IBM

IBM's Large-scale BI Private Cloud What, Why & How

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IBM Cloud Computing

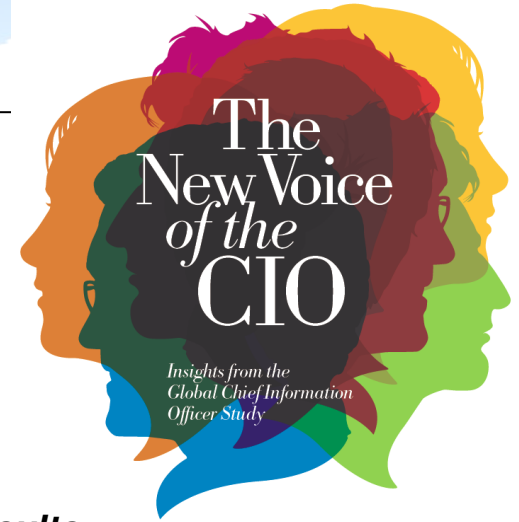**Cloud Computing with System z**

IBM

IBM Blue Insight

IBM's Large-scale BI Private Cloud
Enabling more users to make better, faster decisions…

1. What, Why & How
   - Feb 9th, 2010

2. BI Cloud Architecture, Challenges & Best Practices Review
   A Look at New Opportunities
   - June 1, 2010

3. Results – Validate the Business Case
   - Nov 2010

Shifting Market Dynamics

- BI Strategic Asset/Mission Critical
  - Broader, more intense users
  - High availability & performance expectations
  - Access to more data

- Troubled economy
  - Do more with less – business & IT
  - Economies of scale/consolidation

- Corporate regulatory compliance driving security

- Environmental concerns

The New Voice of the CIO

Insights from the Global Chief Information Officer Study

IBM: 2009 CIO survey results

CIOs select their ten most important visionary plan elements

- 3/4s of CIOs anticipate moving to a strongly centralized, shared infrastructure to improve economies of scale

- 83% say Business Intelligence & analytics -   is their top focus area

Introducing IBM's *Blue Insight*

In the spotlight

IBM
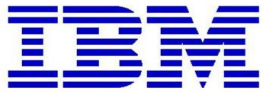
*Our commitment to informed decision making led us to consider private cloud delivery of Cognos via System z, which is the enabling foundation that makes possible **+$20M savings over 5 years**.*

-IBM CIO Office

Blue Insight enables IBM to deliver business intelligence (BI) with greater efficiency across the enterprise

- Establishes a corporate strategy for service delivery of BI
- Reduces the time and cost to deliver BI to new divisions and departments
- Maintains current departmental business processes, corporate security and compliance
- Maximizes departmental budgets by subscribing to standard services
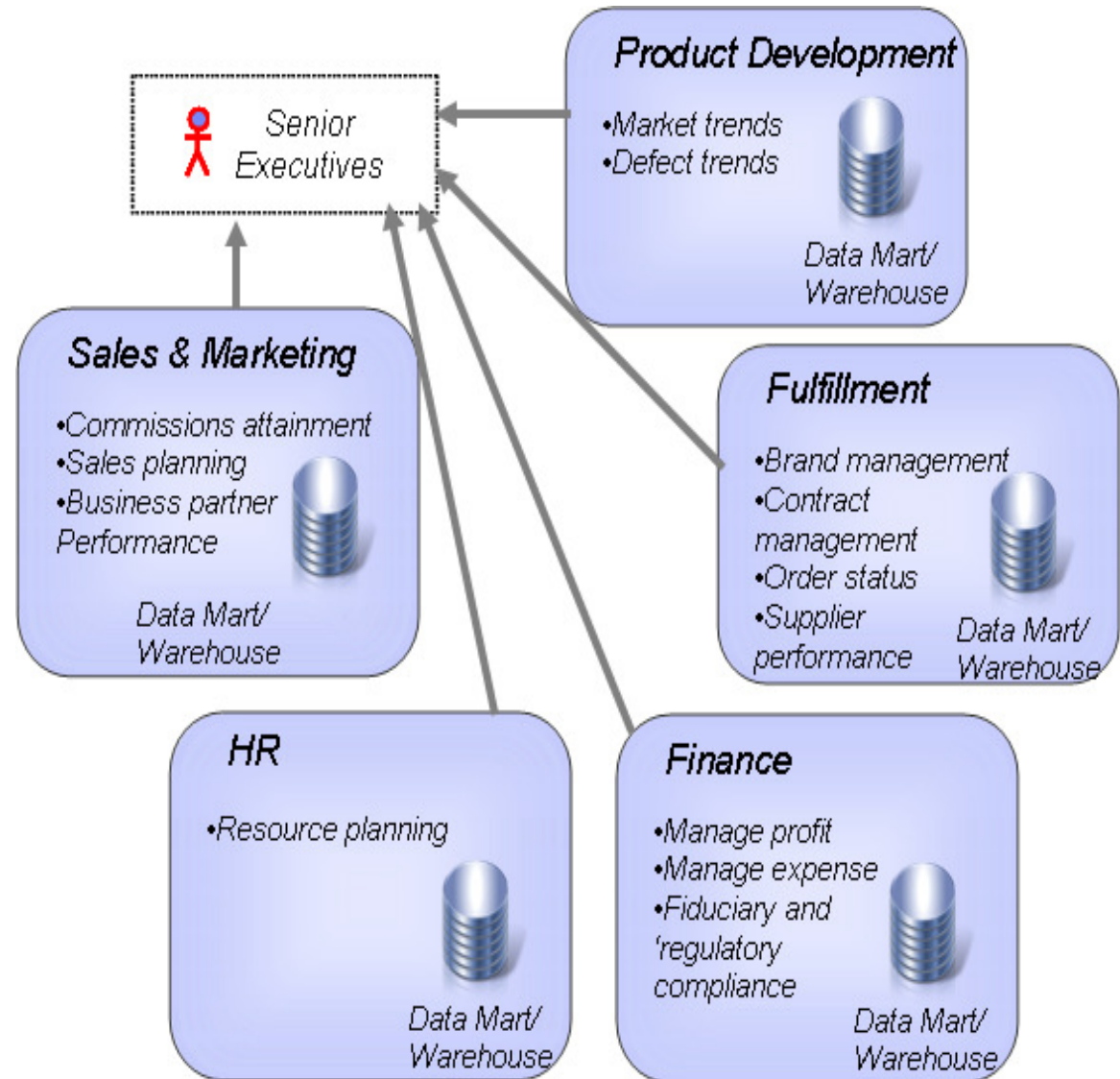- Private cloud solution implementation offers economies of scale and flexibility

