Combining the Strengths of HP NonStop and HP Superdome Servers

Jon Hokama

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HP, NonStop Enterprise Division

HP WORLD 2003
Solutions and Technology Conference & Expo

Agenda

- Customer needs for business agility
- HP Integrity Superdome Integrity
- HP NonStop
- HP's integration Hub
- Customer stories

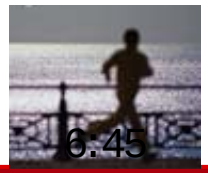
Customer needs

- Cost reduction
- Doing more with less
- Right information at the right time
- Having a life: dog food or steak?

A-day-in-the-life with HP servers

MSNBC

Wake up, watch news



Reebok

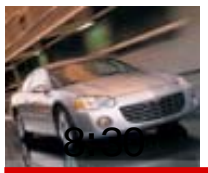
Go for a run

Nestlé, Kellogg's

Have breakfast

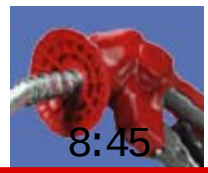
Liz Claiborne, Kohl's

Get dressed



Daimler Chrysler, Goodyear

Drive to work



Valero

Stop for gas

AOL, Starbucks

Pick up coffee and check e-mail

Deutsche Telecom, Bell Canada

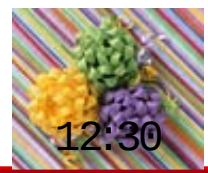
Worldwide Conference call

Verizon, Bell South

Call stockbroker

New York Stock Exchange

Place sell order on IBM stock



Amazon, FedEx

Send gift to mom for birthday

Wells Fargo

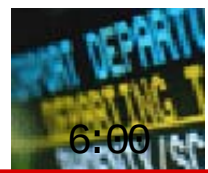
Go to lunch, pay with credit card

Sabre

Make reservations for Japan trip

Astra Zeneca

Pick up prescription



Continental, Boeing

Fly to Phoenix for regional meeting

DreamWorks

Watch movie before bed

Superdome strengths

key verticals

- telco
- manufacturing
- insurance and finance
- research and government
- transportation
- pharmaceuticals and healthcare

popular applications

- SAP
- Oracle
- Peoplesoft
- Siebel
- SQL Server
- Manugistics

success factors

- broad application/openness needs
- data warehousing performance
- technical computing
- business oriented applications
- consolidation platform (3+OS)

NonStop strengths

key verticals

- banking
- exchanges
- telco
- travel and retail
- healthcare
- government

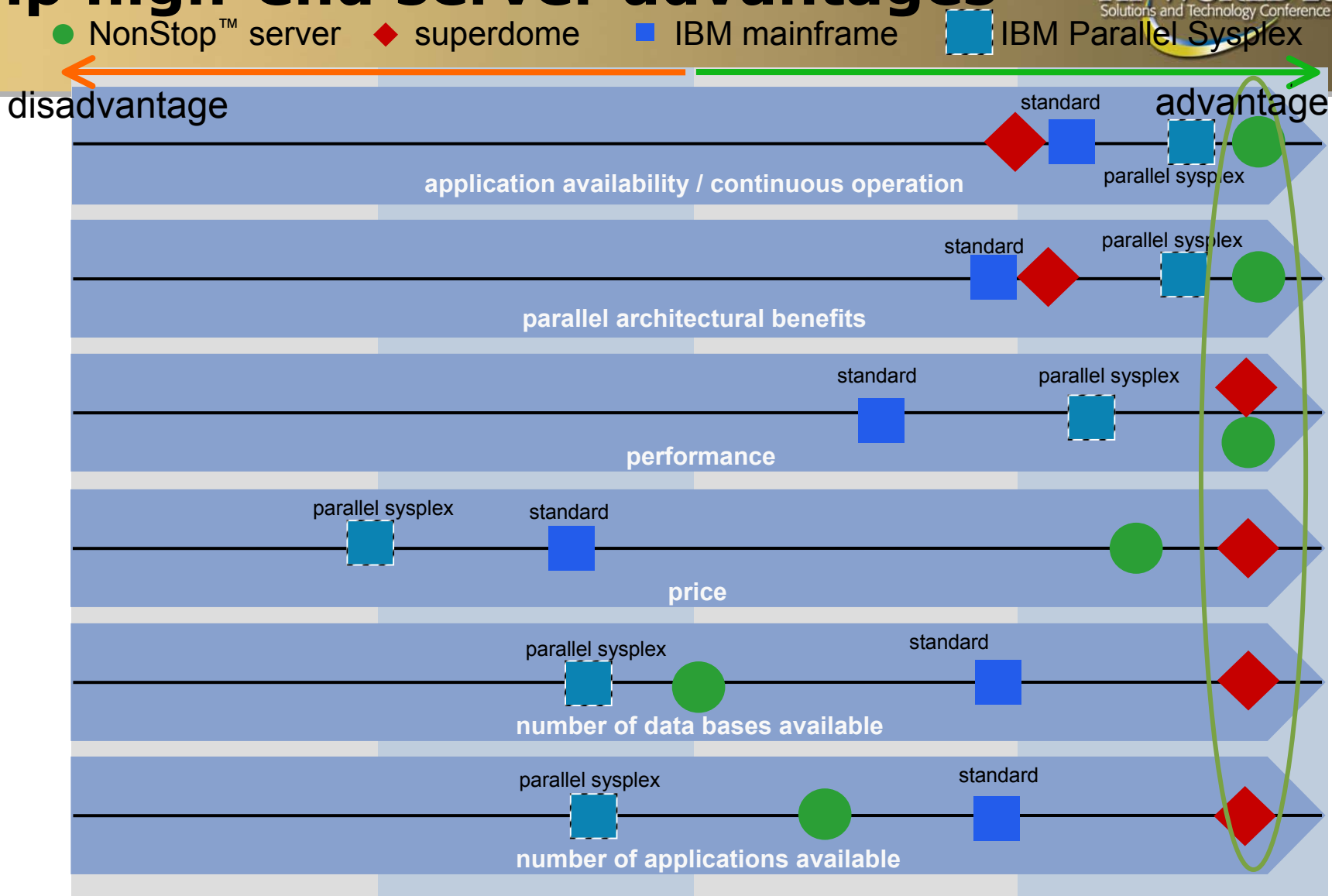
popular applications

- electronic funds transfers
- retail banking
- e911
- wireless database

success factors

- complex database workload requirements
- real-time computing (with ZLE)
- applications requiring zero down-time
- scalability up to 4,080 CPU
- consolidation platform NonStop™ servers & other

