HP Integrity NonStop Servers

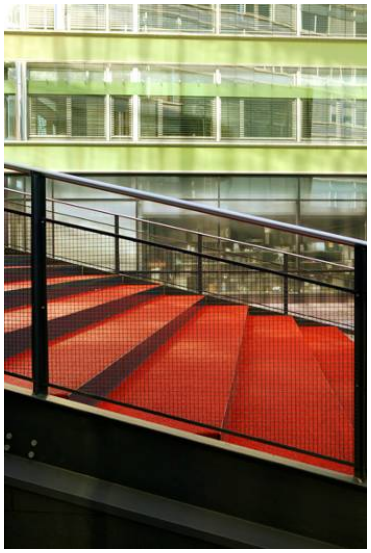
"Moving to an industry-standard Platform"

Vortrag 1D01

Costas Maggoutas
Account Consultant Presales
HP NonStop Enterprise Division

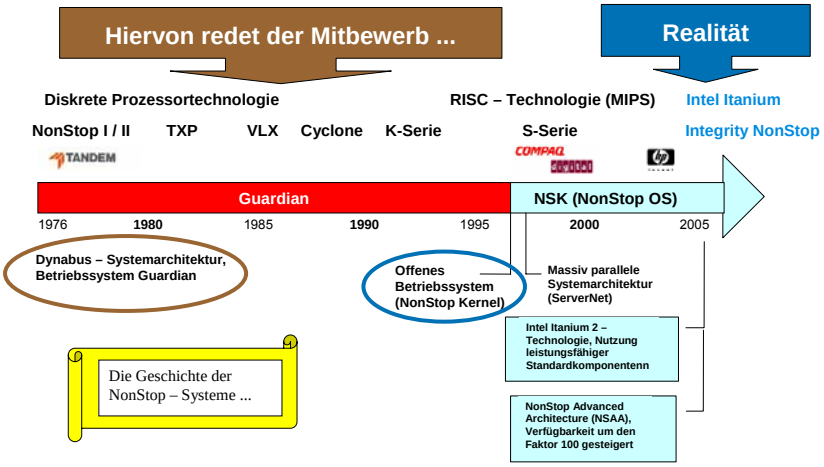
Agenda

- Die Entwicklung von NonStop
- HP Server Strategie
- NonStop Fundamentals
  - Verfügbarkeit
  - Skalierbarkeit
  - Datenintegrität
  - Sicherheit
  - Selbstverwaltendes System
  - Integrationsfähigkeit
  - Kostengünstiger Betrieb (TCO)
- Kunden und Anwendungsbeispiele
- Itanium - Technologie und die NonStop Advanced Architecture



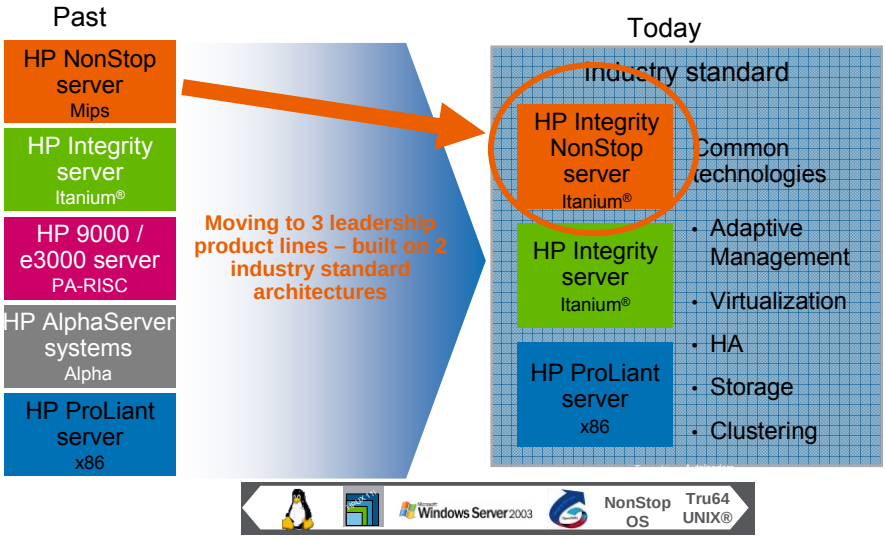
5/16/2006 2

NonStop History ...



Eine Geschichte der Ausfallsicherheit und des Investitionsschutzes
(NonStop I – Programmobjekte aus den 70er Jahren laufen ohne Änderungen auch noch heute)

HP Strategy: Standards-based server
Migration zum Industrie-standard



Optimale Plattform für viele Anwendungsbereiche

Access tier	Application tier	Data tier
Web Infrastructure Mail File/print	• ERP • CRM • SCM • BI • HPC	• OLTP • Data warehousing • Operational data store

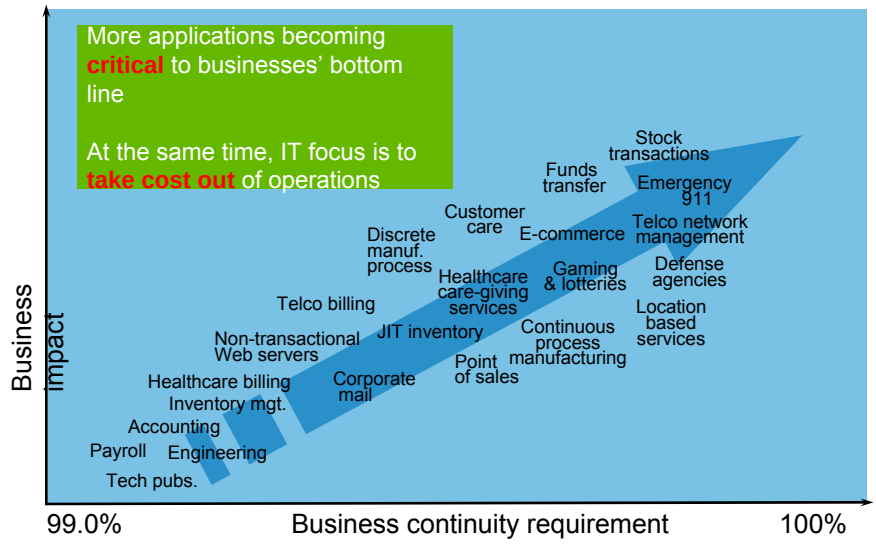
HP Integrity NonStop servers (Itanium 2 processor)
2–4080 p; NonStop operating system

