IBM's System z Forum

Extreme Performance for Complex Business Analytics

IBM DB2 Analytics Accelerator

DB2 Analytics Accelerator
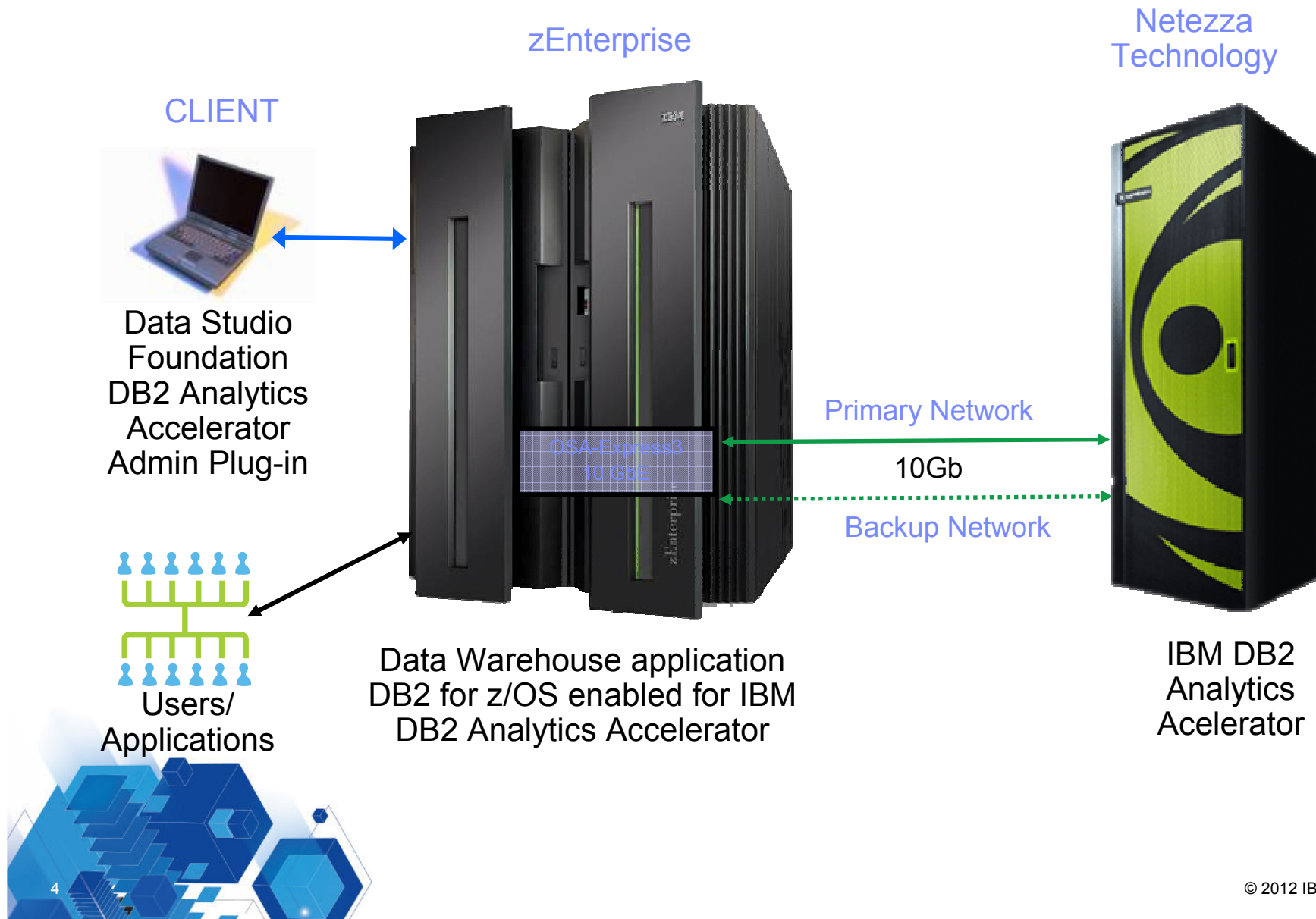## *Accelerating decisions to the speed of business*

Blending System z and Netezza technologies to deliver unparalleled, mixed workload performance for complex analytic business needs.