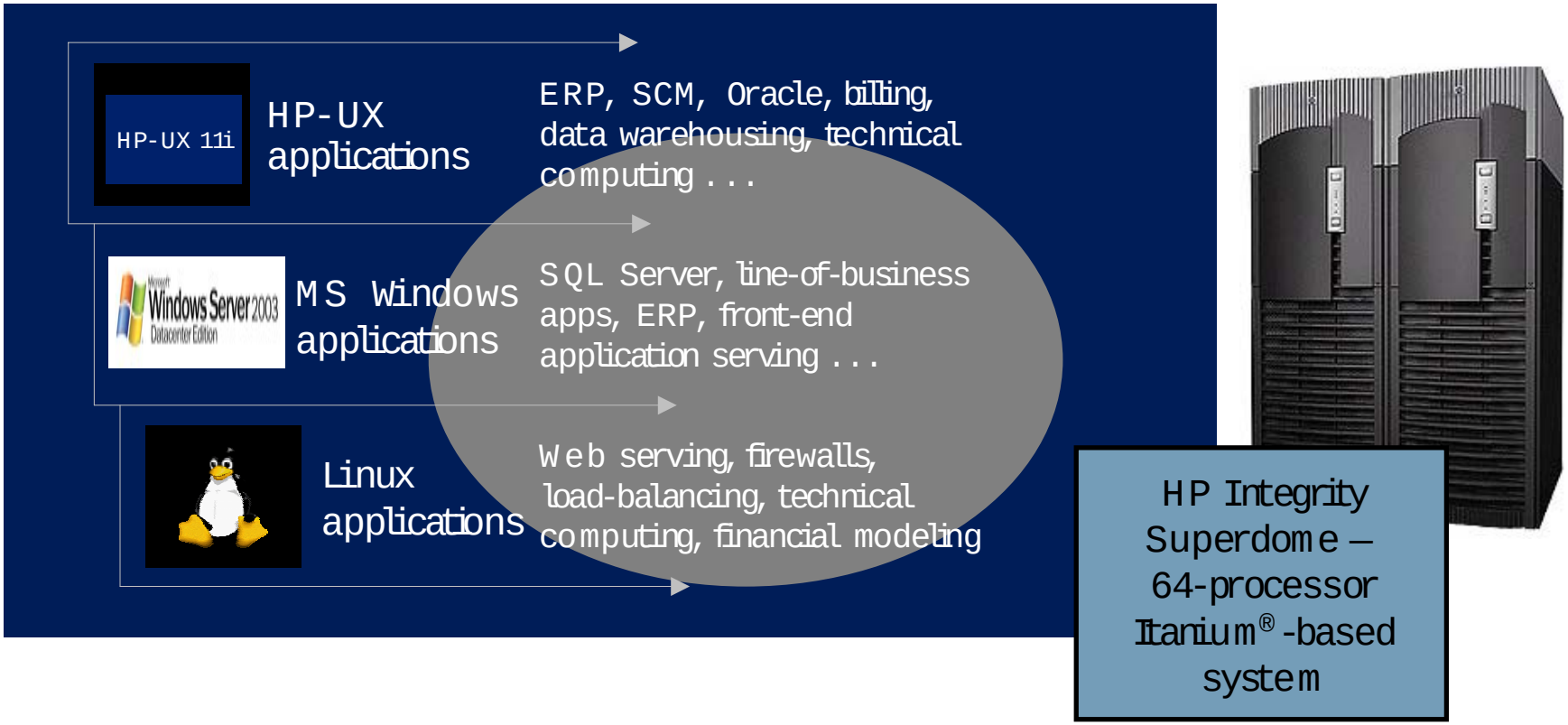
hp high-end server advantages



HP Integrity Superdome

- Multi-OS
- High availability
- Advanced technology
- Partnerships

Multi-OS usage model with HP Integrity Superdome



The 3-OS Target applications

- HP-UX
  - Enterprise Resource Planning (ERP)
  - Customer Relationship Management (CRM)
  - Technical computing
  - Consolidation
  - Data warehousing
  - Billing/financial/order processing
- Windows
  - Database serving (large SQL Server databases)
  - Data warehousing
  - Database consolidation
  - Enterprise Resource Planning
- Linux
  - Database serving
  - Technical computing
  - Business processing
  - Application development/Java
  - Secure Web serving
  - Some “network edge” applications

Windows is a real database opportunity

Customer profile

- Existing Superdome customers upgrading to Superdome with Intel® Itanium® processors for the following reasons:
  - Higher performance than PA-8700+
  - Consolidation of multiple operating environments
  - Support for new applications
- Windows customers in need of
  - Higher performance and scalability than IA-32
  - Lower cost of ownership versus proprietary solutions
- Linux customers in need of
  - High-performance 8-way partitioned cluster solutions
  - Low cost of ownership for 4-way server consolidation

HP Integrity Superdome: target markets

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System consolidation

Financial services
- Enables massive queries and data transactions

Extended manufacturing
- Provides huge memory capacity for complex applications

xSP & telcos billing
- Slashes need for more data center space

Business processing	• Provides database scalability
Decision support	• Data mining, warehousing with virtually unlimited memory
E-commerce	• Internet transaction optimization

Product requirements
- Large SMP scalability
- Performance and reliability
- Partitions
- Resource management

HP Integrity Superdome: more than just the server

Support and services are included to provide outstanding total customer experience

- Hardware
- Support
  - Foundation
  - Proactive 24
  - Critical service
- Services
  - High-level solution design
  - Detail solution design
  - Integration
  - Education

HP Integrity Superdome = hardware + support + services

Full range of HA features

Keep it running

n+1 features (hot swappable)
1. Cabinet blowers
2. I/O fans
3. DC power supplies
4. Cell backplane DC power supplies

Error correction
1. ECC on CPU cache**
2. Parity protected CPU and I/O links
3. Single wire correction on fabric and I/O**
4. ECC on all fabric and memory paths*
5. "Chipkill"**

Redundant AC input power (optional)

**Sun does not have

HP-UX 11i

Microsoft Windows Server 2003 Datacenter Edition

Fix it fast

Diagnostic features:
1. Test station
   - ASIC-level scan tools
   - Remotely accessible via LAN
2. Enhanced predictive support
3. High Availability Observatory
4. EMS monitoring system
5. Dynamic processor resilience*
6. Dynamic memory resilience*

Fault isolation technologies

Online removal, replacement:
1. Dell assemblies*
2. I/O cards
3. I/O cages*

* Note: OS version dependent

HP Integrity Superdome: more with less

- Fast and agile deployment of applications to give you the competitive edge (3 OSs)
- Best server consolidation in the industry
- Redeployable with a different OS for enhanced investment protection
- On the performance fast track to new Intel® Itanium® processors (Intel will develop a new Itanium processor every 12 months)
- Outstanding performance to meet user demands
- Leading investment protection to help the IT budget