Customer results:

- Consolidating +20 multi-product, departmental BI deployments to Cognos 8 BI on System z
- Deploying a private cloud to support +200,000 named users across our global workforce
- Realizing value from +60 data sources across IBM

Learn more: http://www.ibm.com/systems/z/solutions/cloud/smart.html

IBM

Evaluation of IBMs Historic BI Environment

- Segmented investments in BI tooling and infrastructure
  - Budget distribution based on operational process, relegated BI investments selection to affordability

- Silo'd metric development
  - Redundant and possibly competing

- Lack of tooling standardization
  - Multiple 3rd party vendors
  - Inflexible BI staffing

- Limited visibility to the total cost of business intelligence costs for the enterprise
  - Top down budget distribution

- Organizational reluctance to a centralized service
  - "Been there before" reaction
  - Fear of loss of autonomy to react to local business drivers

Senior Executives

Product Development
- Market trends
- Defect trends

Data Mart/ Warehouse

Sales & Marketing
- Commissions attainment
- Sales planning
- Business partner Performance

Data Mart/ Warehouse

Fulfillment
- Brand management
- Contract management
- Order status
- Supplier performance

Data Mart/ Warehouse

HR
- Resource planning

Data Mart/ Warehouse

Finance
- Manage profit
- Manage expense
- Fiduciary and 'regulatory compliance

Data Mart/ Warehouse

From our previous discussion on Blue Insights BACC
Start with a standard defined offering…

- **Common BI "appliance like" service for delivering Business Intelligence to IBM**

  - Common extensible infrastructure (HW & SW)

  - Common operational support

  - Common management of Cognos 8 BI *licensing* and Level 3 *support*

- **Common service definition and boarding process**

  - Defined BI tooling service scope (Reports, Adhoc, cubing, pervasive, etc)

  - Defined standard security and LDAP management

  - Common operational processes

- **Business intelligence experts to assist adopters**

  - BICC - (Business Intelligence Center of Competence)

  - Consultants available to assist in solution definition and consumption of service

- **Blue Insight is NOT an enterprise data strategy or a portal strategy**
  - Assumes data consumed by reports is a trusted part of the enterprise data strategy

  - Initial scope of Blue Insight was to use the standard Cognos portal delivery

Initial Business case
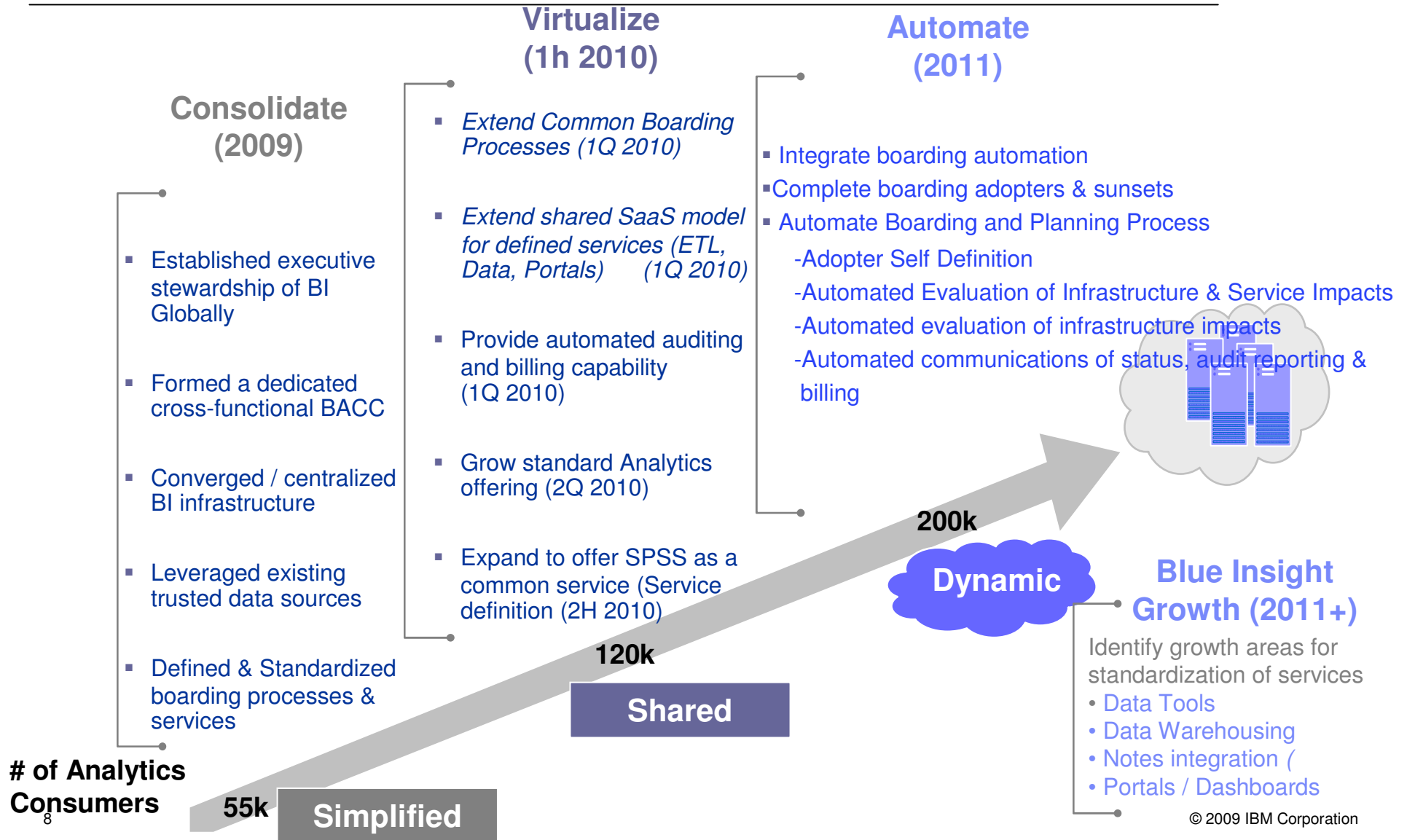## – > $25M Savings over 5 years…

