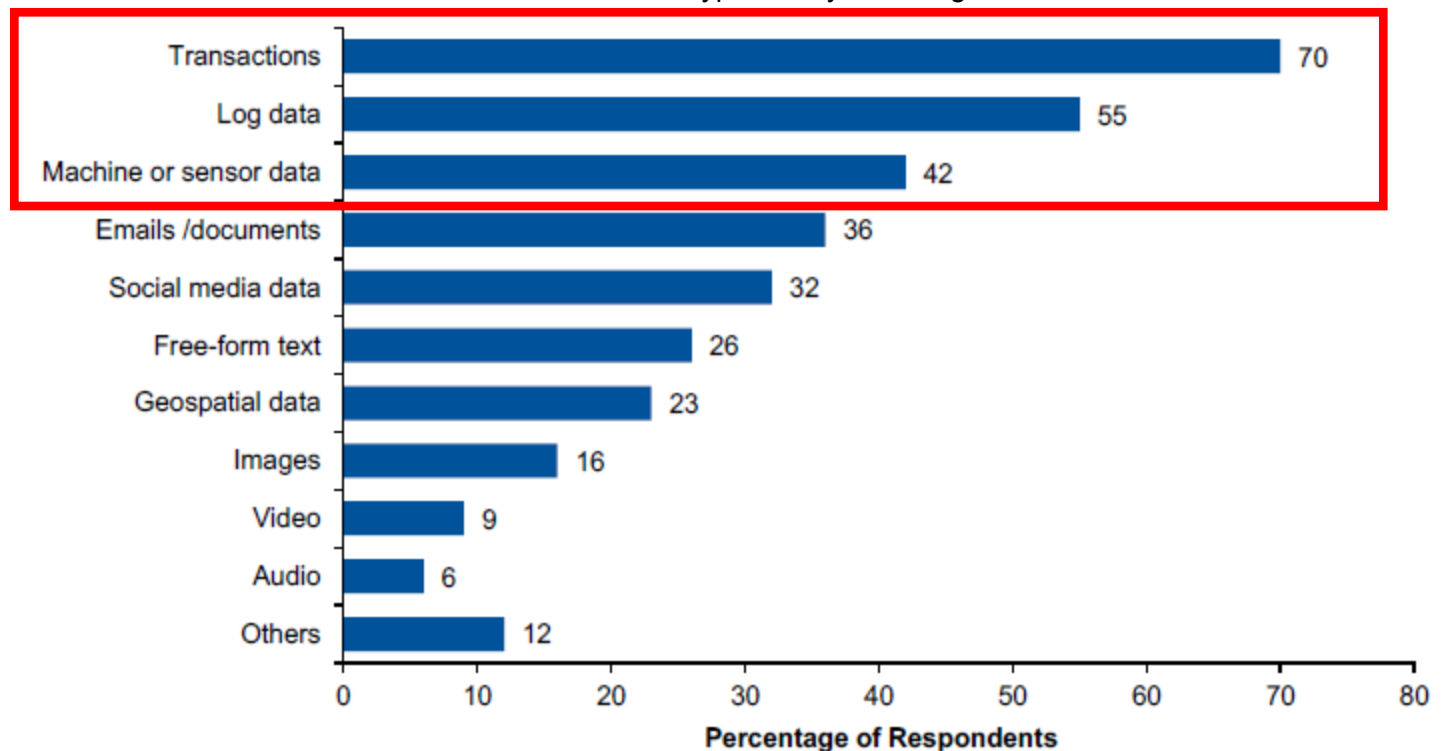




# The Big Data Starting Point

Types of Data Analyzed

Transactional sources are the dominant data types analyzed in big data initiatives



N =465 (multiple responses allowed)

Source: Gartner (September 2013)

Gartner research note "Survey Analysis - Big Data Adoption in 2013 Shows Substance Behind the Hype" Sept 12 2013  
Analyst(s): Lisa Kart, Nick Heudecker, Frank Buytendijk