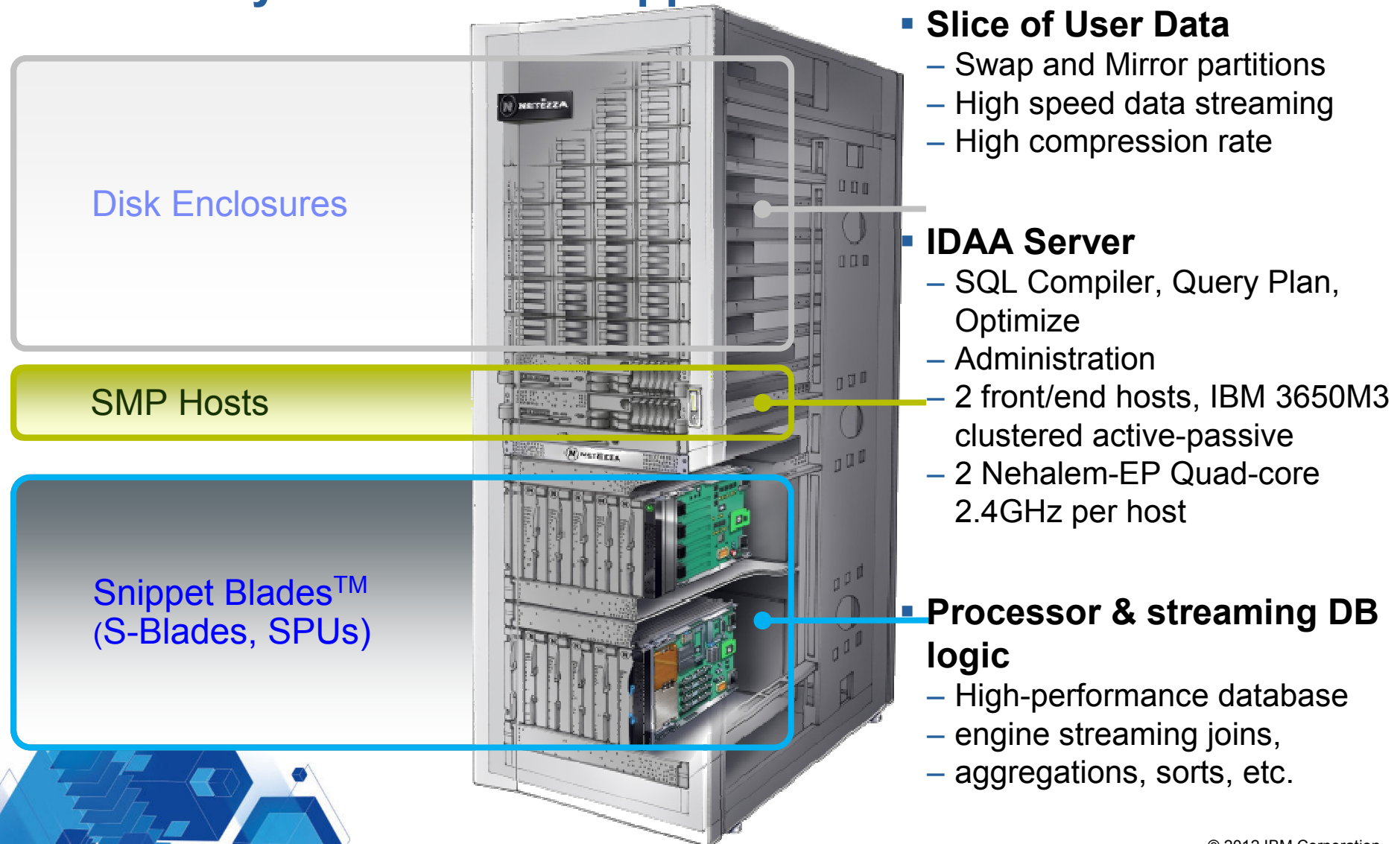- **Get more insight from your data**

  - Fast, predictable response times for "right-time" analysis

  - Accelerate analytic query response times

  - Improve price/performance for analytic workloads

  - Minimize the need to create data marts for performance

  - Highly secure environment for sensitive data analysis

  - Transparent to the application

IBM DB2 Analytics Accelerator V2 Components

zEnterprise

Netezza
Technology

CLIENT

Data Studio
Foundation
DB2 Analytics
Accelerator
Admin Plug-in

OSA Express3
10 GbE

Primary Network

10Gb

Backup Network

Users/
Applications

Data Warehouse application
DB2 for z/OS enabled for IBM
DB2 Analytics Accelerator

IBM DB2
Analytics
Acelerator

4

DB2 Analytics Accelerator V2 Powered by Netezza 1000 Appliance

Disk Enclosures

SMP Hosts

Snippet Blades™
(S-Blades, SPUs)

- **Slice of User Data**
  – Swap and Mirror partitions
  – High speed data streaming
  – High compression rate

- **IDAA Server**
  – SQL Compiler, Query Plan, Optimize
  – Administration
  – 2 front/end hosts, IBM 3650M3 clustered active-passive
  – 2 Nehalem-EP Quad-core 2.4GHz per host

- **Processor & streaming DB logic**
  – High-performance database
  – engine streaming joins,
  – aggregations, sorts, etc.