HP Integrity servers (Itanium 2 processor)
1–64 p/1–128 c
HP-UX, Windows, Linux, OpenVMS systems

HP ProLiant servers
(Intel Xeon™ processor with EM64T and AMD Opteron™ processor)
1–4 p/1–8 c; Windows, Linux systems

Small-scale, well-defined workloads ⟷ **Large-scale, complex workloads**

Kritische Geschäftsanwendungen fordern hohe Verfügbarkeit (highest service levels)

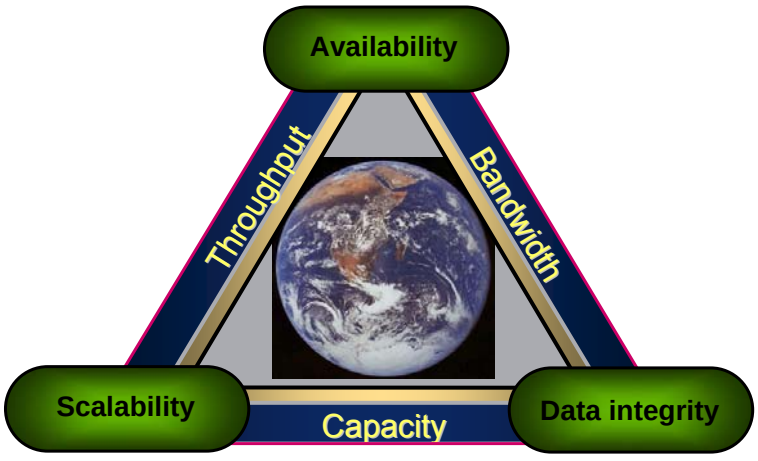


Integrity NonStop system

Business-critical infrastructure requirements

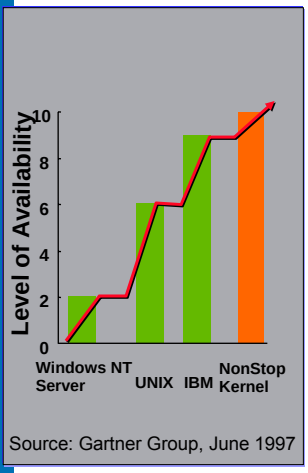
- **Continuous availability**
- **Unlimited scalability (HW+SW)**
- **Data Integrity**
- **Extreme manageability**
- **Security**
- **EA Integration**
- **Lowest total cost of ownership (TCO)**