# The reality of Analytics

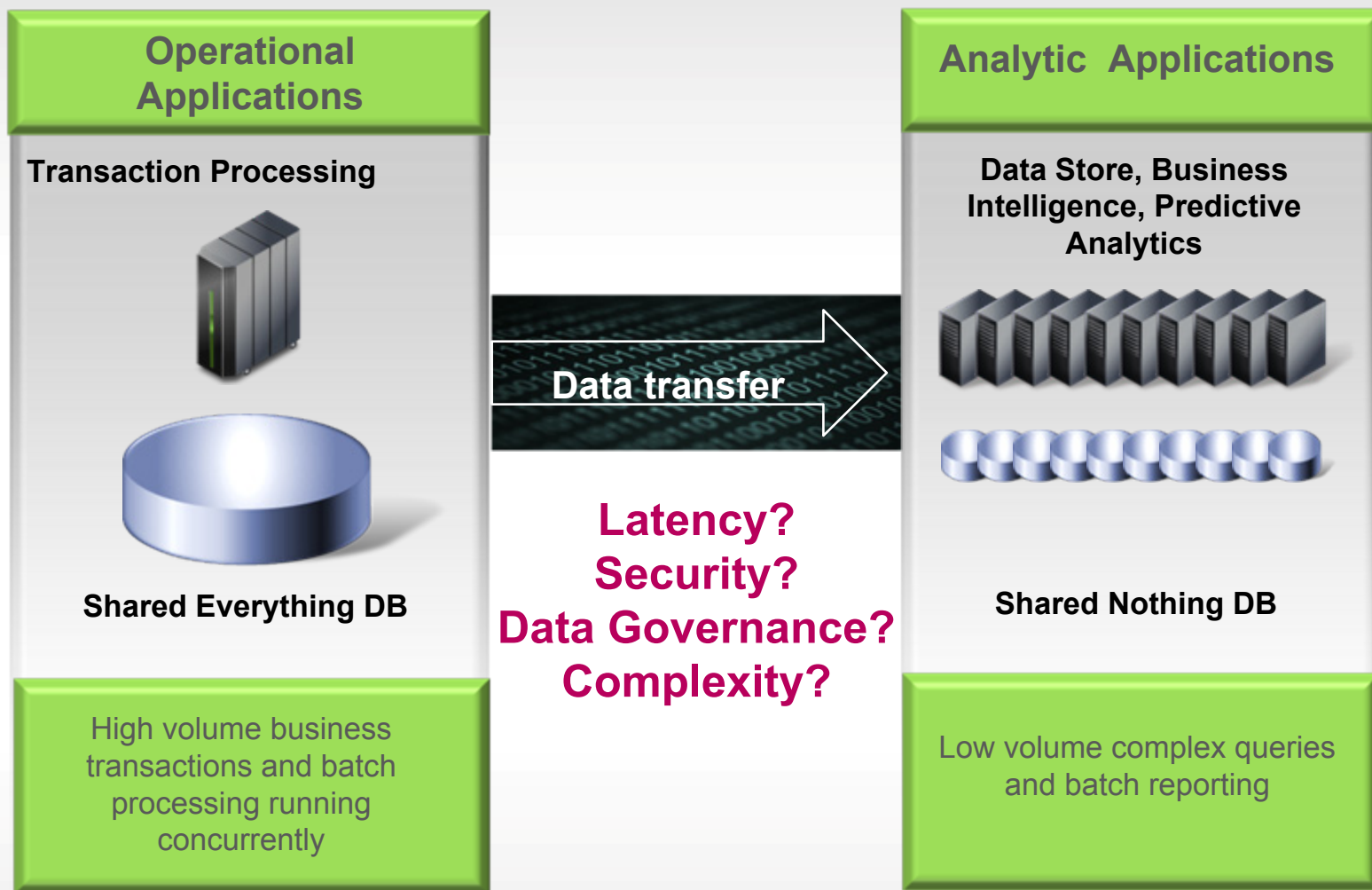


1. Organizations are using analytics to outperform their competition
2. More users across the organization want access to business critical analytics
3. Business critical analytics demands low latency, high qualities of service and performance
4. Spreading analytic components across multiple departments can increase data latency, cost, complexity and governance risk
5. Bringing analytic components to where data originates improves data governance, while minimizing data latency, cost and complexity

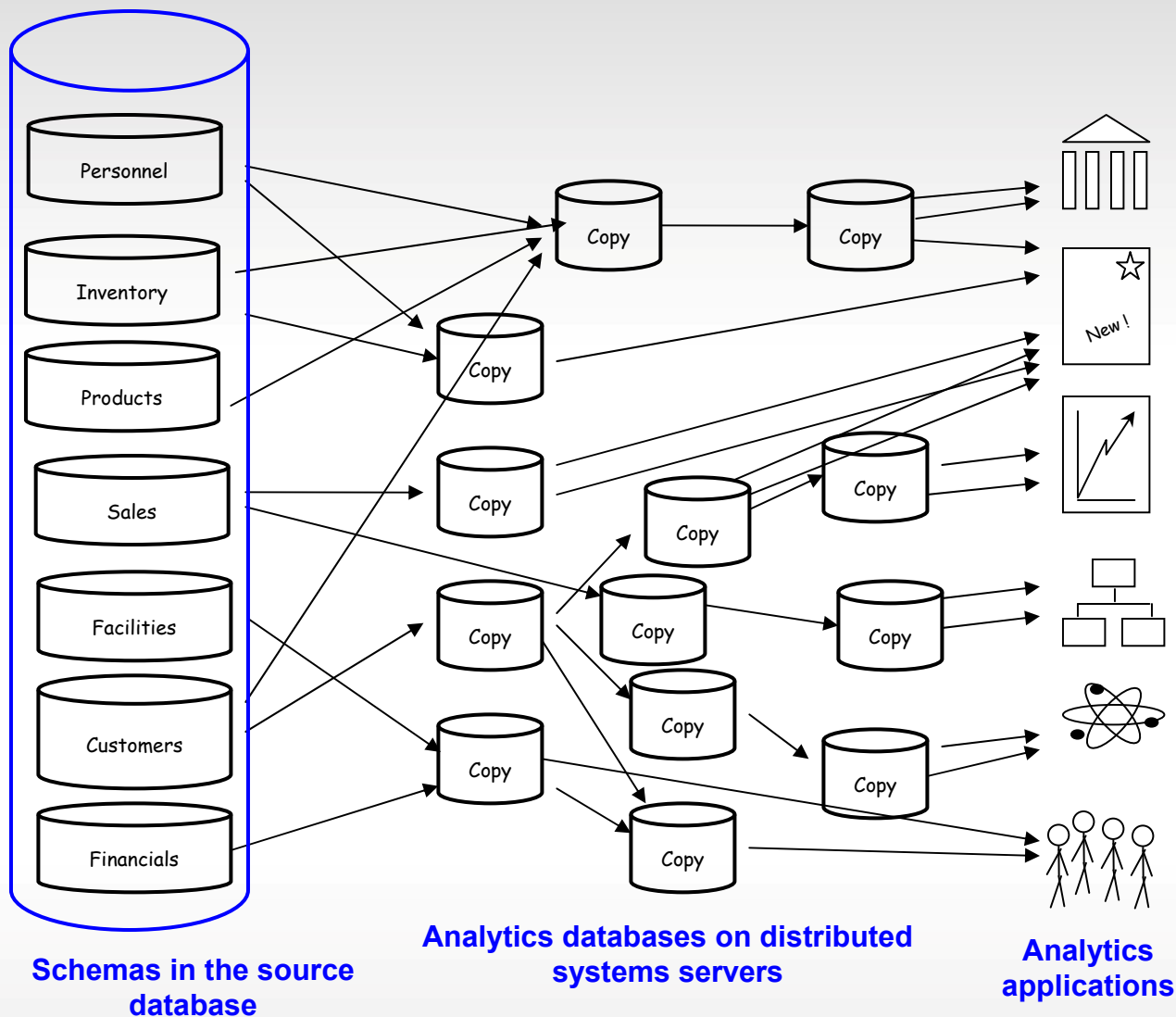




# Traditional Approach to Analytic Systems



# Typically results in . . .



## Problems:

- Data latency: time between transaction and insight
- Expensive, resource-intensive data replication processes
- Greater risk of data security breaches
- Data governance issues: copies of data can become inconsistent – do users trust the data?
- Data currency challenges: copies of data can become out-of-date – users demand timely data
- Proliferation of data silos impedes integration, reduces value derived from data assets

# The Hybrid Transactional/Analytics Environment on System z

## Combined Workloads

**Transactional Processing, Traditional Analytics  
& Business Critical Analytics**



**Hybrid DB**

***Reduced Latency. Greater Security.  
Improved Data Governance. Reduced Complexity.***

High volume business transactions and batch reporting running concurrently with complex queries



## The Analyst Community Has Taken Notice!

Gartner®

- “By eliminating analytic latency and data synchronization issues, hybrid transaction/analytical processing will enable IT leaders to simplify their information management infrastructure”
- “This architecture will drive the most innovation in real-time analytics over the next 10 years via greater situation awareness and improved business agility”



# DB2 Analytics Accelerator

*Enabling a Hybrid Transactional / Analytics Environment on System z*

## ■ What is it?

- A high performance appliance that integrates Netezza technology with zEnterprise technology, to deliver dramatically faster business analytics

## ■ What does it do?

- Accelerates complex queries, up to 2000x faster
- Improves access to and lowers the cost of storing, managing and processing historical data
- Minimizes latency
- Reduces zEnterprise capacity requirements
- Improves security and reduces risk
- Complements existing investments





## PETROL

### *Business Challenge:*

How to improve customer service and satisfaction in order to drive greater revenue

### *Technical Challenge:*

Existing analytic processes were unable to manage the analysis of historic and transaction data from Petrol's retail stores, service stations and home oil/gas businesses

### *Solution:*

Implemented IBM DB2 Analytics Accelerator to support high performance queries and IBM SPSS to make real time, point of sale product recommendations

Increased  
retail sales  
revenue through  
point-of -sale  
suggest-sell  
insight

*"IBM provides us with tools that align with smarter commerce, enabling us to deliver the right message to the right person at the right time, to understand product affinities and intelligently drive the sale all in a customer centric way"*



## *Swiss Mobiliar* *Insurance & Pensions*

### *Business Challenge:*

How to maximize profitability as its business grows

### *Technical Challenge:*

Running its growing transaction processing and analytics workloads side by side without increasing compute requirements

### *Solution:*

Deploy IBM DB2 Analytics Accelerator for z/OS bringing together transactional processing and analytics workloads in a cost-effective solution

achieved its  
objective of  
**providing  
access to the  
most timely,  
accurate  
insight to  
improve customer  
satisfaction**

“Queries that used to take five hours to complete are now processed in just 20 seconds in the optimized mainframe environment—and we can run them any time, day or night, with no interruption to our production systems on the mainframe.”