VIRTUALIZATION	STANDARDIZATION	AUTOMATION

- Business case categorization

  - Infrastructure
  - Operations
  - Skill efficiency

Reduced Cost

Increased Flexibility

Z10 Infrastructure	Common service definition	Web 2.0 Boarding application
Shared peripheral infrastructure	Common security	Automated choreography & administration
Shared middleware	Common promotion process	Predictive planning
Shared Cognos V8	Common operations process	Automated provisioning
60% ▪HW Consolidations ▪SW Costs ▪3rd Party vendor savings	35% ▪Operations efficiency ▪Development efficiency ▪Improved time to value	5% ▪Adopter administration * - Future focus

IBM

IBMs Transformation and Deployment Plans for Blue Insight

**Virtualize
(1h 2010)**

**Automate
(2011)**

**Consolidate
(2009)**

- Extend Common Boarding Processes (1Q 2010)

- Extend shared SaaS model for defined services (ETL, Data, Portals)   (1Q 2010)

- Integrate boarding automation
- Complete boarding adopters & sunsets
- Automate Boarding and Planning Process
  - Adopter Self Definition
  - Automated Evaluation of Infrastructure & Service Impacts
  - Automated evaluation of infrastructure impacts
  - Automated communications of status, audit reporting & billing

- Established executive stewardship of BI Globally

- Formed a dedicated cross-functional BACC

- Converged / centralized BI infrastructure

- Leveraged existing trusted data sources

- Defined & Standardized boarding processes & services

- Provide automated auditing and billing capability (1Q 2010)

- Grow standard Analytics offering (2Q 2010)

- Expand to offer SPSS as a common service (Service definition (2H 2010)

200k

Dynamic

120k

Shared

Blue Insight Growth (2011+)

Identify growth areas for standardization of services
- Data Tools
- Data Warehousing
- Notes integration (
- Portals / Dashboards

