

Next Generation SAP Data Center

The image shows a large, three-dimensional white SAP logo mounted on a dark, modern building facade. The letters are bold and blocky, with a slight shadow effect. The building has a dark, possibly metallic or dark grey, finish. The sky is a clear, bright blue.

Infrastruktura za agilna poduzeća

Dr. Michael Missbach
SAP HP Competence Center

Agenda



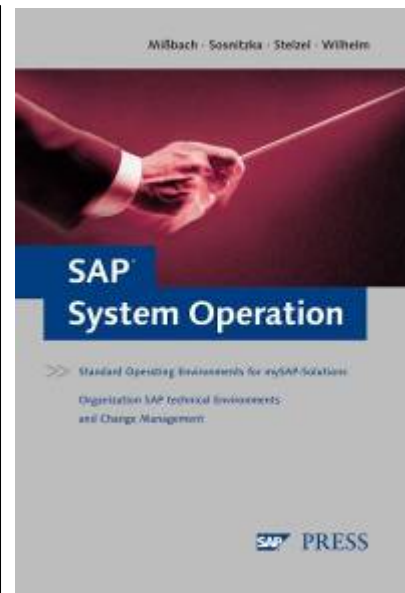
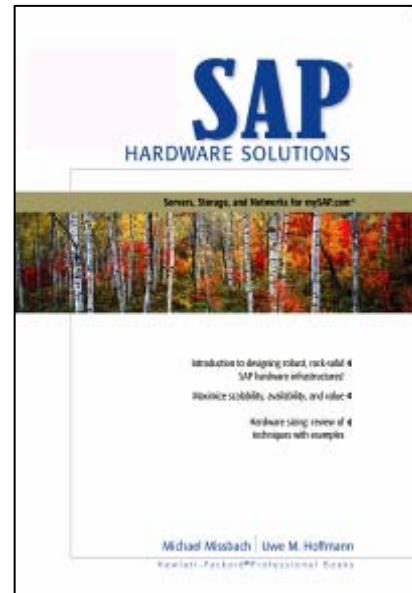
- **SAP and HP - more than 16 years Partnership Success**
- **Infrastructures for Enterprise SOA**
- **How to grant the availability of Enterprise Services?**

About the speaker



- Senior Solution Expert SAP HP Competence Center Walldorf
- responsible for development of best practices for adaptive infrastructures for mySAP, NetWeaver & Enterprise SOA
- Scientific work on infrastructure optimization and architectures
- Previously Project Director and IT Superintendent Europe at ALCOA & GE CompuNet

- Author of SAP Press books on Hardware Infrastructures and System operation for SAP systems in German English and Russian



Partnership Success

- over more than 16 years



- 1989 HP supports SAP developing R/3
- 1990 joint SAP HP Competency Center
- 1991 HP support R/3 developers
- 1992 First R/3 customer goes live on HP
- 1993 > 100 Installations, R/3 bypasses R/2 Funktionalität
- 1994 > 500 Installations, first NT
- 1996 >1000 Installations, first mixed UX/NT
- 1997 >3000 Installations, first High Availability for SAP
- 1998 > 4500 Installations
- 1999 > 6000 Installations, first Linux
- 2000 > 7000 Installations, first SAP system consolidation,
SAP Infrastructure book
- 2001 >10.000 Installations, PBO-Kernel,
- 2002 > 25.000 Installations, CCMon, E-Xsid > 1370
outsourced SAP instances
- 2003 > 35.000 Installations, Netweaver competence center,
SAP Operation book
- 2004 > 40.000 Installations, HP ITSM for SAP
- 2005 > 45.000 Installations, **adaptive Infrastructure for SAP**
- 2006 > 51.000 Installations**

HP RUNS SAP

ECC, APO, BW, IPC, KW, PLM, CRM, GTS, KW
Portal, SSM....