HP is committed to protect and advance the NonStop™ fundamentals



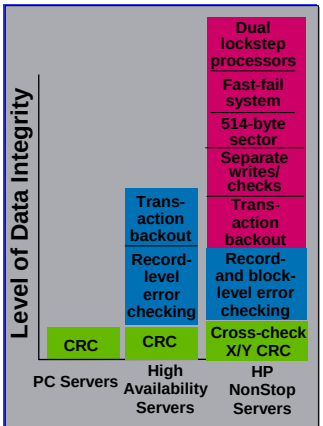
HP NonStop Servers Set the Standard

Industry Leader in Availability

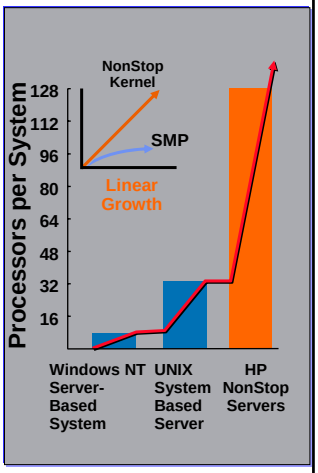


Source: Gartner Group, June 1997

Industry Leader in Data Integrity



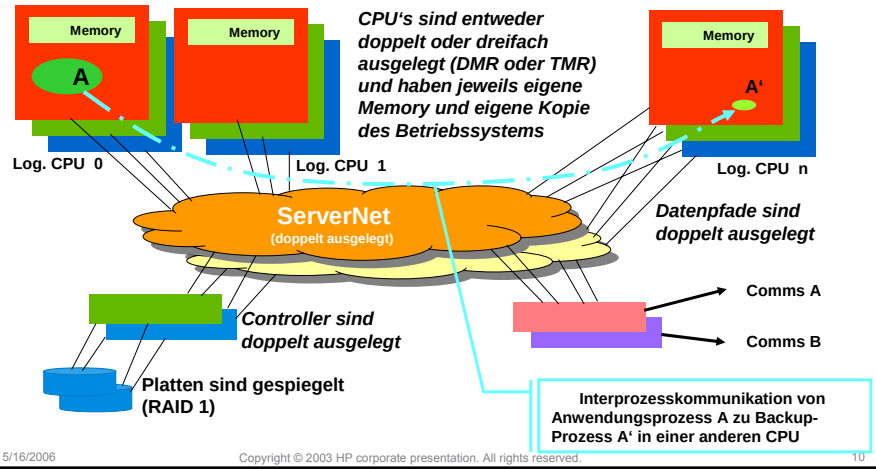
Industry Leader in Scalability



NonStop Architektur: Continuous availability

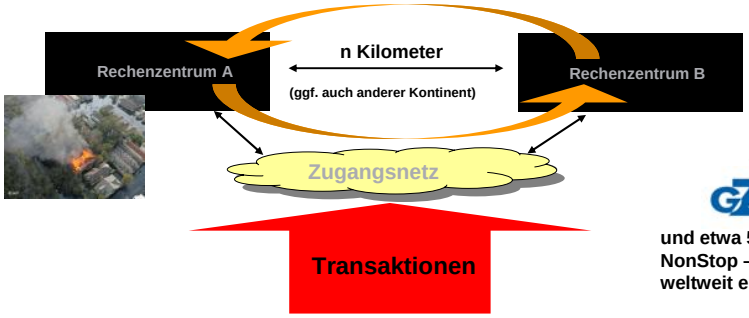
Die Ausfallsicherheit basiert auf Hardware und Software (no „single point of failure“)

- Clusterfunktionen tief im System eingebettet, völlig transparent für Anwendung, Operating und Benutzer



Disaster Toleranz
Doppelt ausgelegte Rechenzentren

Remote Data Duplication Facility RDF



z.B. bei

und etwa 50 % der NonStop – Kunden weltweit eingesetzt

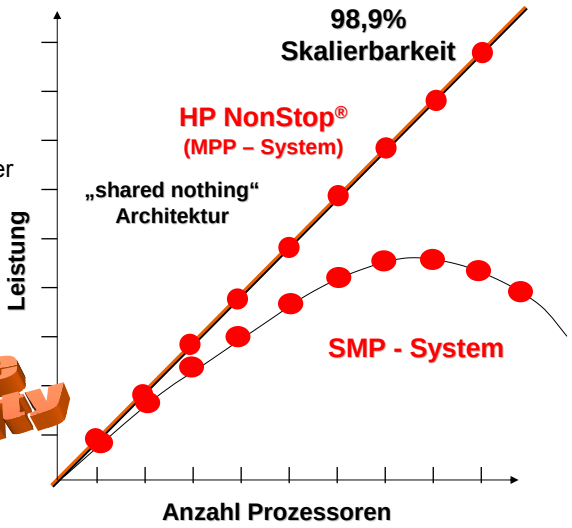
- **Katastrophenvorsorge: RDF dupliziert Daten in einem entfernten Rechenzentrum**
- **Beide RZ's können produktiv genutzt werden**
- **Entweder asynchrones Verfahren (im Katastrophenfall ist der Verlust einzelner Transaktionen möglich, die Transaktionsintegrität bleibt jedoch gewahrt)**
- **Oder synchrones Verfahren (es geht garantiert keine Transaktion verloren)**
- **Upgrade der Systemsoftware bzw. Einführung neuer Hardwaregeneration : In betriebsschwachen Zeiten, ein RZ trägt in dieser Zeit die gesamte Last**
- **100 % Anwendungsverfügbarkeit über viele Jahre hinweg ...**

5/16/2006 11

NonStop® Server - Unbegrenztes Wachstum
lineare Skalierbarkeit

Practically unlimited scalability:
(current limits: 4 080 CPU's, over 65 TB Memory,
about 13 000 TB Disk, over 180 000 Comms Ports

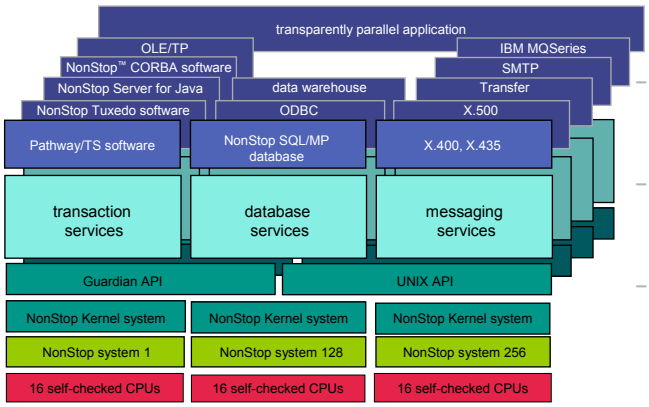
*** Linear growth in performance proven:**
(Linearity of 98,9 %, even with 100's of CPU's)



5/16/2006 12

integrated, scalable end-to-end solution

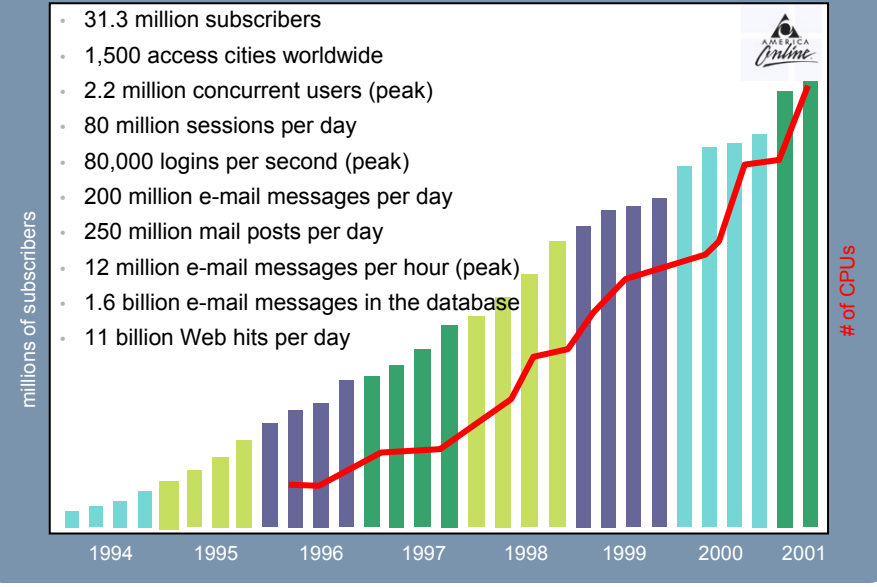
transparently scales application without reconfiguration, database replication, or forklift server upgrades