# of Analytics Consumers

8

55k   **Simplified**

Blue Insight adoption status as of June 1, 2010

- User adoption target will be exceeded by the start of 2H 2010

  - Original FY 2010 target was 120K users, currently 113K users have boarded
  - Adopters cover <u>all Geographies and business process areas</u>
  - Currently there are >50 adopters that have boarded content into the BACC BI service
    - Adopters are the focal point teams for a constituency of users
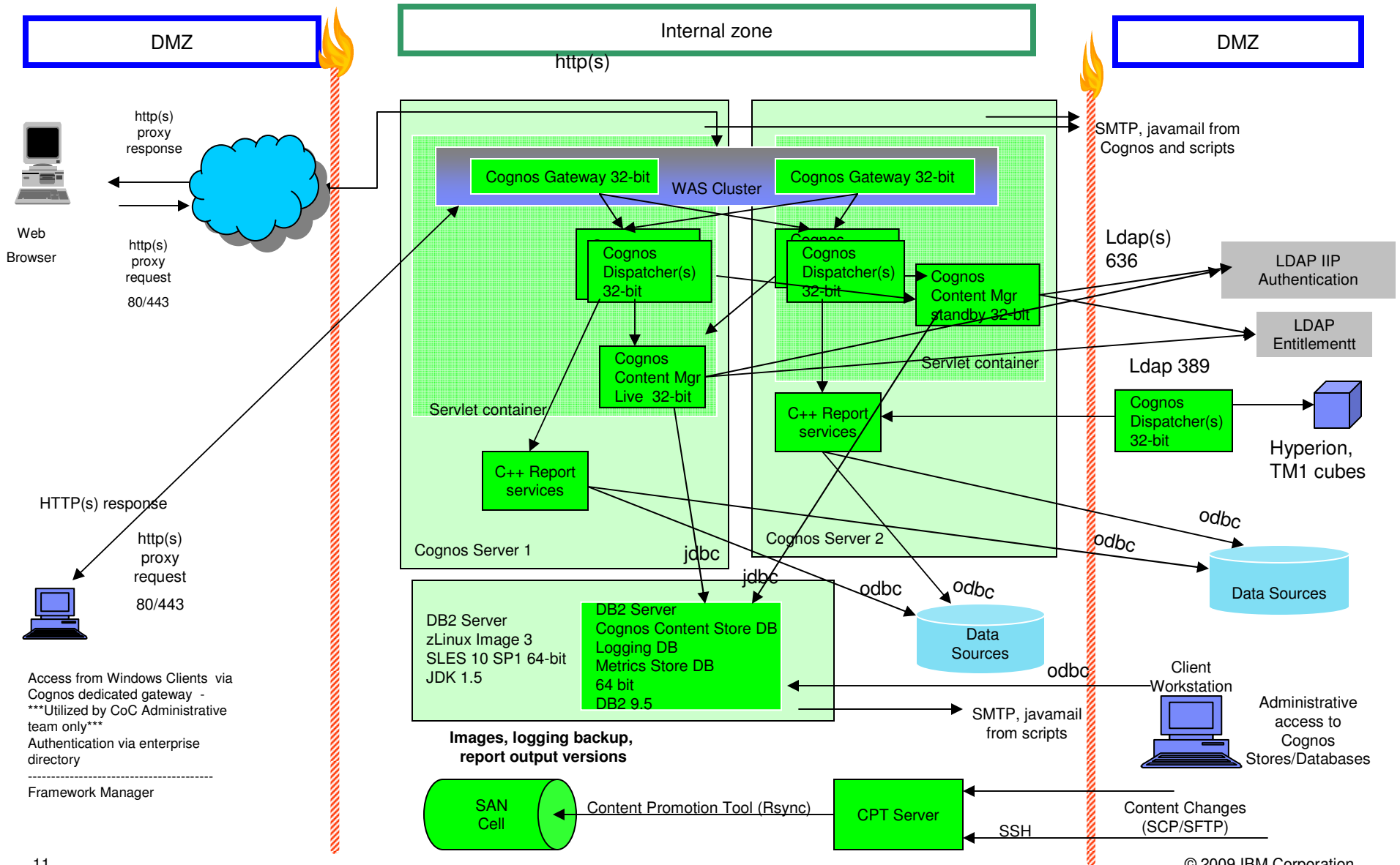   - User groups range from 50 K to < 50 users

- 2010 savings allocation of the projected 25M target over 5 years will be met

  - 1Q quarter end actuals achieve savings of over 80% of the 2010 target
    - Savings identified through BI infrastructure, operations cost retirements and 3rd party licensing

Blue Insight's Architecture

IBM Cloud Computing

Cloud Computing with System z

Architecture Diagram for Cognos 8 BI – Linux on System Z Production

DMZ

Internal zone

http(s)

DMZ

http(s)
proxy
response

Web
Browser

http(s)
proxy
request

80/443

SMTP, javamail from
Cognos and scripts

Cognos Gateway 32-bit

WAS Cluster

Cognos Gateway 32-bit

Ldap(s)
636

LDAP IIP
Authentication

Cognos
Dispatcher(s)
32-bit

Cognos
Dispatcher(s)
32-bit

Cognos
Content Mgr
standby 32-bit

LDAP
Entitlementt

Servlet container

Cognos
Content Mgr
Live 32-bit

Ldap 389

Cognos
Dispatcher(s)
32-bit

Servlet container

C++ Report
services

Hyperion,
TM1 cubes

HTTP(s) response

C++ Report
services

odbc

http(s)
proxy
request

80/443

Cognos Server 1

Cognos Server 2

odbc

jdbc

odbc

jdbc

odbc

Data Sources

DB2 Server
zLinux Image 3
SLES 10 SP1 64-bit
JDK 1.5

DB2 Server
Cognos Content Store DB
Logging DB
Metrics Store DB
64 bit
DB2 9.5

Data
Sources

odbc

Access from Windows Clients via
Cognos dedicated gateway -
***Utilized by CoC Administrative
team only***
Authentication via enterprise
directory

Framework Manager

Client
Workstation

SMTP, javamail
from scripts

Administrative
access to
Cognos
Stores/Databases

**Images, logging backup,
report output versions**

SAN
Cell

Content Promotion Tool (Rsync)

CPT Server

SSH

Content Changes
(SCP/SFTP)

Blue Insight Bill of Materials

Type Of Server	Type of Software	Software Version	OS & OS Version
Hardware	System z Enterprise Class	V10	Linux
Cognos 8.4 BI Server 1 and 2	WebSphere ND for Linux on zSeries – 32 bit WAS for Linux on zSeries – 31 bit IHS server DB2 9.5 FP1 64-bit with 32-bit libraries JRE – 32 bit IBM SDK for Java 32-bit X11 32 bit and 64 bit libraries Directory Server LDAP GSA- (Global Storage Architecture) - SAN Cognos 8 BI 32 bit Essbase client	v6.1.0.17 v6.1.0.17 v6.1.0.29 v9.5 fp5 v 1.5 v1.5 SR7 v8	64-bit distribution of SLES10 Enterprise Server
Database Server	DB2 9.5 FP1 64-bit with 32-bit libraries JRE – 32 bit IBM SDK for Java 32-bit X11 32 bit and 64 bit libraries GSA	v9.5 fp1 V 1.5 v1.5 SR7	64-bit distribution of SLES10 Enterprise Server

The Power and Flexibility of System z Virtualization delivers value for Blue Insight

⮞ **Over 40 years of continuous innovation provides stable, reliable virtualization technologies**

⮞ **The Architecture designed and optimized for resource** over commitment fits Blue Insights non linear user behavior