- > 40.000 users
- > 500 Plants (HP and contractors)
- > 230 SAP instances in total
- > 100 Legal Entities
- > 100 Sales Orgs
- > 70 production SAP environments
- > 60 Countries
- > 10 Languages

THE BEST-RUN BUSINESSES RUN SAP



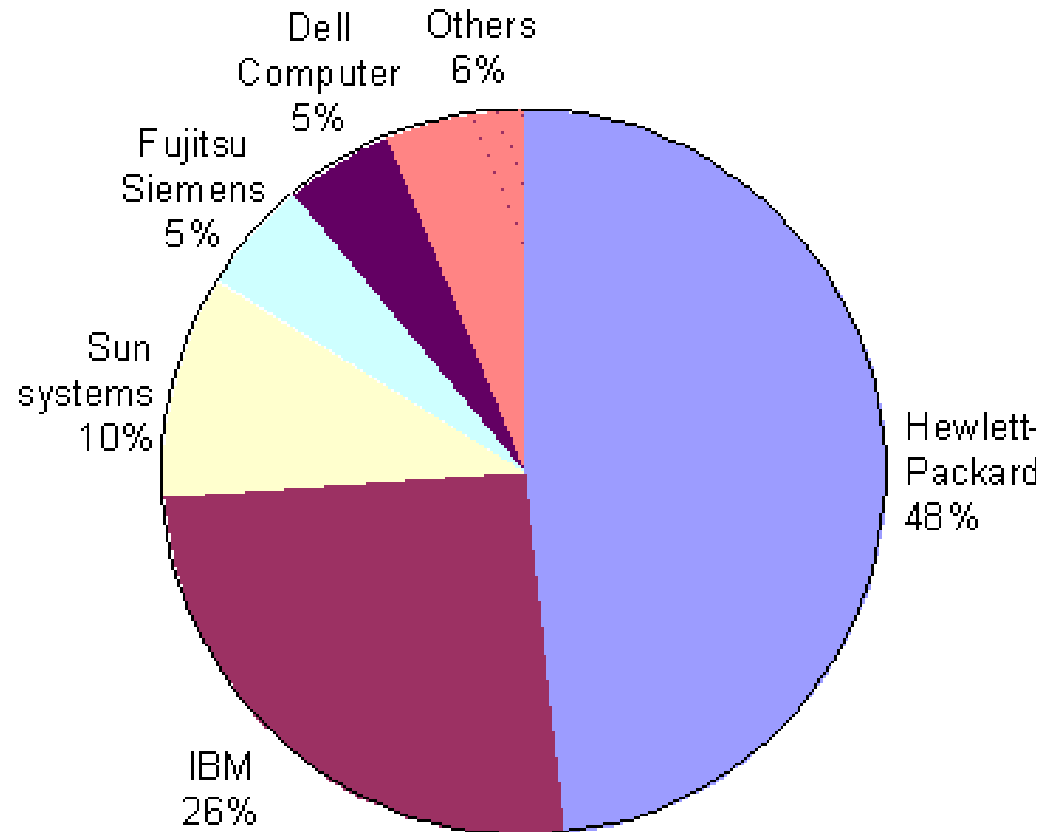


Committed partners

HP and SAP are each others largest customers*

- HP runs more than 150 SAP instances and is a reference for the full SAP solution suite
- SAP uses HP servers for its mission critical IT and trusts HP services to operate its internal SAP applications
 - Superdome for productive R/3
 - rp8400 for productive BW
 - Integrity Superdome for HR
 - ProLiant for product development

*in their industries



world SAP Hardware Market Share

(Source: most recent Gartner Research study)



Key Facts EMEA Installed Base

- SAP had over 52,000 installations of their software in EMEA
 - 26,400 installs run on HP hardware (50.3 %)
 - 7,354 installations on Unix (39%)
 - 17,984 installations on Windows (62%)
 - 1,059 installations on Linux (48%)
- HP is #1 in all O/S platform categories in EMEA