*Thomas Baumann, IT Performance Architect at Swiss Mobiliar*





### *Business Challenge:*

How to maximize value from big data in order to improve product development and customer relationships

### *Technical Challenge:*

Unable to quickly extract actionable insights from big data and identify market opportunities in order to adapt or expand its offering to meet customer demand

### *Solution:*

Created a secure analytics platform, to extract true business value from their big data for better business decisions about everything from product development to special offers to promotions

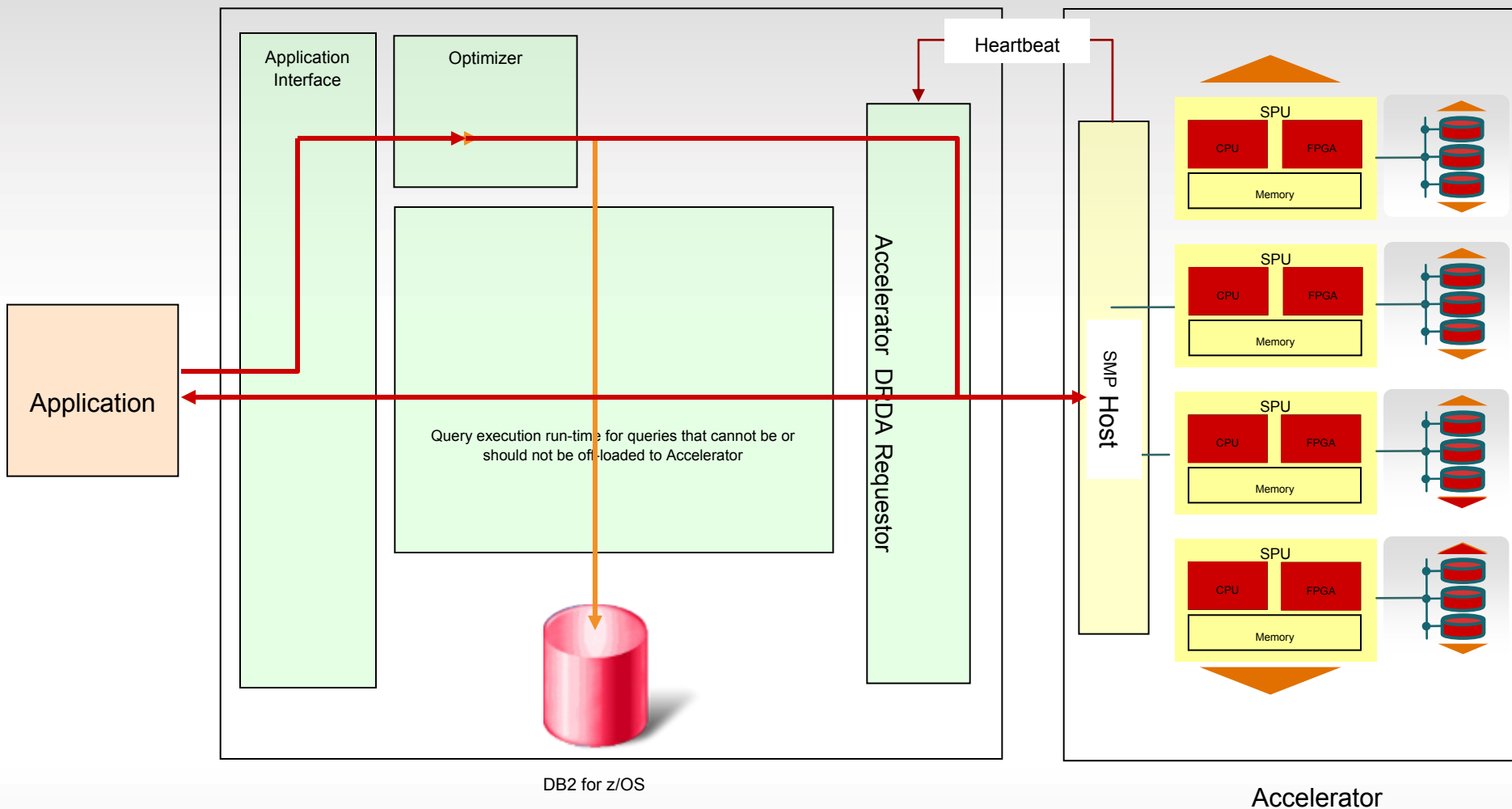
1000+ users  
simultaneously get high-speed analytics on  
**real-time data**



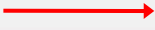
Time cut from  
months to  
weeks

to deliver the insight  
needed to develop and  
release new marketing  
campaigns

*“IBM DB2 Analytics Accelerator enables us to support the additional workloads that come with business growth without activating more cores on the mainframe.”*