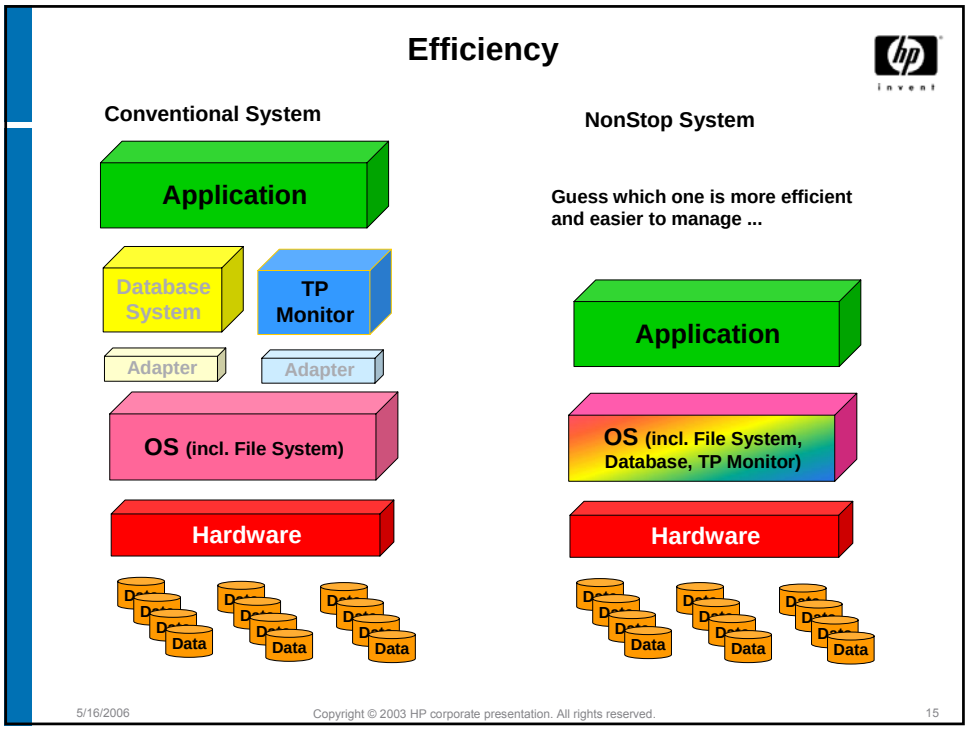


- application server transparently manages applications across parallel systems
- transaction processing and database infrastructure scales across systems
- operating system provides transparent parallel fault-tolerant infrastructure

US ISP: scalable growth with NonStop™ servers

- 31.3 million subscribers
- 1,500 access cities worldwide
- 2.2 million concurrent users (peak)
- 80 million sessions per day
- 80,000 logins per second (peak)
- 200 million e-mail messages per day
- 250 million mail posts per day
- 12 million e-mail messages per hour (peak)
- 1.6 billion e-mail messages in the database
- 11 billion Web hits per day




Efficiency
Conventional System
Application
Database System
TP Monitor
Adapter
Adapter
OS (incl. File System)
Hardware
Data
NonStop System
Guess which one is more efficient and easier to manage ...
Application
OS (incl. File System, Database, TP Monitor)
Hardware
Data
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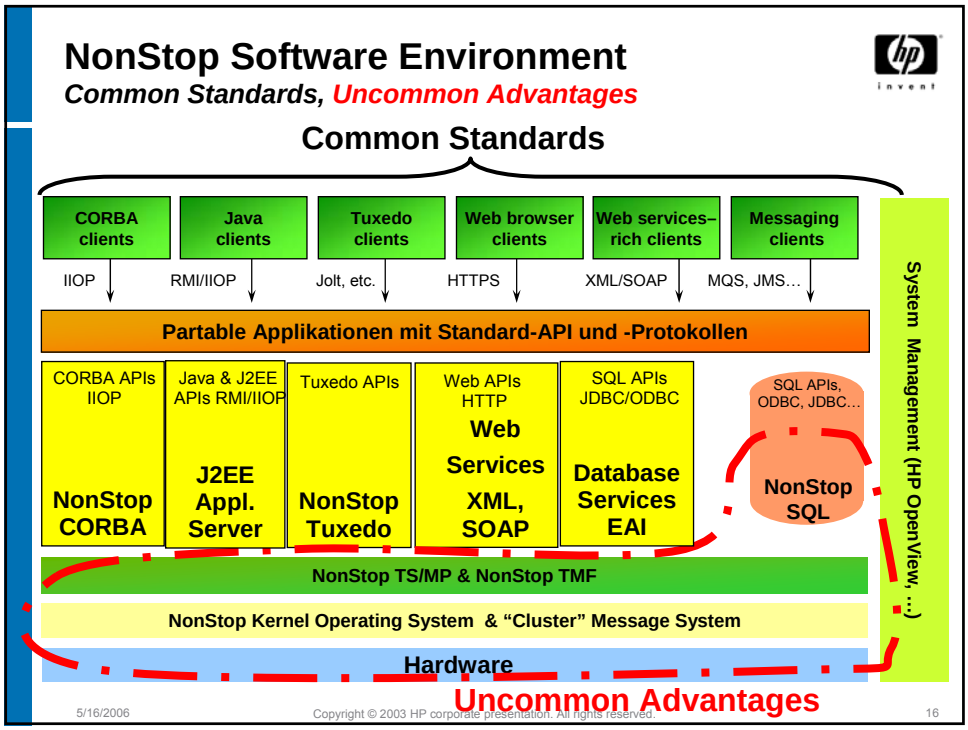
15