NonStop servers

- Why NonStop servers?
- “NonStop Fundamentals”
- Availability: Advanced architecture
- Complex workloads: Sabre example
- Information integration: ZLE = EAI + ODS

…When it comes to HP NonStop servers, there is no question

- NonStop servers represent the pinnacle of the HP enterprise portfolio
- The NonStop platform is "front and center" of HP's corporate strategy to transition to the Intel Itanium® processor
- Thousands of companies around the world with the most demanding computing environments rely on NonStop technology
  - Stock exchanges, banks, E911 systems, ATM, and electronic funds transfer networks, telecommunications networks, healthcare providers, retail point-of-sale networks, online travel systems, and the world's largest e-mail system

"By merging with Compaq, we've significantly strengthened our position in the high-end fault-tolerant computing with our NonStop servers. That's important because NonStop systems are at the center of some of the most data-intensive real-time applications in the world, whether those are national security or the New York Stock Exchange."

– Carly, HP World keynote, HP World 2002 Conference & Expo, September 25, 2002

"The Tandem NonStop platform is a hugely important piece of our strategy going forward.... In fact ... I believe we cannot deliver the HP strategy without that NonStop platform. It is front and center."

– Carly, CHIME Conference, Spring CID Forum, February 2003 (Health Information Management)

HP NonStop™ servers — Business-Critical Enterprise solutions

500 Financial Services Companies

- 80% of ATM transactions
- 66% of credit card transactions
- 75% of the world's 100 largest electronic funds transfer networks

106 Securities / Commodities Exchanges

- 95+% of securities transactions
- 106 of the world's120 exchanges

135 Telecommunications Providers

- 100% of the 35 largest
- Wireless and land lines

40 Police, Fire, Emergency Dispatch Systems

- Many large & small cities worldwide
- Majority of all U.S. 911 calls

450 Manufacturers

- Most European car manufacturers: Mercedes, Peugeot, Renault, Porsche

400 Retailers and Wholesalers Worldwide

- Including Hertz, Target, Victoria's Secret

200 Hospitals and Healthcare Providers Worldwide

- World's Largest HMO: Kaiser

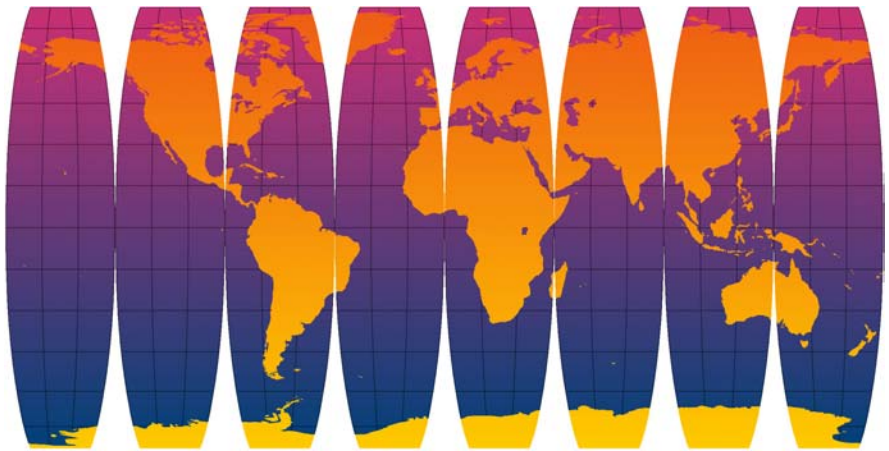
100 Very Large Databases for Business Intelligence

- Deutsche Telecom
- AOL
- Target

What Sabre says...

- Why HP Non-Stop?
  - Linear scalability
  - Open standards (C++, Java, SQL, CORBA)
  - Worldwide customers mean we can't afford downtime!

Sabre



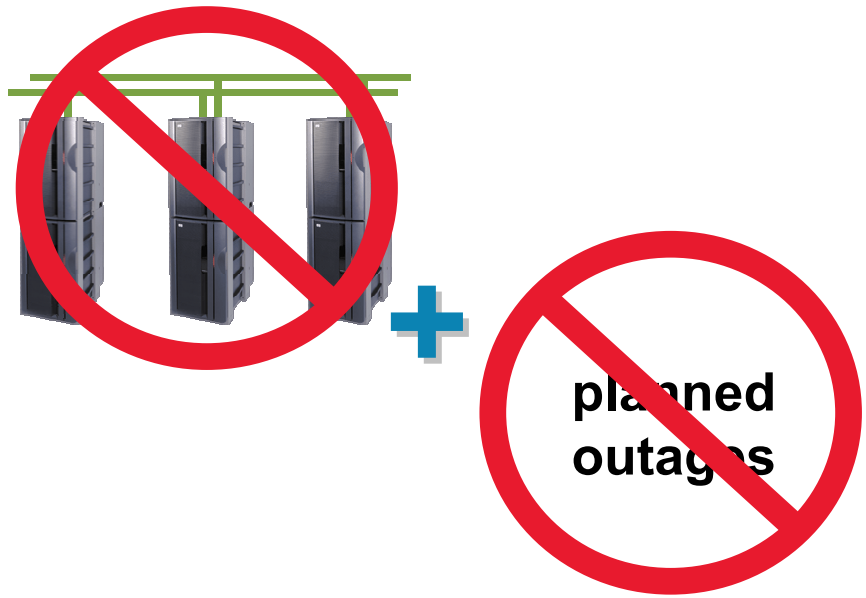
When Customers need NonStop servers...

- **24 x 7 availability**
  - avoid unplanned outages and planned outages, and shorten recovery time
  - end-to-end availability
  - a culture of 24 x 7 x 365 support
- **Scalability**
  - ability to scale without planned outage
  - scalability of multiple dimensions—processors, **database**, and software
- **Complexity**
  - transactions
  - mixed workloads
  - intense real-time database access