⮞ **Multiple images concurrently share all physical CPU and I/O resources reducing user costs**

⮞ **Resources assigned** as needed, automatically**, based on report demand**

⮞ **New OS images can be easily provisioned for pilots, upgrade testing and root cause**

Dev/Test and
Optional Failover

Linux Production

z/OS Production		z/OS Pre-Production		z/OS	Linux	Linux	Performance Critical		Linux	Linux	Linux
z/OS	z/OS	z/OS	z/OS	z/VM			Linux	Linux	z/VM		
LPAR 1	LPAR 2	LPAR 3	LPAR 4	LPAR 5			LPAR 6	LPAR 7	LPAR 8		

GP	GP	GP	GP	GP	GP	zAAP	zAAP	zIIP	zIIP	IFL	IFL	IFL	IFL	IFL	IFL	IFL	IFL

IBM System z

13

© 2009 IBM Corporation
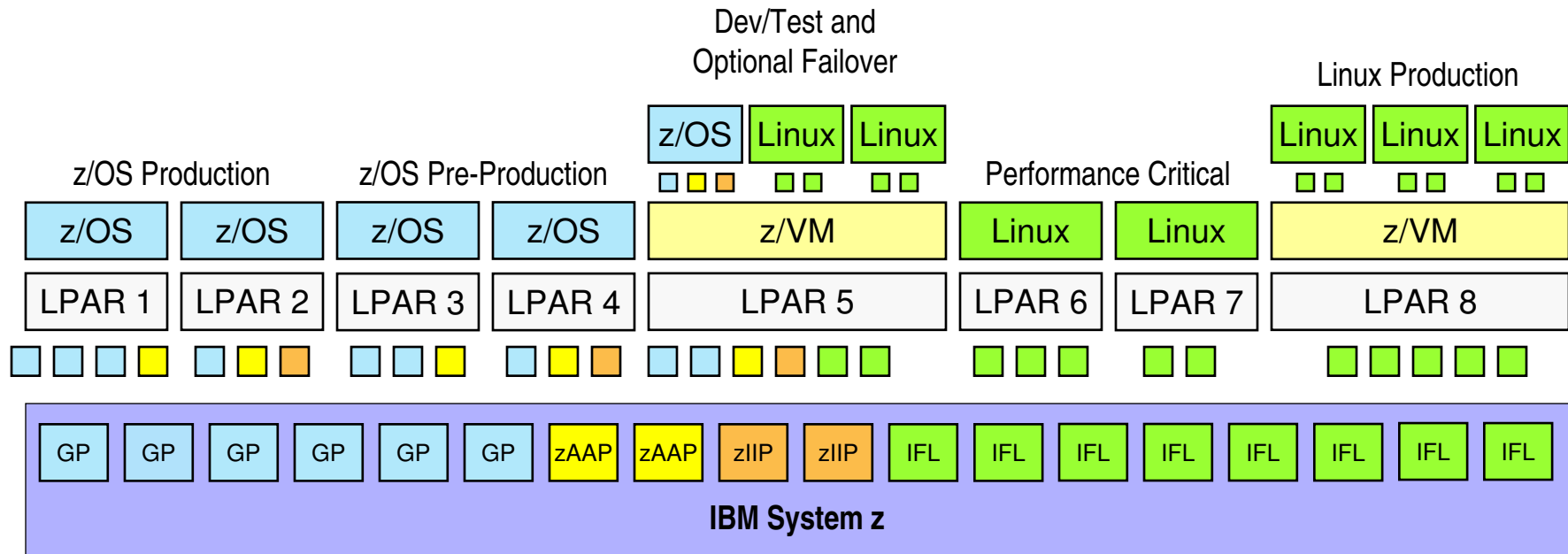
Why System Z for Blue Insight

- **System Z allowed us to start with our final architecture**

  - Our initial implementation was "right sized" for our fist year projected adoption
  - Blue Insights implementation has grown ~ 20% in 2010 to accommodate adopters
    - Result was simply adding resources (IFLs, Memory) with no architectural changes

- **Operations simplification**

  - Growing adopter base does not produce new "moving parts"
  - Supports broader centralization strategies of data warehousing, business intelligence and predicative analytics on a single platform

- **Time to value**
  - Small to large implementations of BI do not go through a lengthy capital cycle
    - Months of ROI justification and deployment
  - "Always on" service is not limited to initial adoption but provides predictable service for lifecycle content changes

Blue Insight – Boarding administration and management

- Web 2.0 Open source application for self registration of adopters
- Utility for managing accounting, business case, adopter communications and billing

Blue Insight IBM Internal charge back methodology

- **Keep it simple**

  - <u>Zero uplift</u> service model
    - Actual cost of service is recouped from adopters

  - Charge back apportionment

    - Measure based on # of adopters, # of users per adopter, complexity

    - Charges are allocated with full transparency of costs and rationale

  - Charges are not based on usage

    - Costs are generally fixed and as more users adopt the service the cost per user drops

- Want something different ?