# Query Execution Process Flow

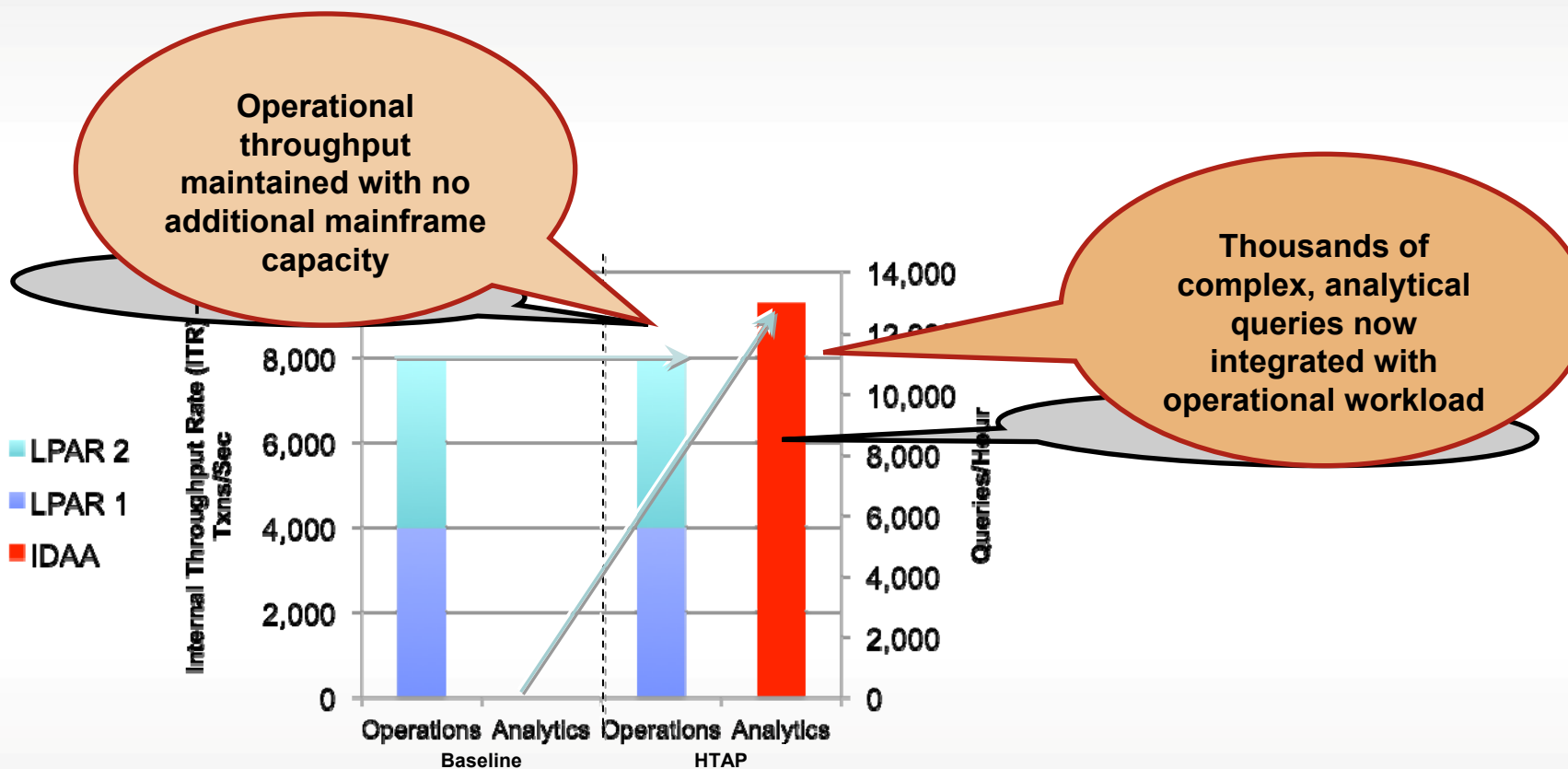


-  Queries executed without Accelerator
-  Queries executed with Accelerator
-  Heartbeat (availability and performance indicators)



# HTAP operations and analytics co-location

## Benchmark Results





# DB2 Analytics Accelerator Version 4.1

Delivering critical insight at the speed of business

## Accelerate a broader spectrum of queries

- Static SQL, multi-row FETCH, and multiple encodings on the same Accelerator

## Improve Enterprise Robustness & Scalability

- Enhanced workload balancing
- Improved incremental update performance

## Enhance High Performance Storage Saver

- Improved ease of use through built-in restore, better access control for archived partitions and protection of moved partitions

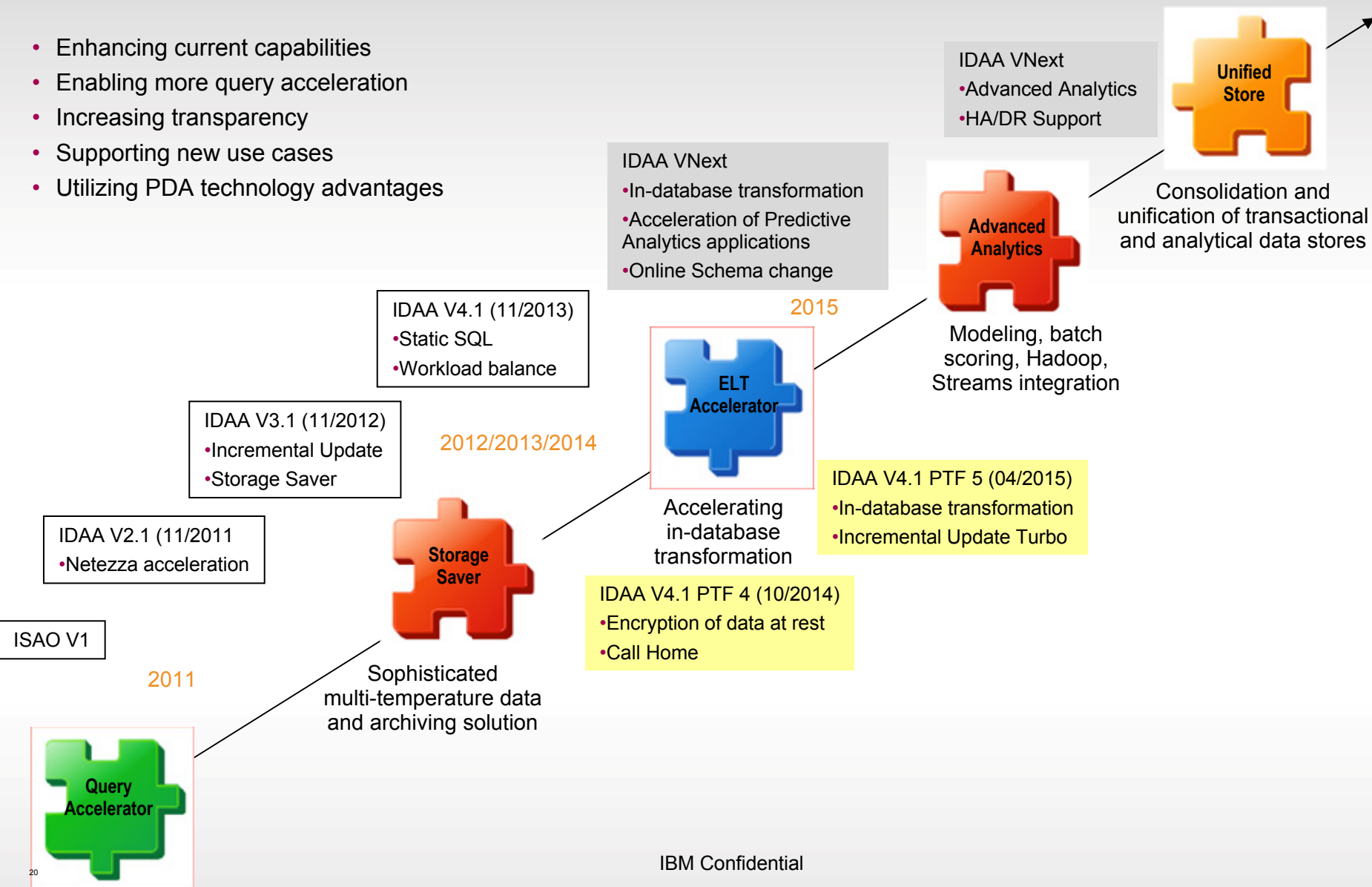
## Supports new DB2 and PureData Technology