NonStop Software Environment
Common Standards, Uncommon Advantages
Common Standards
CORBA clients
Java clients
Tuxedo clients
Web browser clients
Web services–rich clients
Messaging clients
IIOP
RMI/IIOP
Jolt, etc.
HTTPS
XML/SOAP
MQS, JMS…
Partable Applikationen mit Standard-API und -Protokollen
CORBA APIs IIOP
NonStop CORBA
Java & J2EE APIs RMI/IIOP
J2EE Appl. Server
Tuxedo APIs
NonStop Tuxedo
Web APIs HTTP
Web Services XML, SOAP
SQL APIs JDBC/ODBC
Database Services EAI
SQL APIs, ODBC, JDBC…
NonStop SQL
System Management (HP OpenView, ...)
NonStop TS/MP & NonStop TMF
NonStop Kernel Operating System & "Cluster" Message System
Hardware
Uncommon Advantages
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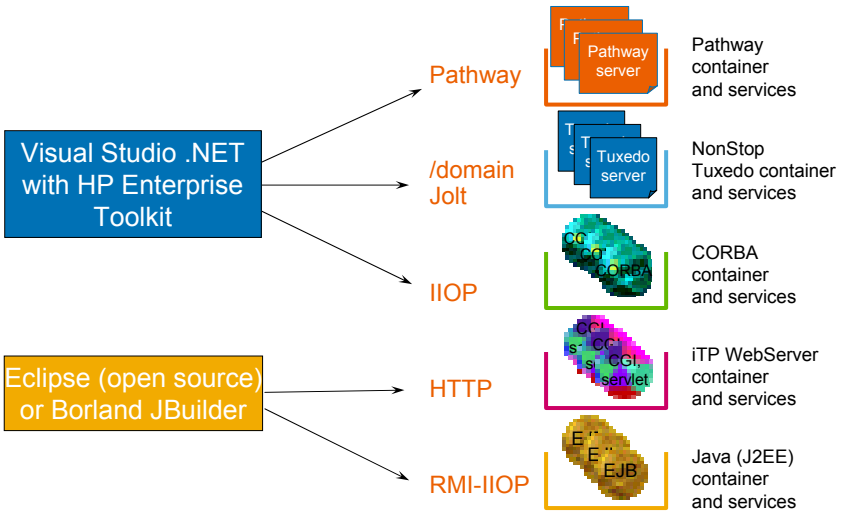
16

HP Integrity NonStop server

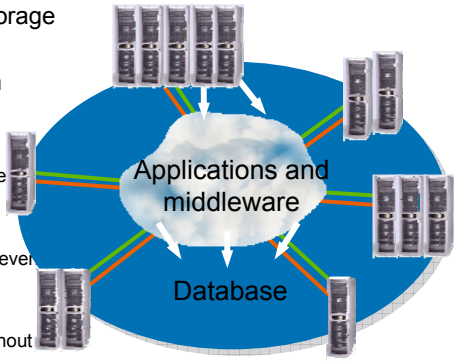
Standard tools for application development



5/16/2006 17

Application Virtualization
optimizing availability & manageability

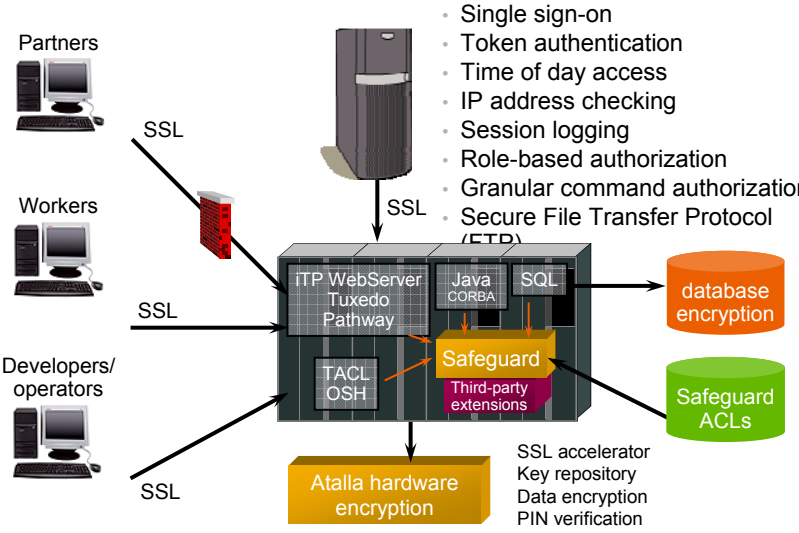
- **Built-in clustering technology** across entire application infrastructure (API, middleware, database, server, and storage hardware)
- Seamless **scaling** of each application across multiple nodes
  - **Single virtual application domain**
  - **Single management domain** based on Ope system
  - **Single security domain**
  - Improved **application availability** node-level failures tolerated —ever
  - Improved **Disaster Recovery**
  - Scales applications linearly up to 2,000x without interruption
- **Simplified application infrastructure** improves time to market and **reduces costs**



→ ***Vortrag 1D03: Anwendungsvirtualisierung***

5/16/2006 18

Platform Security



- Single sign-on
- Token authentication
- Time of day access
- IP address checking
- Session logging
- Role-based authorization
- Granular command authorization
- Secure File Transfer Protocol (FTP)