best TCO for mission critical applications

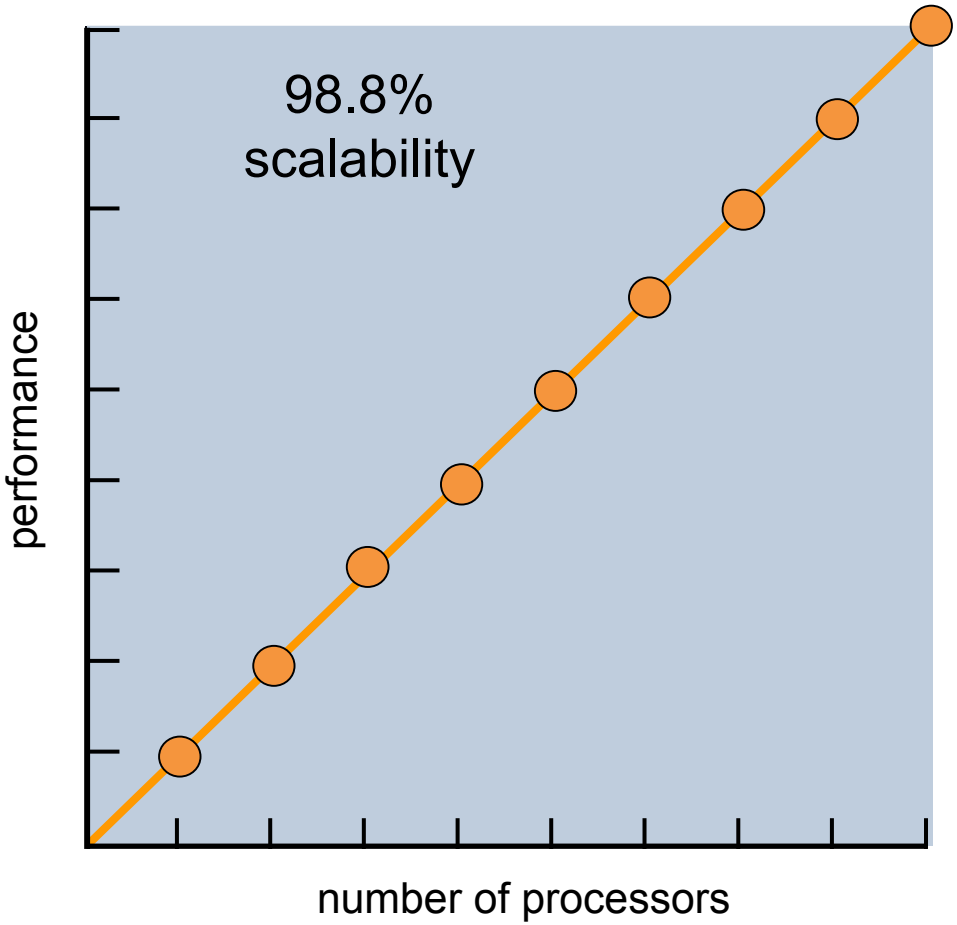
NonStop server fundamental:
more than just fault tolerance

- Data integrity
- Dynamic system configuration
  - adding processors, direct access storage devices (DASDs), and network components
- Online manageability
  - database services
    - backup
    - reorganization
    - database maintenance
    - recovery
    - cache configuration
  - transaction services
  - networking services
- NonStop™ systems availability services
- Disaster protection and recovery solutions

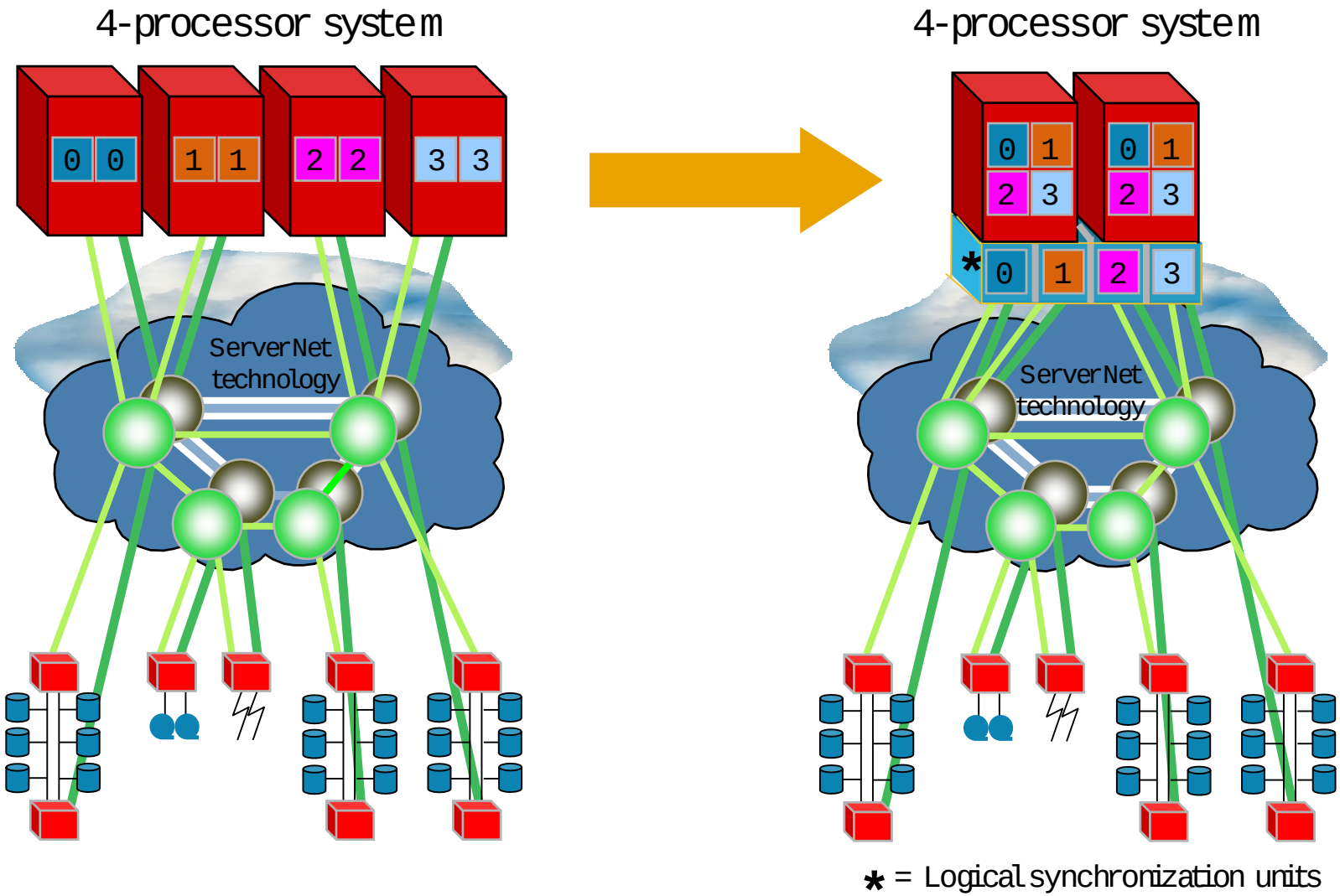


NonStop fundamental: unlimited scalability with linear growth

- hardware scalability
  - processors, to 4,080
  - I/O and interconnect
- software scalability
  - database, >100 TB
  - transaction management
  - networking
- benchmark and customer proven