Status March 2005

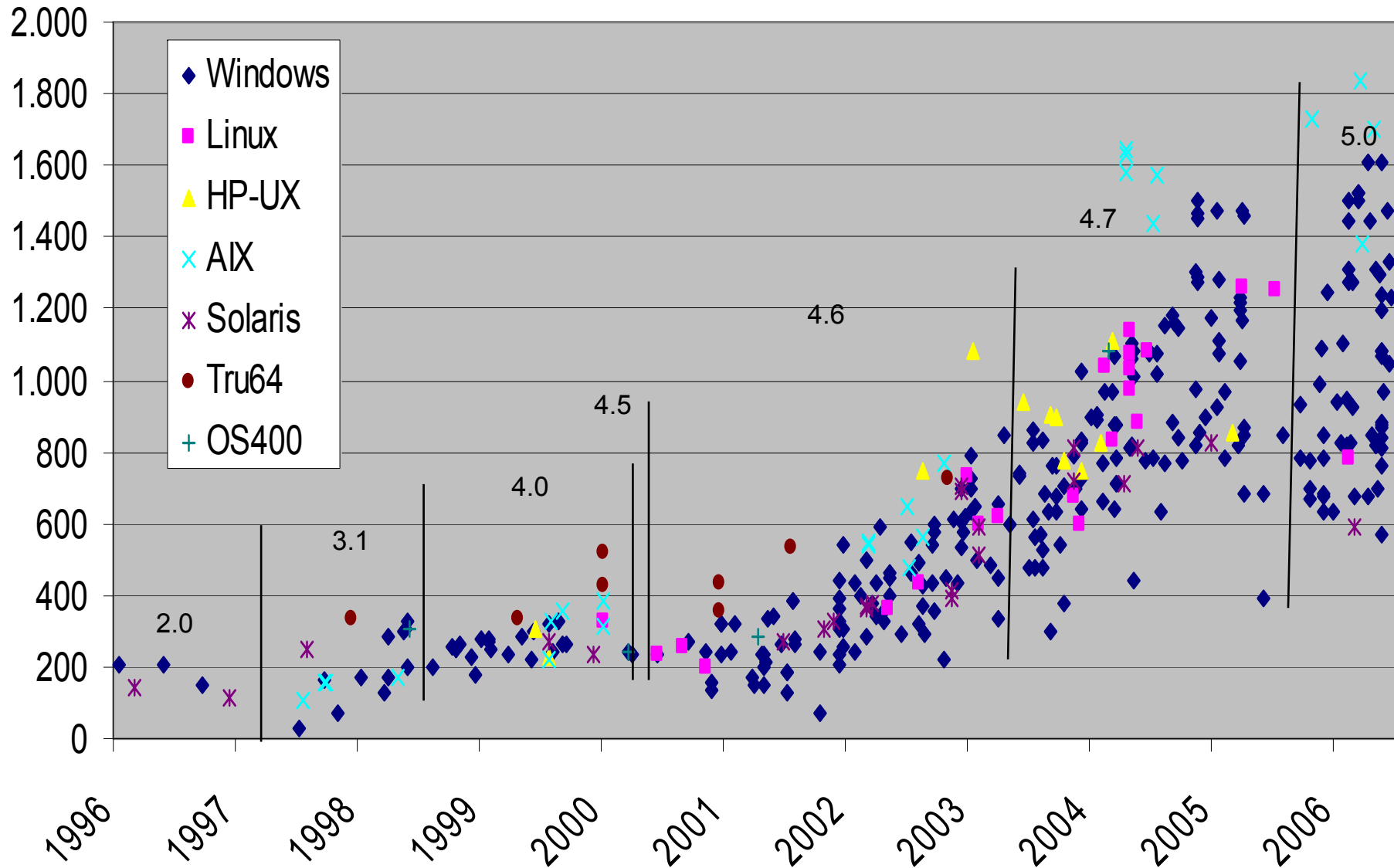
A large, white, three-dimensional SAP logo is mounted on the dark facade of a modern building. The letters are bold and sans-serif. The building has a dark, possibly black or dark grey, exterior with some greenery visible on a balcony level. The sky is a clear, bright blue.

SAP



preparing the infrastructure for NetWeaver & Enterprise SOA

SAPS per Core (as measured in SD 2-tier benchmarks)