→ ***Vortrag 1D05: IT Security und TCO***

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Managing HP NonStop Server

Now integrated into HP OpenView and the HP Unified Infrastructure Management

Application management | Business process management

HP OpenView portfolio

Standards: WS-CIM/WSDM/WSRF

Unified Infrastructure Management
HP Systems Insight Manager and Essentials Software

Standards: SNMP, SMIS, WBEM, SMASH

Element management
ProLiant, Integrity, **Integrity NonStop**, and StorageWorks systems

HP Systems Insight Manager 5.0—industry-first Unified Infrastructure Management software—now provides complete infrastructure control for Integrity NonStop servers

- Common management tools regardless of the hardware platform or operating system
- Better utilization of IT resources decided by IT management, not dictated by hardware platform
- Increased flexibility and coverage redundancy through (reduced) cross-training

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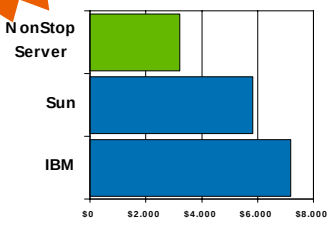
NonStop Server
Lowest total cost of ownership (TCO)

- Standish Group Initiative
- Weltweite Studie von ca. 30 Kunden für jede Plattform
- Die umfassendste TCO–Studie in der IT-Industrie
- Echte 24x7-realtime Enterprise Applikationen
- Betrachtet alle Aspekte der IT-Kosten
- NonStop Server sind die am besten skalierbaren, höchstverfügbaren und kosteneffektivsten Transaktions-Maschinen der IT-Welt!

TCO

Application TCO



→ ***Vortrag 1D02: Anwendungsverfügbarkeit & TCO***

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Ein Tag im Leben der HP NonStop Server

BT Broadcast Services

06:30

Catch up on the latest world news

London Stock Exchange

09:00

Place a buy order

Bankenes Betalings-Sentral

09:45

Pay your bills from home

Deutsche Bahn AG

11:00

Make a train reservation for weekend getaway

Daimler Chrysler

11:20

Drive to work

GZS

13:00

Go to lunch, pay with credit card

Deutsche Telekom AG

15:30

Call your mother

Deutsche Bank AG

16:45

Transfer funds to your son

DER

18:40

Book your hotel

AGES-Maut

Porsche

21:00

Enjoy the *Autobahn*

Dt. Shell

23:00

Stop at the gas station

Swiss Federal Department of Justice and Police

02:30

Drive safe at night

Sie fallen nicht auf, denn sie fallen nie aus!

5/16/2006 23

Integrity NonStop in the Finance Market

- **490 of the world's most prominent banks use NonStop servers**
  - 339 of the world's most prominent banks use NonStop servers for ATM transaction processing (automation)
  - 364 of the world's most prominent banks use NonStop servers for POS transaction processing
- **The 5 largest U.S. banks rely on NonStop servers**
- **NonStop servers process more than 60% of the world's equity (stock) transactions**

5/16/2006 24

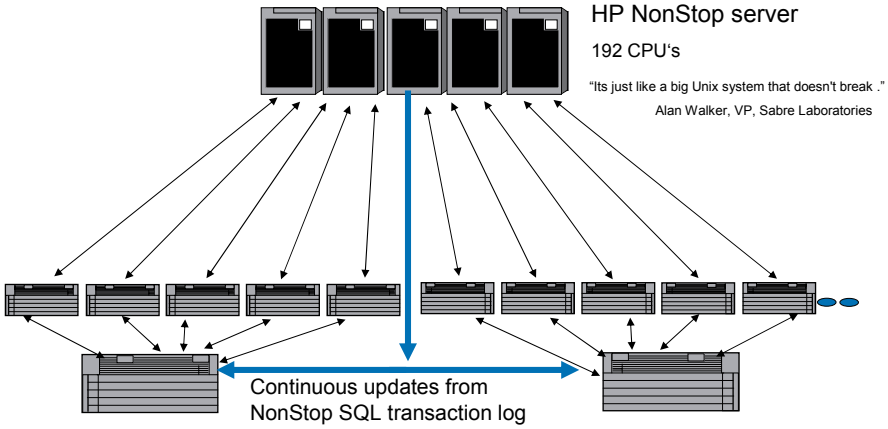
Integrity NonStop supports the world's financial institutions

Major banks, exchanges, processors and transaction switches around the world rely on Integrity NonStop servers for their most critical applications

NYSE New York Stock Exchange · CREDIT SUISSE · WACHOVIA · London STOCK EXCHANGE · Alliance Leicester · RBC Royal Bank · Barclaycard · KRUNG THAI BANK PUBLIC COMPANY LIMITED · ABN·AMRO · OCBC Bank · Banamex · WELLS FARGO · citigroup · usbancorp · CREDIT LYONNAIS · NASDAQ · JPMorganChase · Abbey · bank-verlag köln · NTT DATA · GRUPO BANCO POPULAR BANCO POPULAR ESPAÑOL · ANZ · SOCIETE GENERALE · Rabobank · CIBC · Bank of America · Higher Standards · HSBC · Lloyds TSB · 中国人民银行 THE PEOPLE'S BANK OF CHINA

Hybrid systems:
See those HP servers combining their strength …

Sabre **- world's largest airline reservation system**



HP Integrity server farm – 120 servers with 4 CPU's each, runnning Linux and mySQL