- DB2 11
- PureData Analytics N2001 hardware



# DB2 Analytics Accelerator Roadmap

- Enhancing current capabilities
- Enabling more query acceleration
- Increasing transparency
- Supporting new use cases
- Utilizing PDA technology advantages



# Business Analytics Solutions on zEnterprise



## Business analytics capabilities

## Business outcomes/benefits



### Cognos Business Intelligence (BI)



- Understand your current & potential state
- Monitor results & fine-tune your business
- Inform strategy with a view into the future



### SPSS Predictive Analytics (PA)



- Predict customer segment & category affinity
- Market Basket Analysis to identify the next best offer for the customer
- Overlay browsing history onto purchase history to profile customers



### TM1 Performance Management (PM)

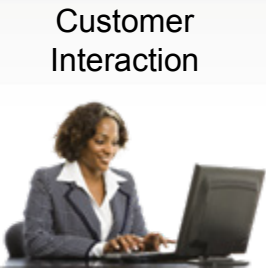


- Reporting, analysis, operational & financial planning and consolidation
- Product profitability solutions across customers, business lines & channels
- Sales Performance Management to improve pay-for-performance programs & efficiency in incentive compensation processes



# In-database scoring for both historical data and real-time transactional data

Support for both in-transaction and in-database scoring on the same platform



Customer Interaction

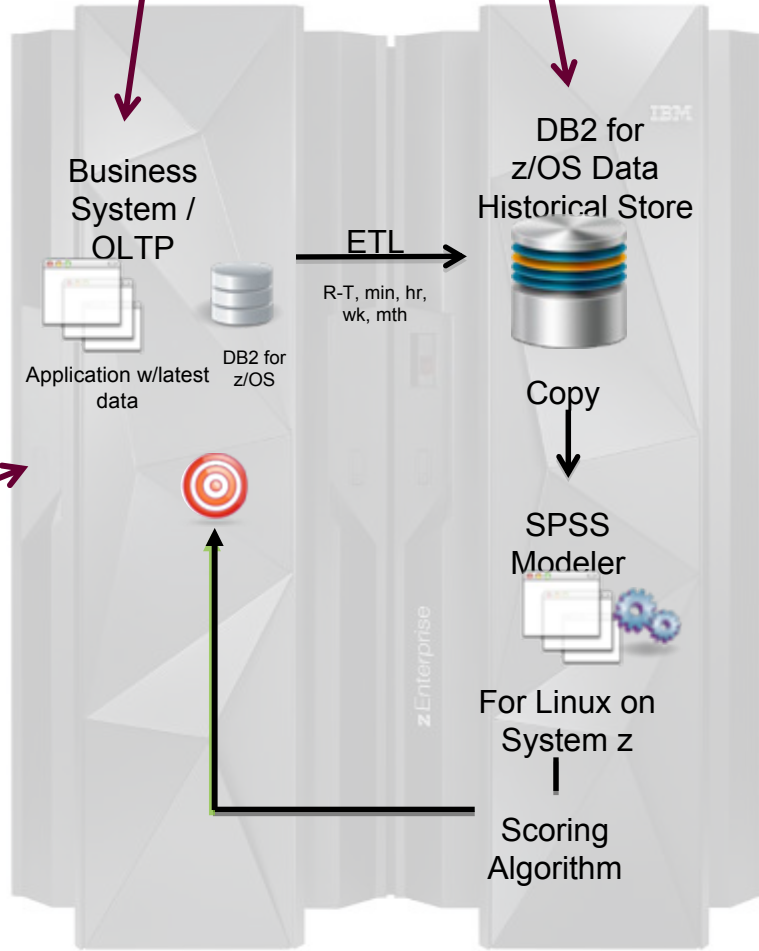
Data In



Real-Time Score/  
Decision Out



Meet & Exceed  
SLA



End to end solution

Reduced Networking

Consolidates Resources





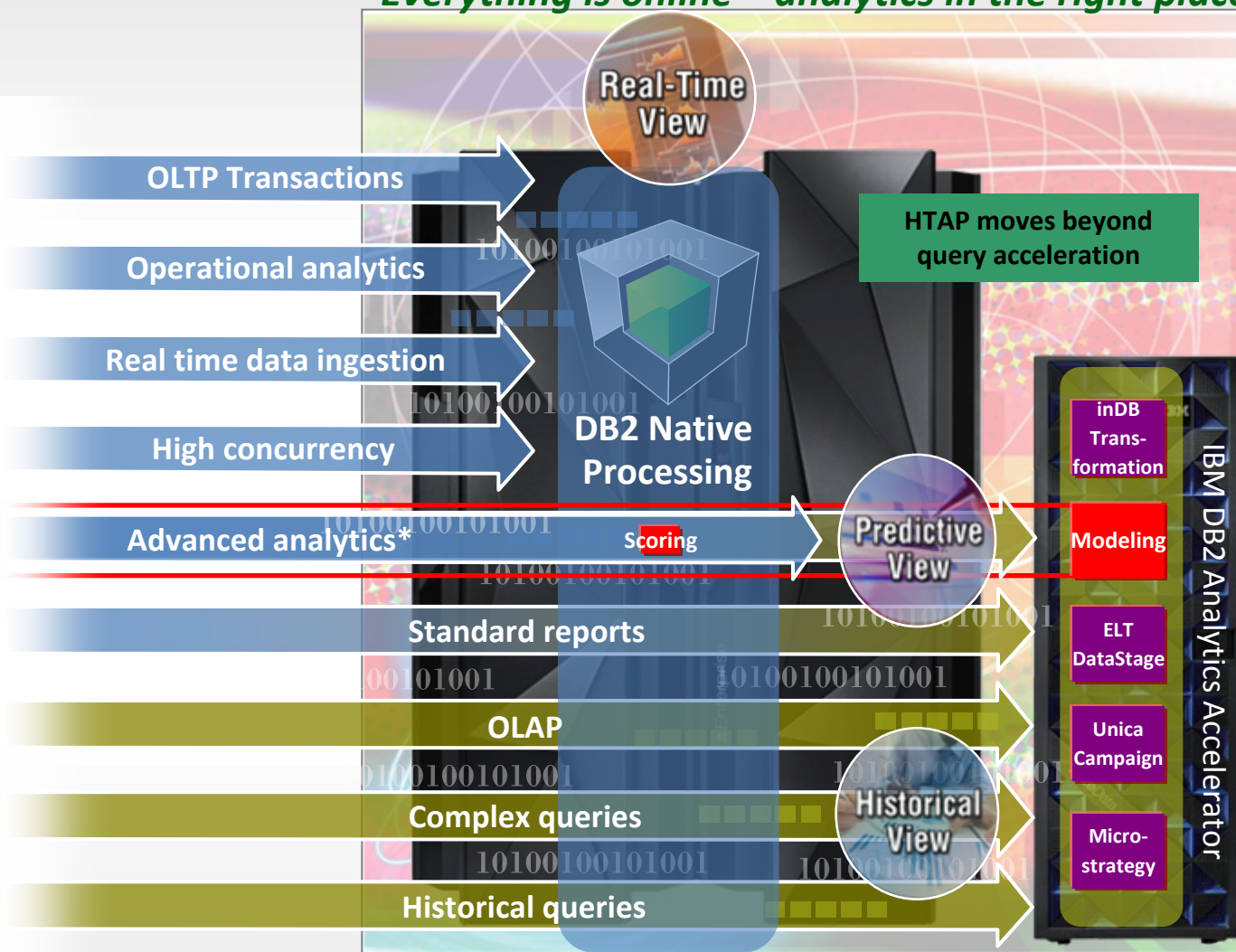
# System z: A Hybrid Transaction and Analytics Processing (HTAP) platform