  - System Z and Tivoli can provide you the ability to deliver user based chargeback or tiered service chargeback based on report writer role definitions (ie. Adhoc, Power user or standard consumer)

Success of IBMs BACC program breeds innovation and change

- **Business users with standard report needs have easily boarded the BACC service**

  - BACC service matches standard report use cases

- **With standard reporting needs satisfied users are <u>expanding their use cases and the business lens</u>**

  Users want to leverage the Cognos service for :

  - Operational business intelligence
  - Integration of reports with existing applications
  - Population of newly created portals for specific business purposes

Architectural challenges of BACC Blue Insight
use case innovation
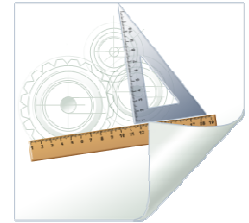
- Creating one successful corporate standard highlights the need for end to end IM standards

    - New Operational BI and support for multiple portals has identified architectural and business case challenges

        - Portal specific security and authorizations
            - Drives custom SDK code for authorization/authentication

            Entices users to want to leverage administrative functions (Scheduling, data checks, etc)

        - Support for external portals vs. internal portals
            - Security drives a need to separate Internal confidential reporting from external reporting needs

- Custom integrations erode the business case
    - Upgrades will be slower and more cumbersome with customized integration code
    - Speed of delivery is effected due to testing cycles for custom code

Operational challenges of BACC Blue Insight innovation

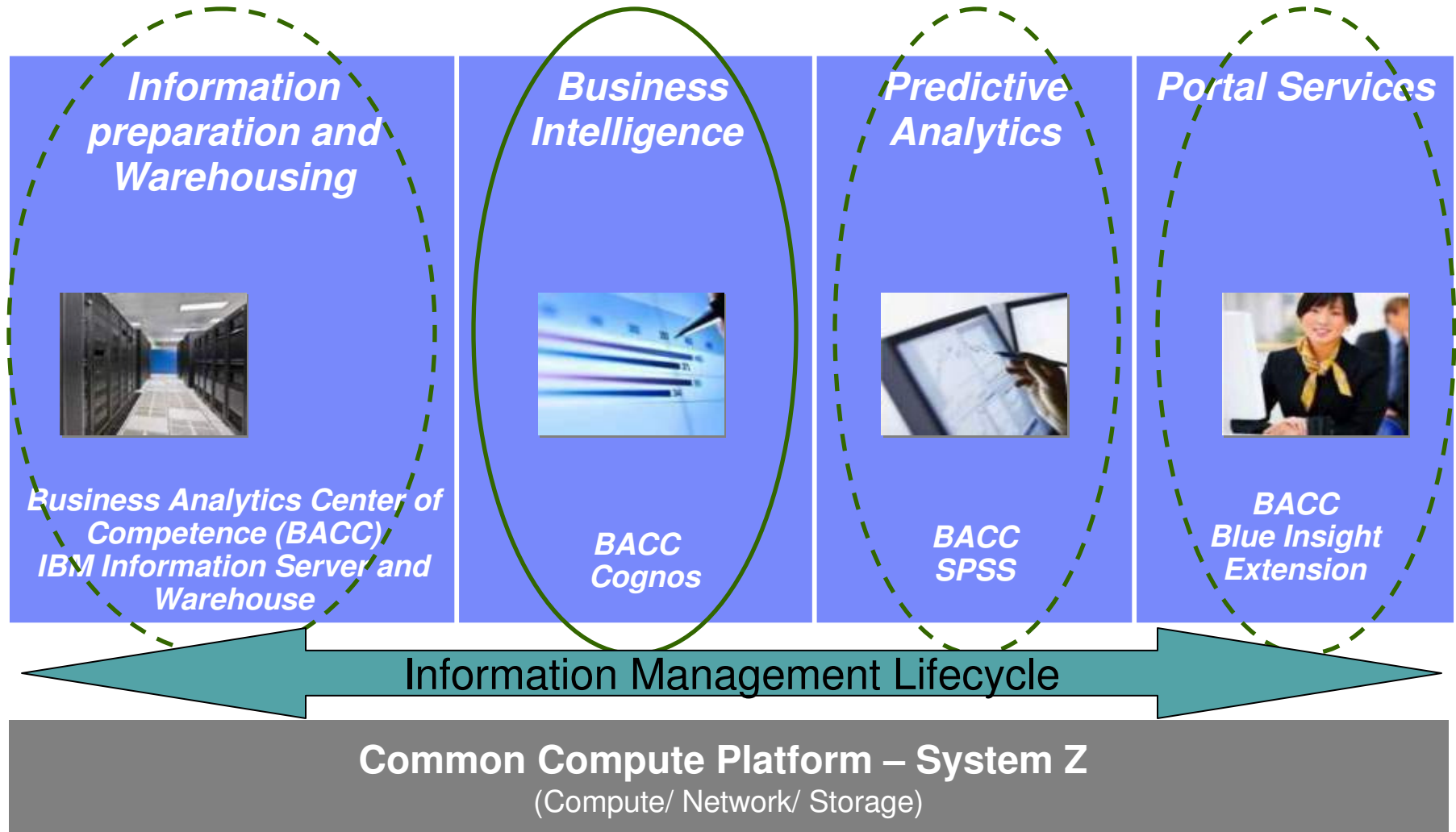*In our previous session we discussed a need for operational excellence*
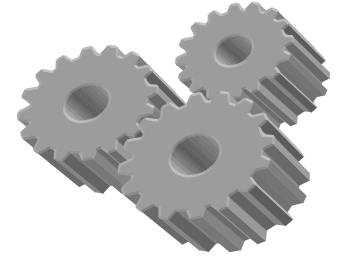
- Cognos portlet delivery needs to preserve user accountability

  – Operations needs to be able to identify rogue processes and actively manage them

  – User anonymity must be avoided

  – Regardless of how service is requested operational integrity needs to be maintained

- External portals drive additional infrastructure

  – Operational impact of additional infrastructure is minimized due to architectural replication

- Maturity drives a focus on adopter accountability of usage

  – Analyze and manage boarding assumptions vs. Actuals

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BACC Business Intelligence success and maturity breed growth…