Eine Auswahl deutscher HP NonStop Kunden

Die Bahn DB

Reservision, Ticketing & Scheduling

ThyssenKrupp

Production Control of Steel Mills

Deutsche Bank

Integration of international Subsidaries

Mercedes-Benz

Production Control of Car Manufacturing

KARSTADT QUELLE

Retail Logistic

Operational Database for future ZLE Apps

CITIBANK

FIDUCIA

BIK

GZS

bank-verlag köln

Autorisation and Clearing Credit-and Debit Cards

5/16/2006 27

„Mixed Workload“ – Verhalten von HP NonStop

- HP NonStop ist traditionell optimiert für **Online Transaktion Processing (OLTP)** – schnelle Response auch bei hohen Transaktionslasten
- HP NonStop bietet jedoch auch leistungsfähige **Batchverarbeitung** (so wird z.B. das Clearing und Settlement für die Börsen in London und Paris auf NonStop – Systemen abgewickelt ...)
- HP NonStop bietet darüber hinaus effizientes **Query – Processing** für Business Intelligence – Anwendungen
- Das Betriebssystem und die Datenbank **NonStop SQL** unterstützt all dies **gleichzeitig und auf den gleichen Datentabellen**
- Dies gilt rund um die Uhr, auch bei Datenbank-Reorganisationen oder während massiver Ladevorgänge
- Ideal für Operational Data Store (ODS)
- Das **“Realtime Data Warehouse“** ist keine Utopie

Geldautomaten etc. → bank-verlag köln Das Service-Unternehmen der privaten Banken

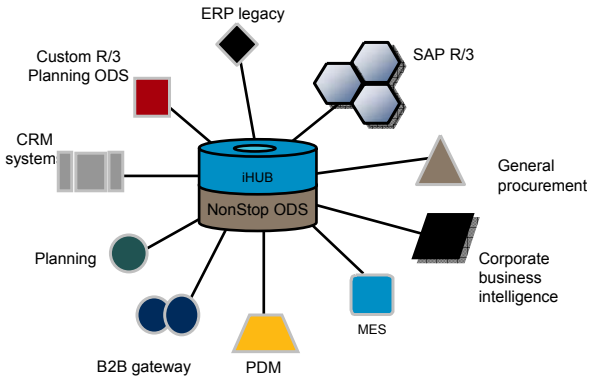
5/16/2006 28

"The ability of the NonStop server to handle OLTP, batch, and ad hoc queries concurrently, with no degradation of service, is extremely important to Bank-Verlag."

—Wolfgang Breidbach,
head of system services, Bank-Verlag

Merger Machine: HP's own integration challenge

Integrate existing supply chains of Hewlett-Packard, Digital, Compaq, Tandem, ...



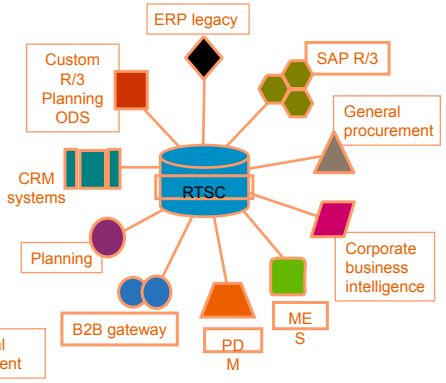
Phase 1: successfully implemented in 2004, direct savings: 37 M$ plus: better lead times, better quality of deliveries

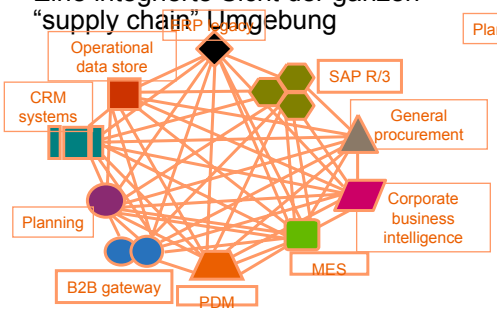
Solution now productized: Real Time Supply Chain (RTSC) Solution portfolio for manufacturing and retail

172 different Systems (incl. 60 SAP systems)

Supply Chain Integration
Real Time Supply Chain (RTSC)

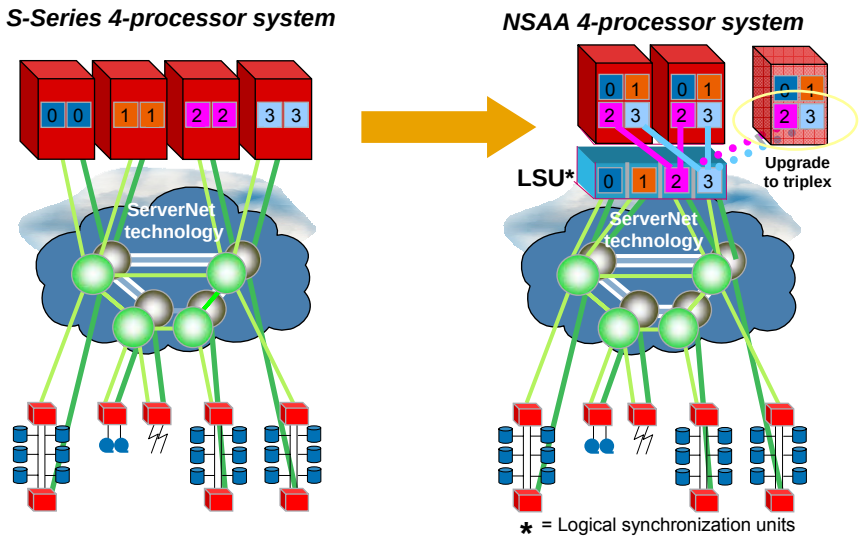
- Vereinfacht und redudiert die Schnittstellen
- Investitionsschutz, kein Replacement vorhandener Applikationen
- Zentrale für alle wichtigen Daten
- Eine integrierte Sicht der ganzen "supply chain" Umgebung