*A single workload-optimized system for accelerating decisions to the speed of business*

**Everything is online – analytics in the right place**

**More timely insights from data**

- High-speed analytics easily integrated into operational applications
- Historical views are quickly analyzed for more train-of-thought analysis
- Decision makers can perform business analysis they never dared in the past
- Secured environment for highly sensitive data
- Speeds batch reporting cycle to meet stricter service level agreements








## Operational benefits

- Configuration simplification
- Single point of entry
- Reduced data movement
- High fidelity data
- Dynamic routing for most efficient fit for purpose execution architecture
- Single environment for security, logging, back-up, and recovery
- Competitive price/performance

# Imagine the possibility of leveraging all of your data assets



<p>Precise fraud &amp; risk detection</p> 	<p>Understand and act on customer sentiment</p> 	<p>Accurate and timely threat detection</p> 	<p>Predict and act on intent to purchase</p> 	<p>Low-latency network analysis</p> 
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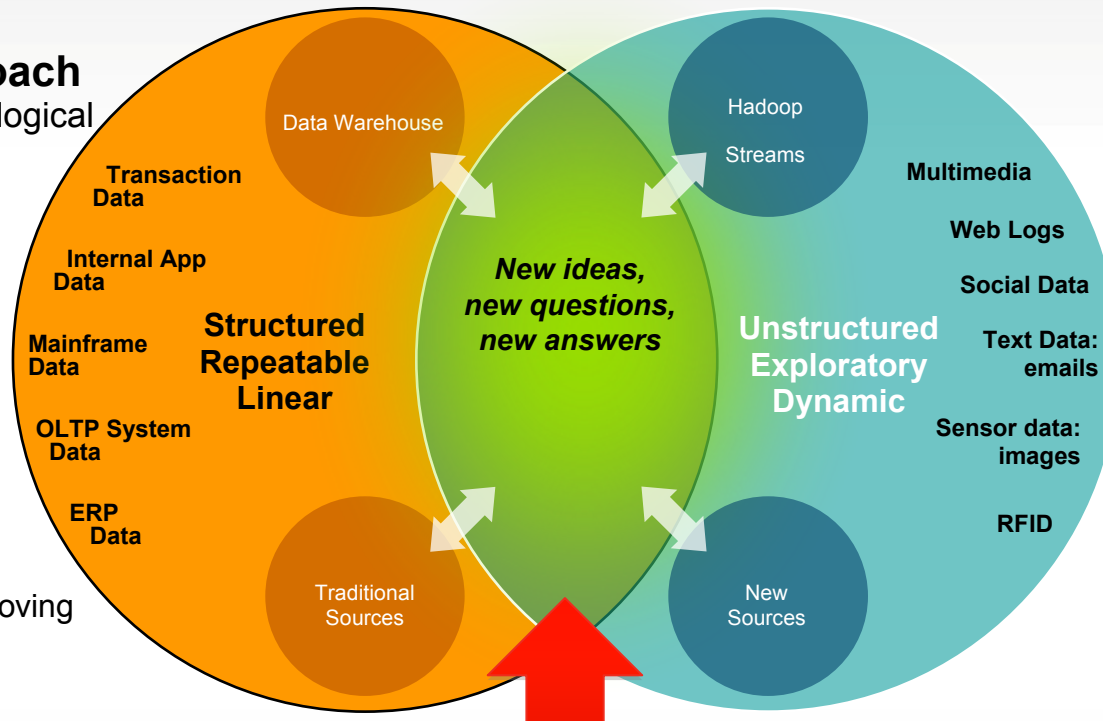
## Traditional Approach

Structured, analytical, logical

Data  
Rich, historical,  
private, structured  
Customers, history,  
transactions

### The "Circle of Trust"

Data warehouse &  
business analytics moving  
closer to this data



## New Approach

Creative, holistic thought, in

Data: Intimate,  
unstructured.  
Social, mobile, GPS,  
web, photos, video,  
email, logs

The real benefit is derived from integration of new data sources with traditional corporate data

- How can you query across both realms?
- How can you preserve security and lower TCO?
- How can you avoid costs and risks of offloading?



# zEnterprise

## *A key data source for Big Data & Business Critical Analytics*

- **Data that originates and/or resides on zEnterprise**
  - 2/3 of business transactions for U.S. retail banks
  - 80% of world's corporate data
- **Businesses that run on zEnterprise**
  - 66 of the top 66 worldwide banks
  - 24 of the top 25 U.S. retailers
  - 10 of the top 10 global life/health insurance providers
- **The downtime of an application running on zEnterprise = aprx 5 minutes per yr**
- **1,300+ ISVs run zEnterprise today**
  - More than 275 of these selling over 800 applications on Linux





# Big Data & Analytics on IBM zEnterprise

Improves Experience → Increases Adoption → Drives greater insight



**A Single Solution to:**

- ACCESS, COMBINE & MANAGE a relevant mix of information
- TIMELY & SECURE ACCESS for more accurate answers