BACC (Blue Insight) Business intelligence and planning will extend standard services for Data preparation, predictive analytics and portal integration services…

Information preparation and Warehousing	Business Intelligence	Predictive Analytics	Portal Services
Business Analytics Center of Competence (BACC) IBM Information Server and Warehouse	BACC Cognos	BACC SPSS	BACC Blue Insight Extension

Information Management Lifecycle

Common Compute Platform – System Z
(Compute/ Network/ Storage)

BACC Predictive Analytics services using IBMs SPSS

- Architecture considerations

  – Delivering SaaS is dependant on the characteristics of the software and the use cases

  – SPSS will be used as both a client and a server solution

    • License control for both client and server solutions will be maintained centrally

  – Use cases for predictive analytics are less predictable than Business Intelligence

    • Model characteristics vary greatly
    • Delivery patterns will include shared and dedicated environments
       - High resource, predictable cadence workloads will be dedicated
       - Low resource, spurious workloads will be in a shared environment

- Business considerations

  – Development / test will be used for discovery and process development and changes

  – Initial production usage will deliver model results as data assets that will be consumed by Cognos reports

BACC Portal Services
Additional standardized service for custom portals

- Business use cases drive the need for business context to information needs

  - "Sales needs to view opportunity, fulfillment, contractual and customer sat data that is pertinent to the customers that a seller is authorized to see"

    - Portal definitions and scope are defined by the business lens of the consumer with one common solution component

      Delivery of report content through the common BI service

- IBMs BACC response - define a common portal access with Single Signon for the BI service

  - Common method for authentication and authorization
  - Common method for passing authorization to the report dependant data sources

- Prescription of access methodology will drive changes to portal methodology

BACC Information preparation and warehouse services Infosphere's DataStage and DB2 Data warehouse edition

- Architecture considerations

  – Architectural considerations are similar to those of SPSS
  – Infrastructure will be delivered in a virtualized environment and SAN storage architecture
  – Specific adopter needs will be addressed by either dedicated or shared infrastructure depending on the functional / non functional requirements
  – Standardized tooling images will be used to provision instances as needed in a virtualized environment

- Business considerations

  – Data engagement process will be available <u>optionally</u> for adopters
    - Insure data governance guidelines met
    - Enterprise data standards compliance
    - Data Modeling
    - Consultation on the use of Data Marts, cubes and MQTs

  – Business requirements will drive the infrastructure delivery
  – Infrastructure delivery requirements will drive the cost model for adopters

    - Common sense dictates shared, scheduled use environments will be lower cost than dedicated environments

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BACC Governance and protecting your ROI

No
Custom
BI Solutions

- BACC is not just an IT delivery efficiency play, it is a business strategy

- Central to this strategy is tooling, infrastructure and operational standardization
    - Control points have been added to the enterprise to govern this strategy

        - Control procurement of non strategic 3rd party BI competitors
        - Infrastructure requests for Cognos require BACC approval
        - Cognos maintenance is restricted to BACC approved installations

- Each adopter that boards the BACC infrastructure represents a savings to the business

    - IBM Initial BACC savings was based on existing infrastructure consolidation, operational support and SW licensing

        - BUT there is more savings to monitor

            - Adopters interested in new tooling for new initiaties but using a traditional silo'd delivery model
            - Influencing adopters from instantiating silod BI installations is driving additional ROI

Summary of Lessons Learned To Date

- Executive sponsor with political collateral is critical to establish the strategy

- Socialization of key stakeholders is critical and should start early

- Make it clear that common service <> take away key personnel and solution autonomy

- Define your service and insure your IT team sticks to that scope, don't slip into solution delivery

- Make is clear to adopters what the process is to board

- Make is clear to adopters the level of service that is available

- Focus on operational excellence

- Cost reduction is achievable

- Reduced time to value is achievable

- Pattern of BI service delivery is repeatable for other common services

- New business usage patterns will emerge requiring extension of standard services

- Bill back methodology needs to be transparent and as simple to plan for as possible

If we had to do it all over again….

- Would we start with BI ?

- Would we try to incorporate a data standardization delivery service ?

- Would we spend more time identifying usage patterns up front ?

- Would we include predictive analytics in the initial offering ?

Introducing the Smart Analytics Cloud

A private cloud optimized for analytic services in large enterprises

	Defined as …	To create…	That delivers …
Smart Analytics Cloud	IBM Smart Business - services with industry leading hardware & software	A private cloud computing solution for business intelligence (BI) & analytics	A services solution for delivering business intelligence to the entire organization