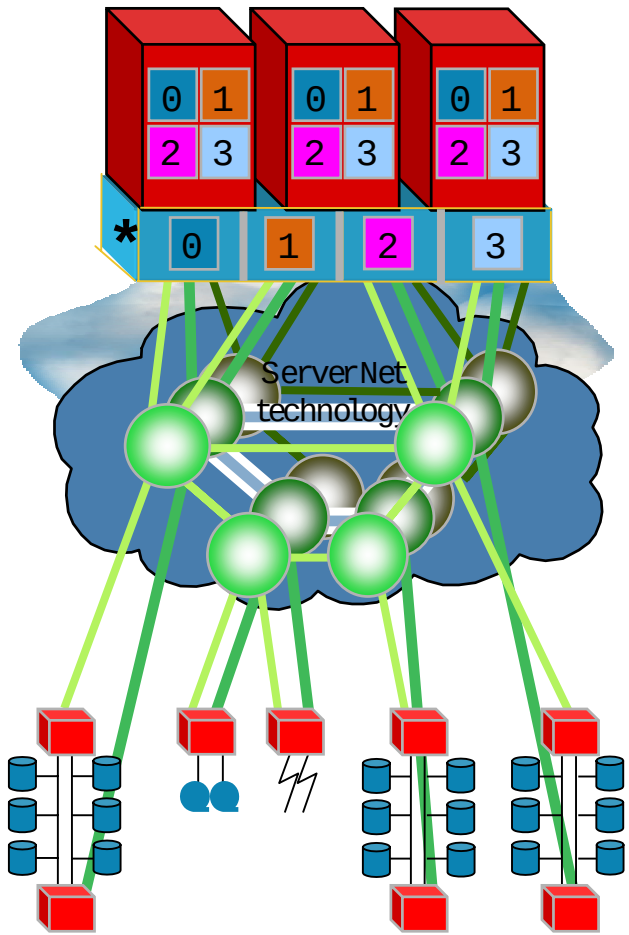


NonStop Advanced Architecture: Itanium +hp



NonStop Advanced Server

- Hardware fault tolerance—better than NonStop S-series servers
  - Recovery from many double faults
  - Three processor slices
  - Option for extra ServerNet connections
- Software fault tolerance—same as NonStop S-series server



NonStop leverages HP & Intel Itanium® technology

Business

- Increase leverage from commodity/volume components
  - Focus R&D resources on added value for customers
  - Speed up introduction of new microprocessor technology
  - Speed time to market for standard storage
- Raise the bar on availability and scalability
- Increase leverage from HP OpenView products

Technical

- Fully leverage performance of multicore microprocessors
- Provide a better long-term approach to provide data integrity of NonStop servers while retaining full microprocessor performance
- More OpenView products now available on NonStop;
- Leverage HP's XP storage technology

Complex Customer Environment: Sabre

- Core system
  - 430,000,000 bookings / yr
  - 59,000 travel agents
  - Web sites, such as Travelocity & GetThere
  - 400 airlines
  - 58,000 hotels
  - 53 car rental companies
  - 232 tour operators
  - 33 rail companies
  - 9 cruise lines

Sabre

Complex workload example: Sabre

- Requirements
  - Store 250 reservations per second (545 peak)
  - Each reservation is 25K and is normalized into 20-30 tables
  - Process 120 traveler profile requests per second
  - Real-time data distribution to multiple backend systems
- Size
  - 88 million reservation records
  - 75 million traveler profiles
  - 4TB of data

Sabre

Consolidation, NonStop style: Data Integration--Sabre

- Consolidate multiple databases
  - TPF online reservations database
  - Unix based analysis (RDBMS)
  - Unix based customer profile (RDBMS)
- Online updates and data push (ZLE)
  - Data feeds to airline customers
  - Security and government feeds
- Online query capability

ZLE defined

A definition

"Zero latency is the real-time, enterprisewide dissemination of new information distributed in such a way that allows businesses to react quickly to it, driving the competitive business advantage to its ultimate limits."

Paul Larson
Talarian Corporation (now TIBCO Software Inc.)

The goal

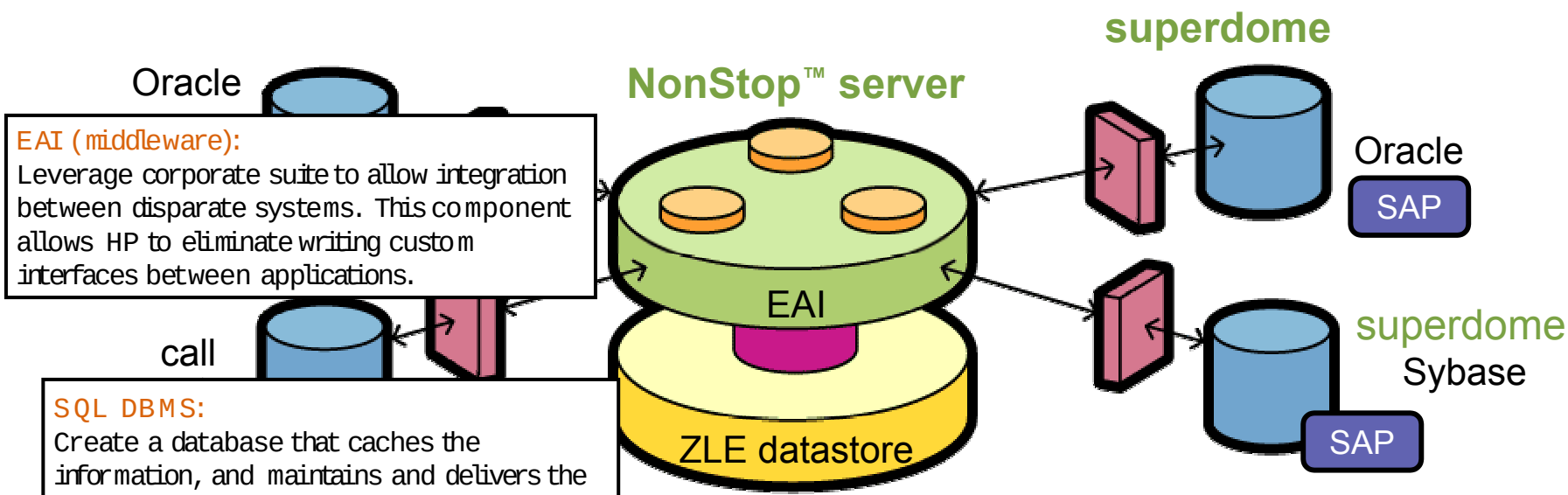
"Instantaneous awareness and appropriate response to events across an entire enterprise."