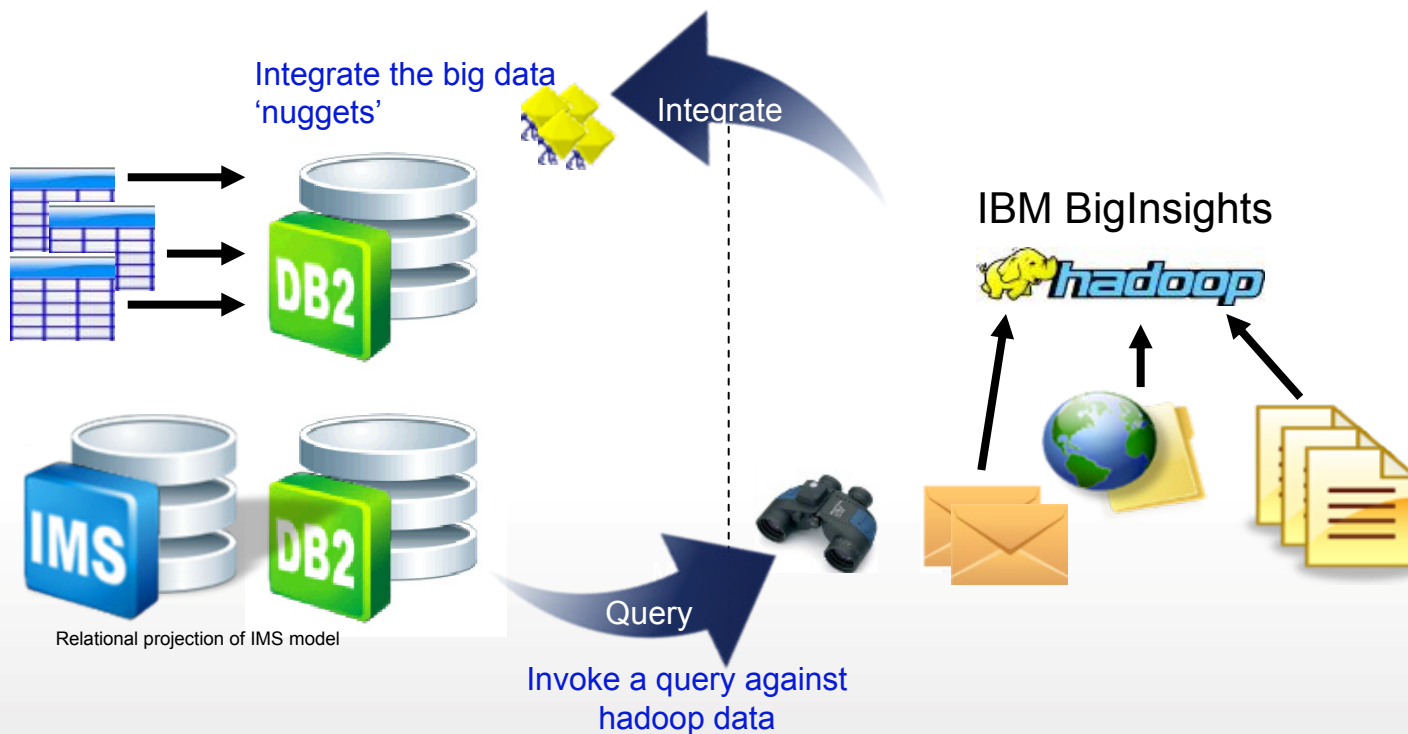


# Integrate a variety of data with IMS and DB2 for z/OS

Much of the world's operational data resides on z/OS

Unstructured data sources are growing fast

- Two significant needs:
  - Merge this data with trusted OLTP data from zEnterprise data sources
  - Integrate this data so that insights from Big Data sources can drive business actions
- IMS & DB2 are providing the connectors & the DB capability to allow BigInsights to easily & efficiently access each data source
- DB2 is providing the connectors & the DB capability to allow DB2 apps to easily and efficiently access hadoop data sources







# Variety of System z solutions for using Hadoop

## Veristorm vStorm Enterprise

On-platform analysis of data that does not fit with relational tools  
Safely combine z/OS and external data for analysis (e.g. improving claims response time)

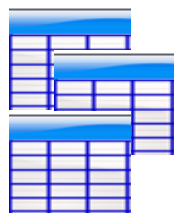


Integrate

## IBM InfoSphere BigInsights



Request

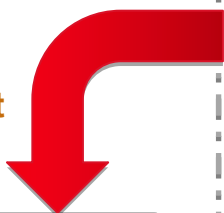


VSAM  
QSAM  
SMF, RMF  
System logs  
Operator logs  
Application logs  
etc.



DB2 z/OS can integrate insights from big data sources to augment analysis (e.g. improve accuracy of fraud detection with "nuggets" from social media)