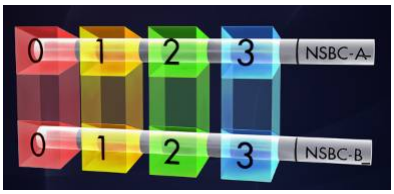
5/16/2006 31

Intel Itanium® processor and the NonStop Advanced Architecture (NSAA)

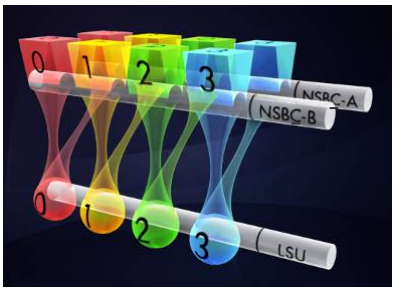


HP Integrity NonStop server – DMR NonStop Advanced Architecture (NSAA)

- New levels of processor hardware availability
- 99.999% uptime (five 9s)
  - 5 minutes hardware downtime per year
- In this architecture each 4-CPU subsystem is called a NonStop Blade Element (NSBE)
- Logical Synchronization Unit is HP IP that delivers leading levels of data integrity
- Application-transparent software fault tolerance

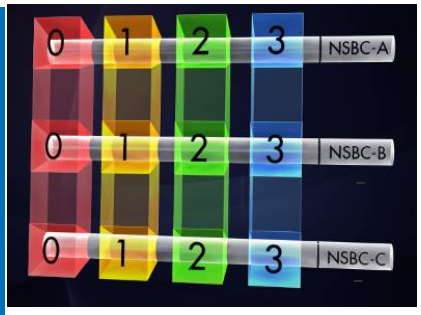


Dual Modular Redundancy (DMR)



HP Integrity NonStop server Tripple Modular Redundancy - TMR

- Hardware availability is increased with a third NSBE
- 99.99999% uptime (seven 9s)
  - 3 seconds hardware downtime per year
- Application availability with the capability to withstand multiple hardware failures
- Industry-leading data integrity
- Only 15% more cost



Triple Modular Redundancy (TMR)

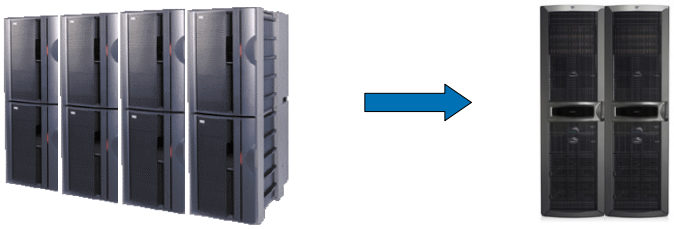
TMR offers best in industry application availability at compelling price point

Triple Modular Redundancy option— 100x increase in availability

- For customers that have zero tolerance for downtime
  - Fastest-growing **cell phone service in Japan** added 2.7 million new subscribers in 2004
  - Downtime means lost customers, lost revenue
  - Choosing Triple Modular Redundancy for highest levels of service at no risk
- Triple Modular Redundancy (TMR) option:
  - Cost-effective option to deliver new seven 9s level of availability
  - Enables a fully fault-tolerant system, even with a processor loss
  - Allows customers to repair a processor at their convenience

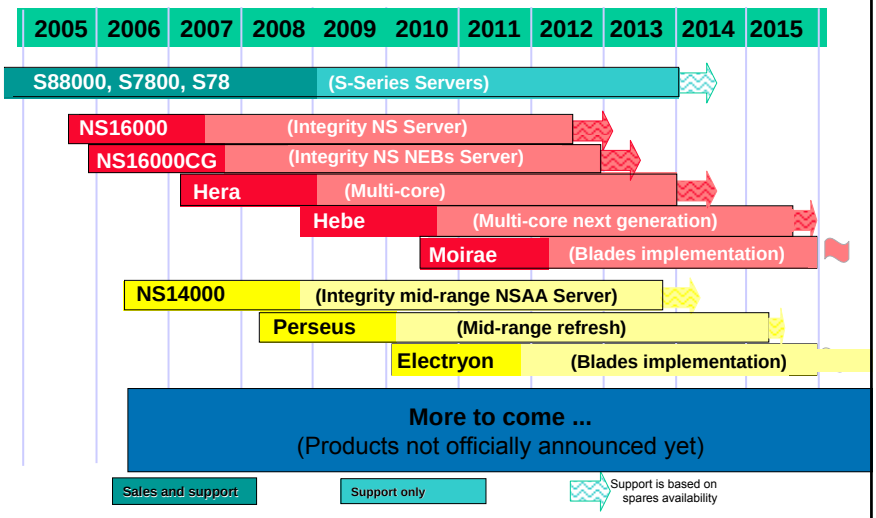
Itanium – Migration aus Benutzersicht

- Neue Hardware – mehr Leistung



- Stark verbessertes Preis/Leistungsverhältnis
- Strategische Plattform

HP NonStop Server Roadmap



Zusammenfassung

Designed from day one for fault tolerance and scalability!

Für unternehmenskritische Anwendungen liefert der HP Integrity NonStop Server :

- **Überlegene Service Levels**, z.B. in Bezug auf
  - Anwendungsverfügbarkeit über 99,99 % - dies ist mit Standardplattformen nicht zu schaffen !
  - Datenintegrität
  - Skalierbarkeit
  - IT - Sicherheit
  - Mixed Workload – Verhalten

- **Günstige Gesamtkosten**
  - TCO
  - Geringe Personalkosten
  - Vermeidung von ausfallbezogenen Kosten
  - Vermeidung von Sicherheitsrisiken und daraus resultierenden Kosten
  - Hybride Systeme möglich: Ausfallsicheres Kernsystem, umgeben von weitgehend kontextfreien Low Cost Servern (Applikation, ggf. auch Datenhaltung)

5/16/2006 39

invent