Roy Schulte
Vice President, World Services, Gartner

hp zero latency enterprise (ZLE) integration hub: superdome and NonStop server

- multi-OS
- integrated information
- real-time data access
- ZLE-enhanced packaged applications

Specialized ZLE applications:
Applications such as supply chain exception management and supply chain visibility reside on top of the ZLE core to leverage real-time integration.



Real Time Supply Chain HP Style

Solving HP's complex supply chain merger challenge using the HP ZLE architecture for the integration Hub (iHub)

supply chain case study: hp

top supply chain challenges

#1: integrating information from existing SAP systems

- 35% of IT Supply Chain Management (SCM) spending

#2: version management

#3: integration of SAP with other vendor's applications

supply chain case study: hp

solution

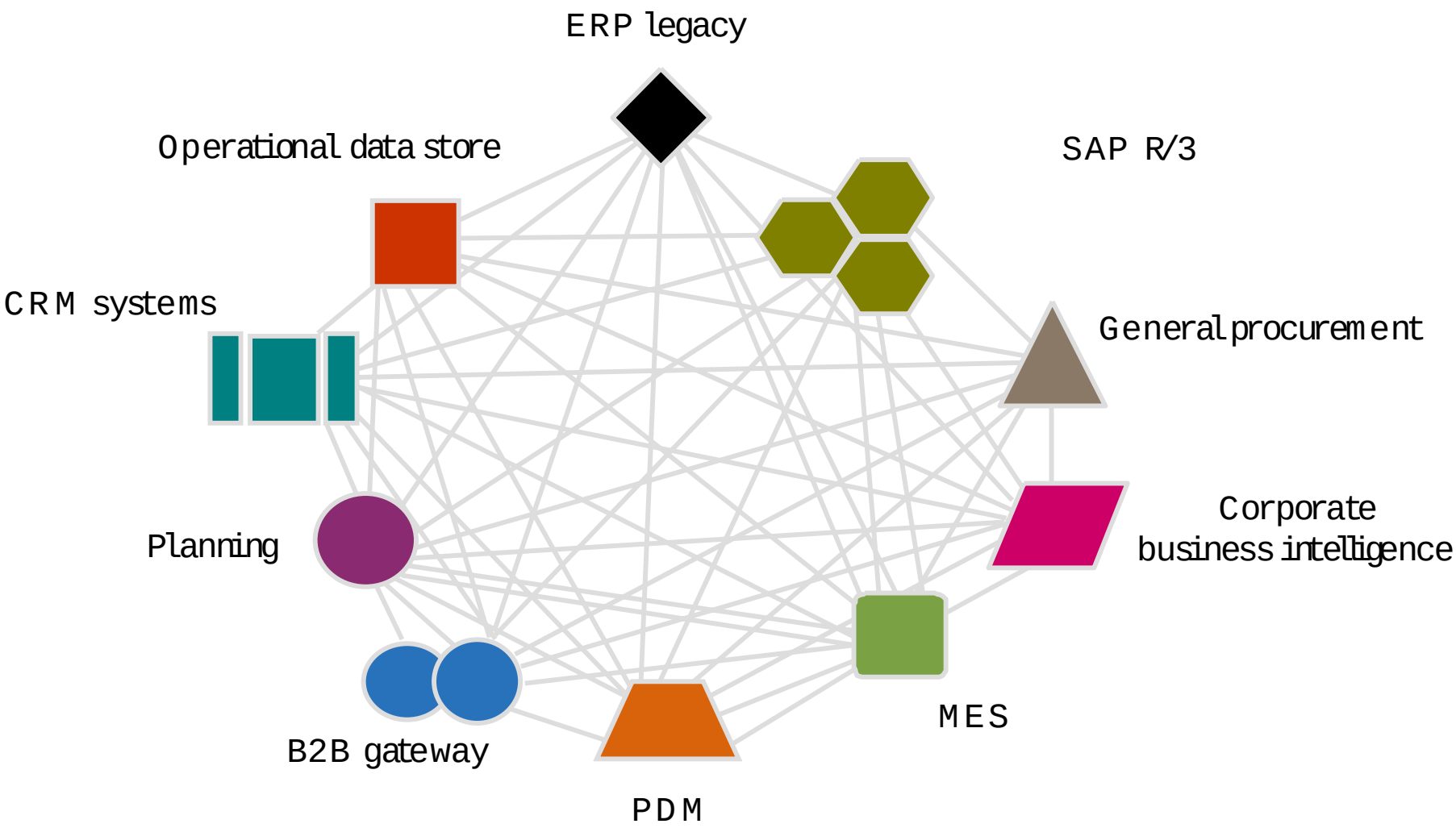
- supply chain visibility
  - platform for timely (near real-time) visibility to total supply chain
  - quote to cash visibility
  - track and trace
- supply chain event management (SCEM)
  - host real-time supply chain event management services across extended supply chain
- integration services
  - web services
  - enterprise ODS for batch sourcing and extraction utilizing DataLoader MP to ensure legacy compatibility
  - eliminates requirement for point-to-point integrations