## vStorm Connect



zDooop



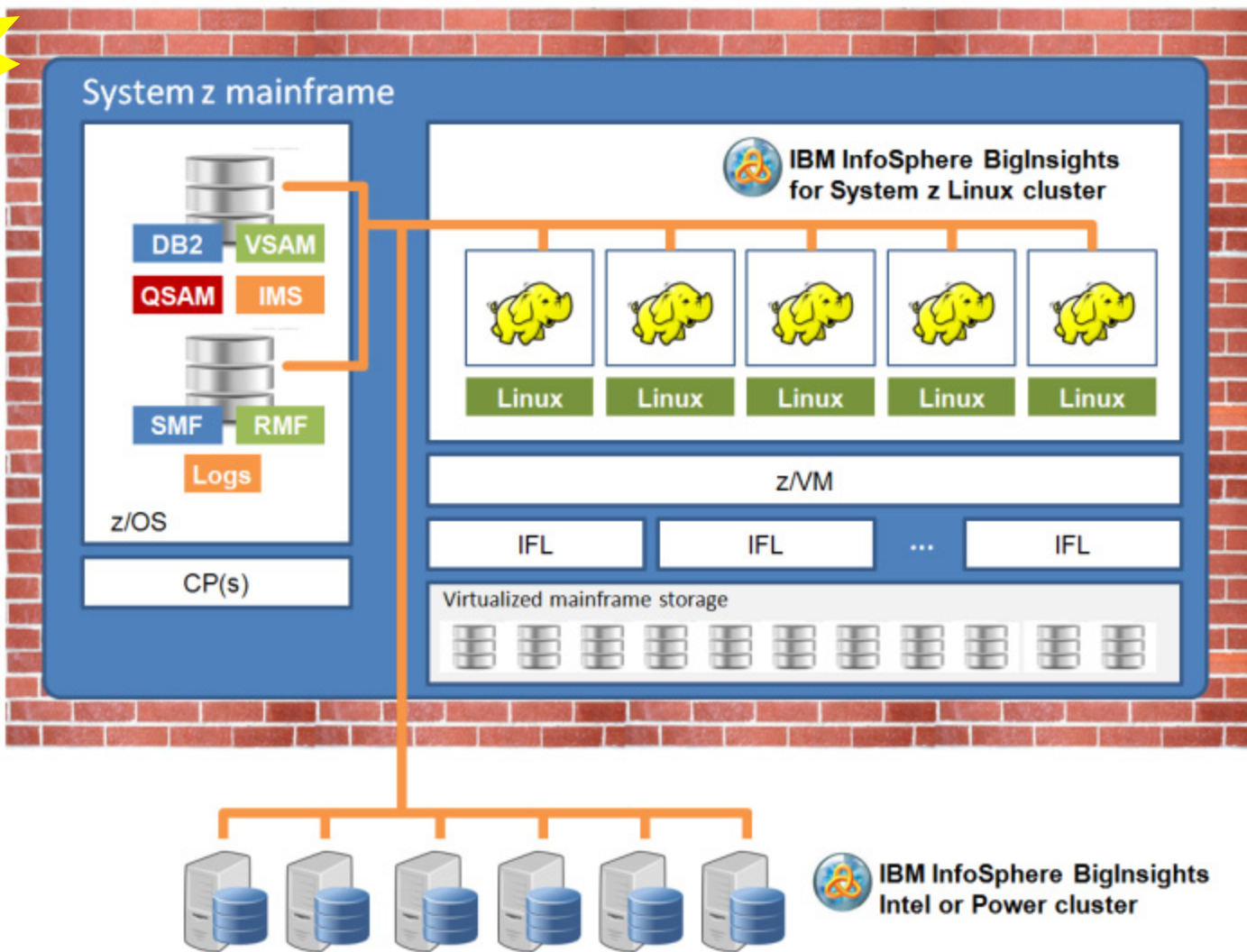


# InfoSphere BigInsights for Linux on System z - 2.1.2



GA'd  
Aug 5  
2014

Secure Perimeter







# InfoSphere BigInsights 2.1.2 for Linux on System z



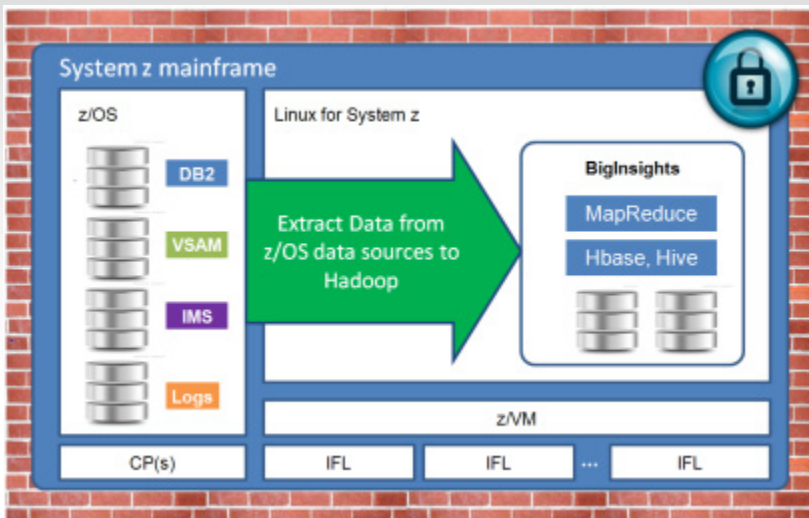
## What's included?

- Enterprise Edition only offered on System z Linux
- Available from Fix Central August 5<sup>th</sup>, 2014
- GA release based on **BigInsights 2.1.2**
- Support RHEL 6.4
- Apache MapReduce and HDFS only (no GPFS FPO or Adaptive MapReduce)
- Pricing identical to System x and Power – per node/VM licensing, perpetual
- 5-6 nodes recommended per IFL
- While all components shown are entitled, some may need to be run on other platforms in this initial release

Adaptive MapReduce and GPFS FPO are not supported in this release of BigInsights Enterprise Edition on System z.  
Other components including Streams and Data Explorer have components that will need to run on other platforms

Big R
Machine Data Analytics Accelerator
Social Media Analytics Accelerator
Text Analytics Accelerator (AQL)
Cognos bundle (business intelligence)
Streams (Real-time processing)
Data Explorer (Search & Exploration)
IIG Integrations, Data Click
Adaptive MapReduce
IBM GPFS FPO
BigSheets
Big SQL
ECLIPSE IDE, developer tools
Web-based management console
Cluster installer
IBM Certified base Hadoop

# Veristorm – vStorm Connect



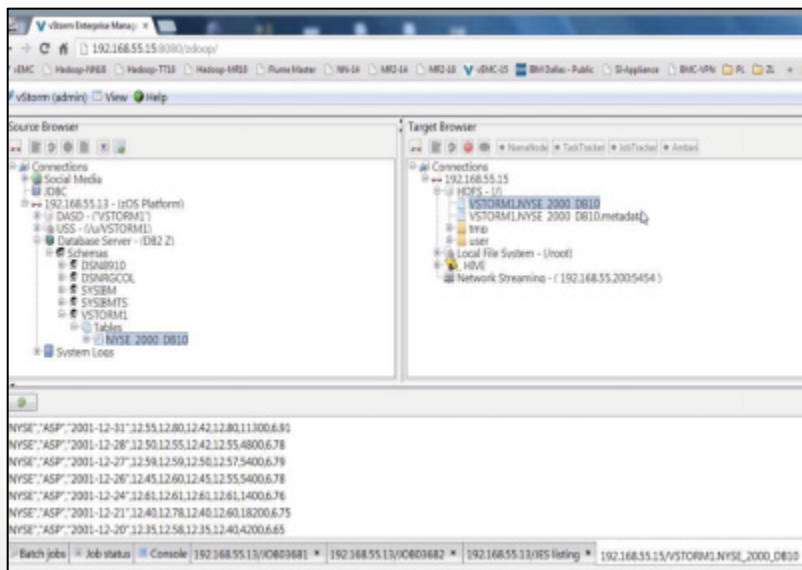
## Easy to use ingestion engine

- Native data collectors accessed via graphical interface
- Light-weight; no programming required
- Multiple z/OS data sources
- Conversions handled automatically
- Streaming technology leverages USS (no z/OS engines) with no DASD required for staging

## A secure pipe for data

- RACF integration – no need for separate or special credentials
- Data streamed over secure channel using hardware crypto
- Combining with BigInsights for Linux on System z means data never leaves the box

## Mainframe efficiencies





# IBM System z Transactional/Analytic Environment

*Delivering real-time insight for proven competitive advantage*

## Helping IT Drive Innovation

- **Improved bottom line results** driven from real-time business critical insight
- **Highly competitive decision making** derived from extremely timely, accurate analytic information
- **Rapid IT execution** against new & changing business demands through a proven, integrated platform
- **Minimized risk** with superior security and data governance technologies
- **Added value realized out of current investments** for reduce total cost of ownership

### End to end solution for real-time enterprise-wide insight

- Transactional Data/Applications
- Data Warehousing
- Rapid query acceleration
- Business Intelligence
- Predictive Analytics (including real-time in-transaction scoring)
- Performance Management

### Business critical analytics at the point of customer impact

- Timely, accurate, secure data
- Proven availability, scalability, performance

### Modern, flexible platform

- Rapid deployment & expansion
- Start from your top requirement
- Grow without re-architecting
- Reduce cost and complexity

### Integration with Big Data

- Volume, Velocity, Variety & Veracity
- Simplified integration of hadoop, streaming & transactional data



**Thank You**

# zEnterprise Analytics System 9700 and 9710

## *Flexible zEnterprise Deployment Models*

***A cost-competitive, integrated combination of hardware, software and services to deliver business reporting and business critical analytics***

- **Solution Priced** - for deployment as an additional logical partition (LPAR) on an existing system or as a new system
- **Preselected** – to deliver a comprehensive, yet flexible end-to-end solution
- **Pretested** – to meet business reporting and critical analytic demands

### *zEnterprise Analytics System 9700*



*zEnterprise EC12*

### *zEnterprise Analytics System 9710*



*zEnterprise BC12*