IBM software

Cognos 8 BI
A broad range of BI capabilities

Web   **Mobile**   **Search**   **Office**

Reporting   **Analysis**   **Dashboards**

Open, enterprise-class BI platform

IBM hardware

IBM System z
Centralize, Virtualize & Simplify the BI infrastructure
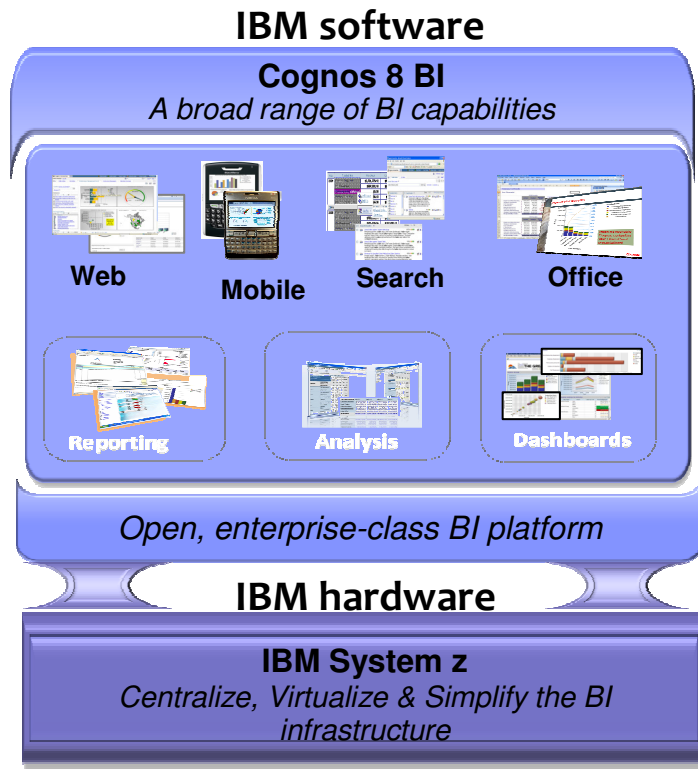
IBM Services

- Create awareness of BI and understand the needs for a BI strategy across the organization

- Complete a readiness assessment to define the scope and priorities for the solution

- Deploy Cognos 8 BI for Linux on System z as a private cloud

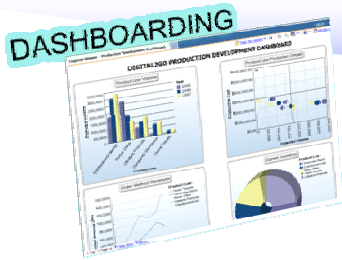- Provide the skills for the on going management & expansion of their BI private cloud deployment

IBM

IBM Business Analytics on System z
Full range of tightly-integrated capabilities to inform the business

How are we doing?	**Why are we on/off track?**	**What should we do next?**

DASHBOARDING · REPORTING · QUERY · ANALYSIS
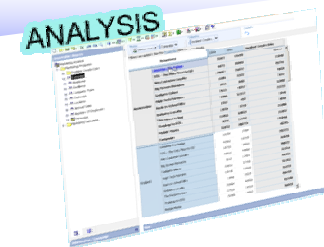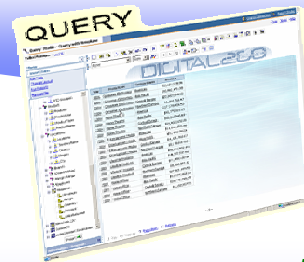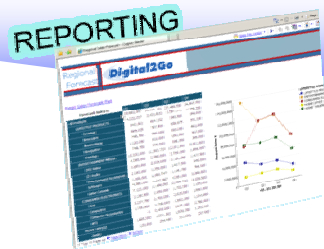
Real-time or historical; operational or strategic

Guided or self-service access and exploration…

Foresight using Statistical, Content, and Predictive Analytics…

Executive | **Business Manager** | **Casual Business User** | **Line Manager** | **Business Analyst** | **Financial Analyst**

IBM System z
Simplifying the Management and Maintenance of your Enterprise BI Infrastructure

- Provides an infrastructure for:
  – Centralizing of data
  – Standardization of service delivery
  – Corporate compliance
  – Metering, billing, chargeback and standardized on-boarding

- Provides effective & efficient utilization of existing resources:
  – Hardware & Software,
  – Human Resources

- Improves response time & agility to support the business
  – Reduce the time and speed associated with deploying BA
  – Rapid Provisioning
  – Simplified and faster access to the data on System z.

- Confidently meet the growing demands of the business
  – Scalability,
  – Reliability,
  – Availability and
  – Security

Cognos 8 BI for Linux on System z TCO Study

Explored the TCO of choosing an x86 infrastructure vs System z for a Cognos 8 BI deployment

- Various IBM Cognos 8 BI Named User deployment sizes (100, 1,000, 10,000, 20,000, 50,000)
  - The implications of some of the deployment decisions customers need to evaluate including:
    - Deployment Cognos 8 BI best practices
    - High availability
    - Hardware upgrades every 3 to 5 years.
    - Scalability

- **Key Results:**
  - Average savings over 5 years of choosing System z: 36%
  - Average savings in CPUs required to manage a Cognos 8 BI infrastructure on System z: 87%
  - Average savings in servers required to buy and manage with System z: 96%
  - Total cost of acquisition is either cheaper (100/1000) or equal to (10,000 – 50,000) with System z vs x86
  - Regardless of the size of the deployment it always costs less for System z over x86 for a administrative and facilities perspective
  - % of a customers total costs over 5 years holds steady regardless of the size of deployment with an x86 infrastructure and does not offer the any volume discounts from a facilities/administrative perspective
  - The savings from the System Administration costs with System z for the 10,000 to 50,000 user deployments is equal to the TCO over 5 years for Cognos 8 BI for Linux on System z
  - The TCO for customers who require high availability is consistently approximately 50% cheaper with System z

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   A Look at New Opportunities
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Learn More

- Part one of today's webinar: Blue Insight: What, Why & How

  - ibm.com/software/systemz/telecon/9feb

- IBM.com: BI & DW on System z:
  http://www.ibm.com/software/data/businessintelligence/systemz/

- IBM.com: Smart Analytics Cloud: http://www-
  03.ibm.com/systems/z/solutions/cloud/smart.html

- Upcoming Webinar:
  - June 15, 2010 - Reduce the cost of delivering business analytics across your
    organization
  - Register today @ ibm.com/software/systemz/telecon/15jun

- Need more information, contact: zCognos@us.ibm.com

Q&A

IBM Cloud Computing

Cloud Computing with System z