supply chain case study: hp

business impact

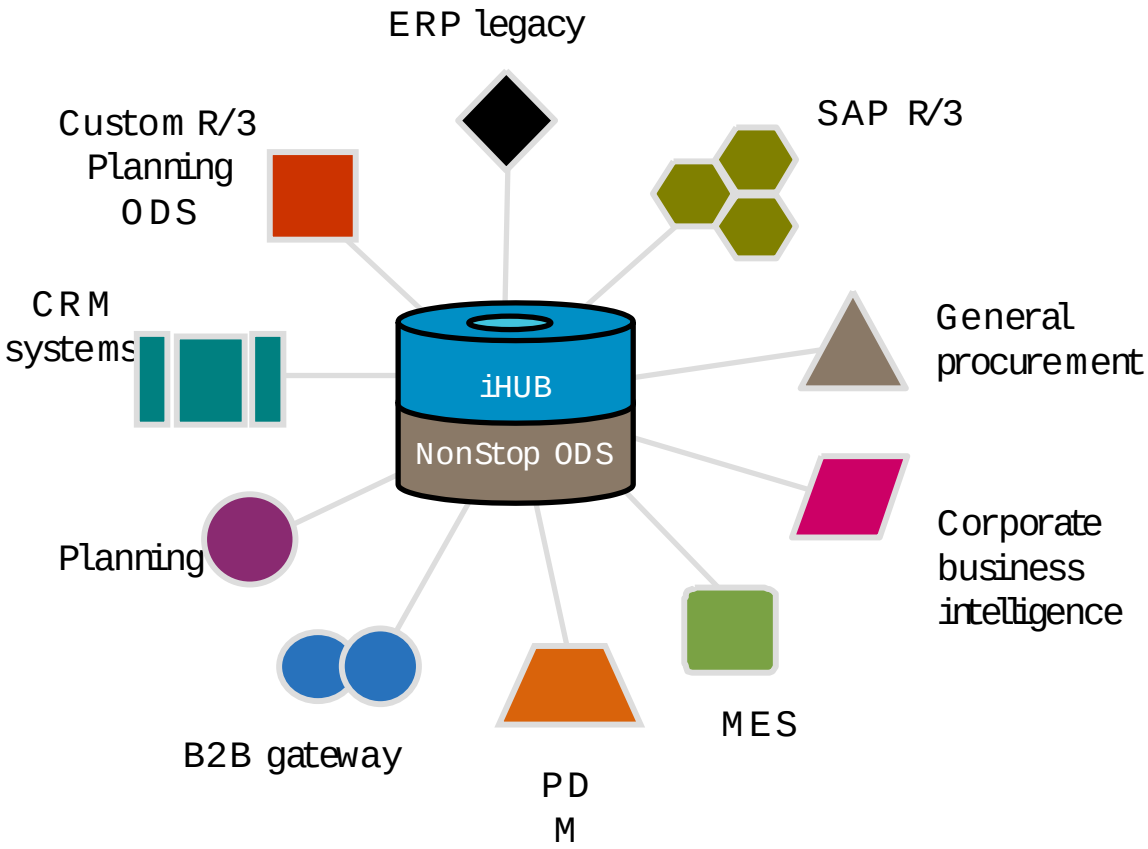
- supply chain visibility
  - improve quote to cash visibility
  - improve decision making
- supply chain event management
  - enable the company to respond to unplanned events across fragmented IT architectures
  - offers a big win with little expense in comparison to implementation and upgrade costs of ERP upgrades
  - huge savings
- web services
  - web services provide a centralized hub for corporate information (configuration, pricing, availability, catalog, tax & freight)

Supply chain landscape: Integration challenge



HP internal project solution—Adaptive supply chain Integration Hub

- Enhances existing applications portfolio
- Enables integration and consolidation programs
- Centralizes key data from across the supply chain systems
- Enables immediate response to real-time changes in the supply chain



HP Integration Hub: Financial benefits

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Estimated savings on implementation

Total IT benefits	More than US$6 million per year
Total operational benefits	More than US$1 million per year
Total strategic benefits	More than US$2 million per year
Order cycle time	Improved by 15%
Net present value	US$37 million over a 5-year period

Customer stories

- Large ISP
- Bell Canada
- Continental Airlines
- Raymond James
- Shoppers Drug Mart
- Sprint

Large ISP

- **Customer need:**
  - Email application serving
  - Over 398m emails/day (Aug 2002)

- **Solution:**
- 87 NonStop servers, 16 cpu each (over 1500 cpu!)
  - Over 9 billion rows of data
  - Over 40,000 TPS at peak
  - Peak: over 21m/hour
- Mailbox application stores “metadata” for the entire mail system
- Staff 13 *total*:
  - 4 developers
  - 3 Quality Assurance Analysts
  - Six operations support: 2 DBAs and 4 system administrators
- **Business benefit:**
  - Continuously available and scalable email system
  - Best TCO

Large ISP

- **Customer need:**
  - Monitoring back-up statistics, customer Unix-based application
- **Solution:**
  - 32 CPU, 32GB memory system (one of nine + Superdomes)
- **Business benefit:**
  - Superior price performance over Sun E15K

Bell Canada – benefiting from the full breadth of the ESS portfolio

Web and infrastructure front end

Enterprise applications tier

Back-end databases

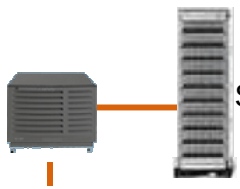
SAP

40 HP rp5400 application servers

3 HP Superdomes consolidating five SAP instances into a single instance

Call center portal app w/BEA

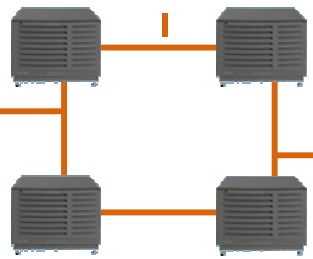
HP Integrity rx5670 Development server



HP StorageWorks va7100 storage

Storage Area Network (SAN)
HP StorageWorks xp512

HP ProLiant running Apache Web server and BEA on Windows



HP Integrity rx5670s as BEA production servers

HP 9000 rp5470 running Oracle database

Plans to connect to a ZLE (NonStop hub)

Continental Airlines: Superdome

- Customer need: IT consolidation
  - To make room in data center
  - Required ROI of less than 1 year requiring corporate-wide enterprise solution
- Solution: SAN connected to two Superdome
  - Installed in Jan. 2002
  - Permitted each business to set own criteria (5 applications)
- Business benefit:
  - Cost savings of $1m/yr,
  - 30-50% performance increase
  - Increased opportunities for other consolidation

Continental: NonStop

- **Customer need:**
  - Applications requiring continuous availability environment (ticket reissue, reporting, security implementation)
  - Automatic ticket reissue (rate desk)

- **Solution:**
  - 2- way NonStop development system
  - Fare search and routing engine

- **Business benefit:**
  - Reduces customer access time and revenue lost from cancelled tickets
  - Continuously available system ideal for customer-facing application
  - NonStop programming services

Raymond James Financial Services

- **Largest full-service investment firm in the Southeast**
  - brokerage trading,
  - settlement processing
  - and portfolio processing to 1m+ customers
- **Customer requirement: highly reliable servers for trade processing application**
  - Downtime = lost revenue fees
  - Volatile trade volumes—up to 70% over average
- **Solution:** NonStop K-series and S-series
- **Customer requirement:** single datawarehouse for company-wide reporting for 5,000 financial advisors needing 6-second response times
- **Solution:** Integrity Superdome running MS SQL Server, Windows Server 2003, Datacenter Edition

Shoppers Drug Mart

- **Customer need:**
  - Basic IT infrastructure needs: datawarehouse, financial, accounting, supply chain, HR
  - Server consolidation
  - Credit card transactions/customer loyalty program/pharmacy (home grown)
- **Solution:**
  - Lawson SW on HP: Superdome—32-way backed up by 32-way for disaster recovery since late 90s
  - ACI for credit/debit card transactions and Optima customer loyalty program on NonStop since 1997
  - Pharmacy claims processing (added in ’99)
  - IBM POS, EMC storage
- **Business benefit:**
  - NonStop continuous availability and OLTP strength
  - Superdome for datawarehousing/partitioning strengths