Fast Time to Value

- **IBM DB2 Analytics Accelerator (Netezza 1000-12)**
  - Production ready - 1 person, 2 days

- **Table Acceleration Setup … 2 Hours**
  - DB2 "Add Accelerator"
  - Choose a Table for "Acceleration"
  - Load the Table (DB2 copy to Netezza)
  - Knowledge Transfer
  - Query Comparisons

- **Initial Load Performance …**
  - 400 GB "Loaded" in 29 Min
  - 570 million rows (Loads of 800GB to 1.3TB/Hr)

- **Actual Query Acceleration … 1908x faster**
  - 2 Hours 39 Minutes to 5 Seconds

- **CPU Utilization Reduction**
  - 35% to ~0%

- **Actual customer results, October 2011**

Performance & Savings

Query	Total Rows Reviewed	Total Rows Returned		DB2 Only			DB2 with IDAA			Times Faster
				Hours	Sec(s)		Hours	Sec(s)		
Query 1	2,813,571	853,320		2:39	9,540		0.0	5		1,908
Query 2	2,813,571	585,780		2:16	8,220		0.0	5		1,644
Query 3	8,260,214	274		1:16	4,560		0.0	6		760
Query 4	2,813,571	601,197		1:08	4,080		0.0	5		816
Query 5	3,422,765	508		0:57	4,080		0.0	70		58
Query 6	4,290,648	165		0:53	3,180		0.0	6		530
Query 7	361,521	58,236		0:51	3,120		0.0	4		780
Query 8	3,425.29	724		0:44	2,640		0.0	2		1,320
Query 9	4,130,107	137		0:42	2,520		0.1	193		13

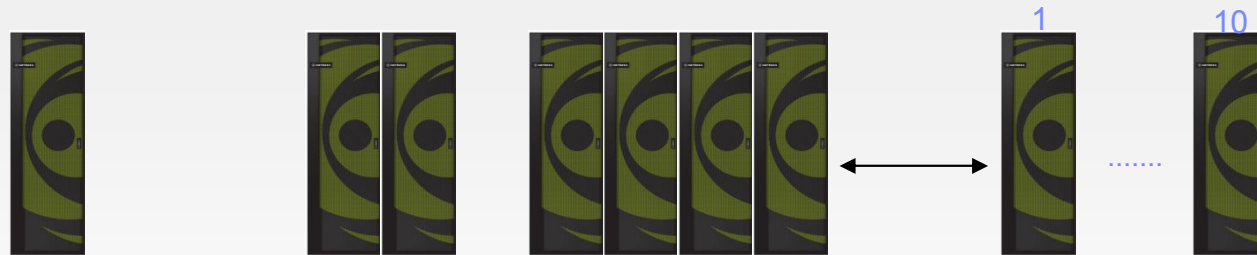Actual customer results, October 2011

- Queries run faster

  – Save CPU resources

  – People time

  – Business opportunities

- DB2 Analytics Accelerator: "we had this up and running in days with queries that ran over 1000 times faster"

- DB2 Analytics Accelerator: "we expect ROI in less than 4 months"

Accelerating decisions to the speed of business

Netezza 1000 Appliance Scalability

	1000-3	1000-6	1000-12	1000-24	1000-36	1000-48	1000-72	1000-96	1000-120
Cabinets	1/4	1/2	1	2	3	4	6	8	10
Processing Units	24	48	96	192	288	384	576	768	960
Capacity (TB)	8	16	32	64	96	128	192	256	320
Effective Capacity (TB)*	32	64	128	256	384	512	768	1024	1280

Current IDAA Platforms   Future ➔

Predictable, Linear Scalability throughout entire family

Capacity   = User Data space
Effective Capacity = User Data Space with compression

*: 4X compression assumed

Why Both?
Marrying the best of both worlds

IBM
System z

IBM
Netezza

Mixed Workload System

Focused Appliance

Very diverse workload

Very focused workload

Tailored to your needs
A Hybrid Solution

IBM
System z with
IBM DB2 Analytics Accelerator

IBM
Netezza

Mixed Workload System	Focused Appliance
▪ Mixed workload system z with operational transaction systems, data warehouse, operational data store, and consolidated marts ▪ Unmatched availability, security and recoverability ▪ Natural extension to System z to enable pervasive analytics across the organization ▪ Speed and ease of deployment and administration	▪ Appliance with a streamlined database and HW acceleration for performance critical functionality ▪ Price/performance leader ▪ Speed and ease of deployment and administration ▪ Optimized performance for deep analytics, multifaceted, reporting and complex queries

Flexibility   The right mix of simplicity and flexibility   Simplicity

The Ultimate Consolidation Platform

Data Mart   **Data Mart**   **Data Mart**   **Data Mart**

Data Mart Consolidation

System z PR/SM
Recognized leader in mixed
virtualization and workload isolation

Transaction Systems (OLTP)

Data Warehousing Business Intelligence Predictive Analytics

z/OS
Recognized leader in mixed
workloads with security,
availability
and recoverability

Netezza
Recognized leader in
cost-effective high speed
deep analytics

Together
Destroying the myth that transactional and decision support
workloads have to be on separate platforms

- **Bringing it all together**

  - Better Business Response

  - Reduced Costs

  - More Available

  - More Secure

  - Reduced Data Movement

  - Reduced Data Latency

  - Reduced Complexity

  - Reduced Resources

IBM