Shoppers Drug Mart:

How

NonStop + Superdome

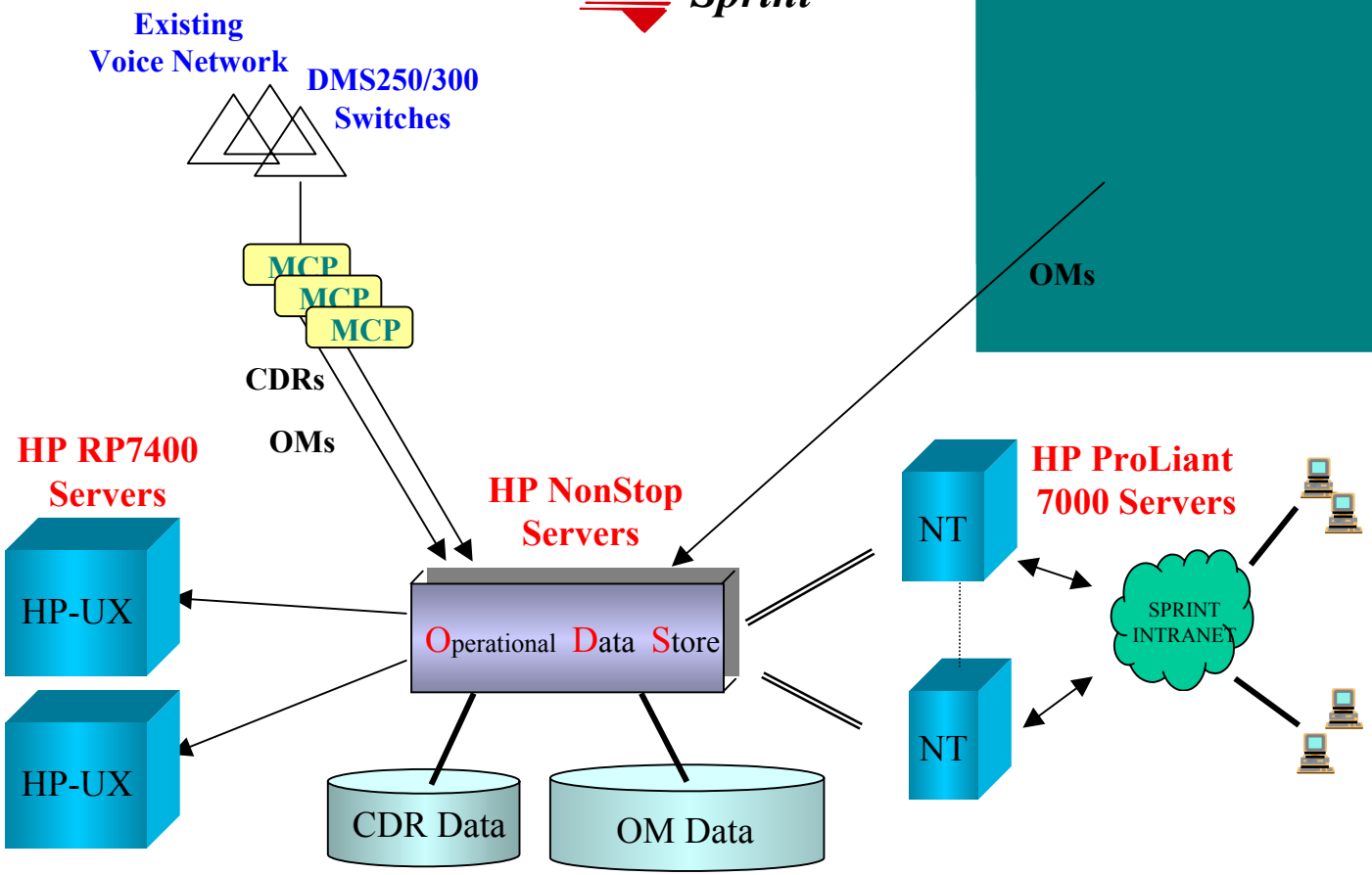
benefit Shoppers Drug Mart

- NonStop servers feed point of sale and customer loyalty information to the datawarehouse
- DSS on Superdome enables
  - optimal inventory shipments
  - special targeted offers
  - more accurate inventory forecasting increasing revenues and profitability

Customer benefits:

- reduced support costs from server consolidation
- balance workload between servers
- Increase revenue through inventory management
- Customer retention through CRM
- Continuous availability for customer facing application

Sprint ODS/ZLE



icroStrategy

icrosoft ISS

old Fusion

Sprint: Superdome

- **Customer need:**
  - Sprint PCS Enterprise Infrastructure for digital wireless network
  - Communication layer between back-office and front-office applications
  - Upgrade to MC/Serviceguard cluster of V-2600 and N-4000 servers

- **Solution:**
  - Amdocs key partner; Oracle database
  - Four 64-way/64GB memory Superdomes: 2 in each datacenter

- **Business benefit:**
  - Application proven in HP-UX 11.0 environment
  - Positive customer experience

Sprint ZLE and NonStop

- **Customer need:**
  - Handling up to 2600 call detail records/second
  - Integrating data from multiple environments
  - Complex workload with an extreme low-latency, high volume of transactions
- **Solution:**
  - NonStop Operational Data Store
  - HP-UX midrange, HP ProLiant, OpenView, XP storage
- **Business benefits:**
  - Greater reliability, greater flexibility, more on-demand features
  - No unplanned outage in four years while ZLE has been in production
  - Reduction in fraud
  - Network optimization

ZLE benefits for Telco sector - ROI study by Gartner Group

- Increase revenues 2 to 3 percent with billing on demand
- Reduce fraud by more than 50 percent
- Reduce information processing costs by 5 to 35 percent
- Improve profitability by 6 to 15 percent by reducing churn

Gartner Consulting Report, March 2001

Summary

- **Customers need an Adaptive Infrastructure**
- **HP Integrity Superdome**
  - Multi-OS, standard applications, datawarehousing, price/performance
- **HP NonStop**
  - Availability, database scalability, Real Time information integration
- **HP's Real Time integration Hub: HP eats our own (dog food) steak/caviar**
- **Customer stories: 1+1=3**

contact information

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HP Success Stories
http://h18006.www1.hp.com/casestudies/ or
http://71033.www7.hp.com/page/CustSuccess.html

HP NonStop homepage:
http://himalaya.compaq.com/ or http://h71033.www7.hp.com/

Zero Latency Enterprise (general information)
http://h30089.www3.hp.com/page/ZLE_HomeExt.html

HP Integrity Superdome homepage:
http://www.hp.com/products1/servers/integrity/superdome_high_end/index.html

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