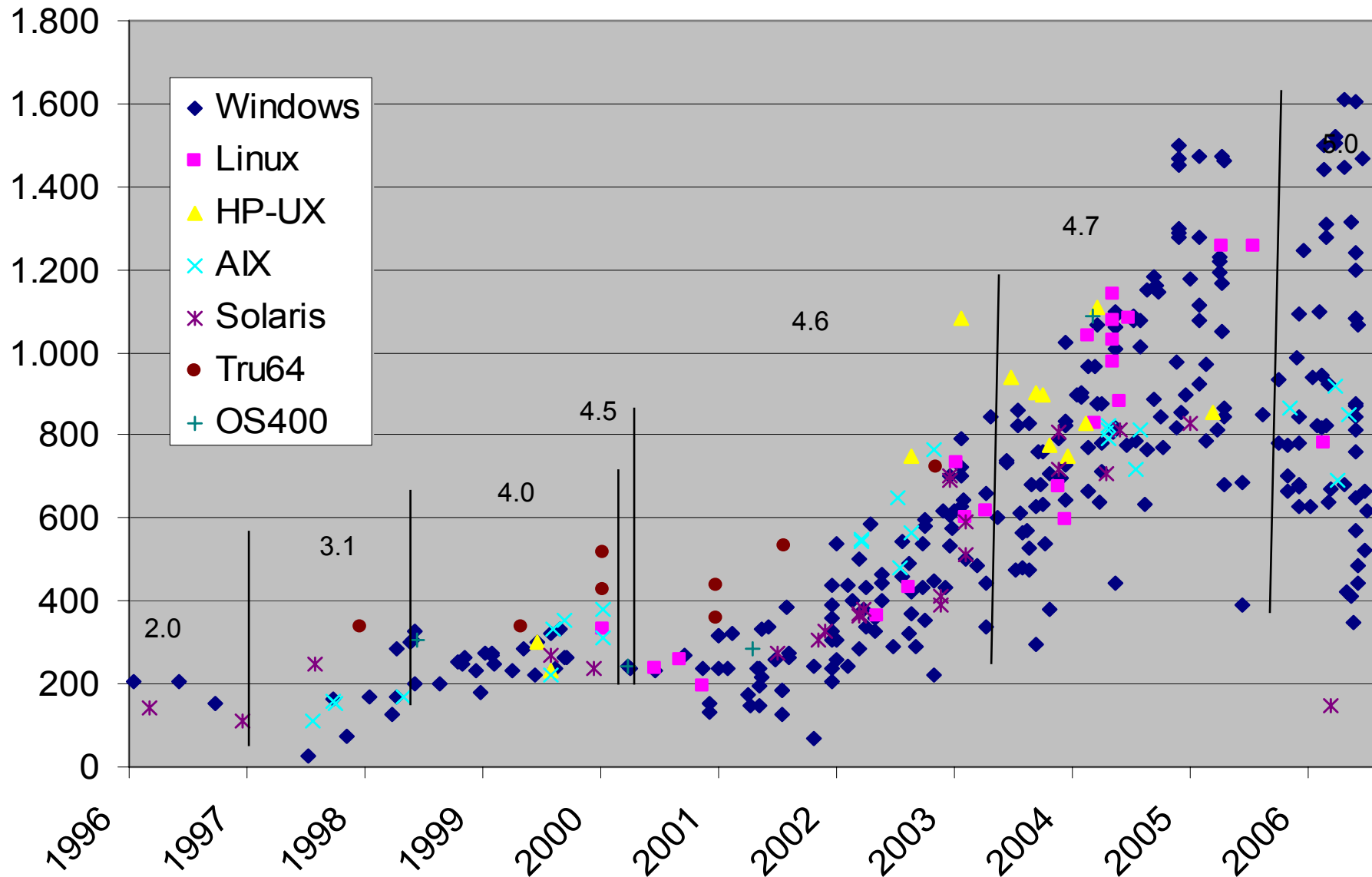
How to count CPUs?



- a processor is the physical thing that you buy and that goes into a socket.
- a processor may have 1 or more cores in the same die.
- a core may have 1 or more threads.
- From a Software perspective cores appeared as physical CPUs and threads as logical CPUs

Does this make a difference for SAP Systems?
Of course – SAP processes are single threaded, so you have to take it into account for batch runtimes

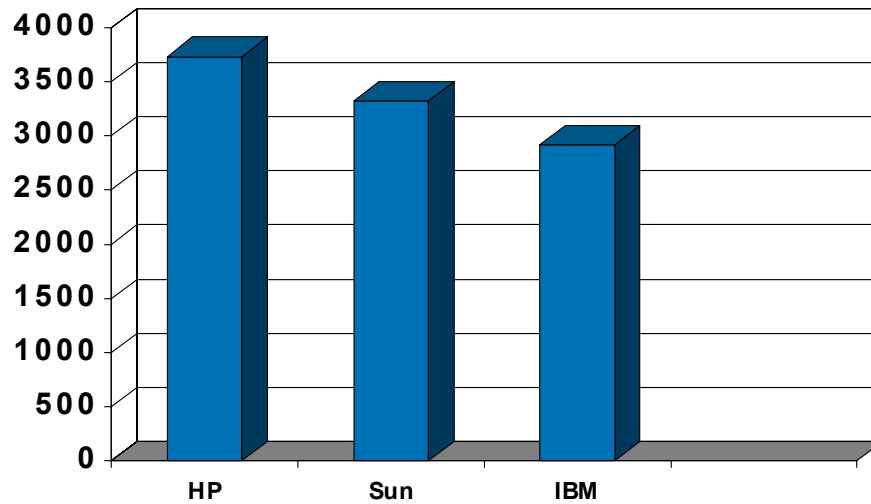
SAPS per thread (in SD 2-tier benchmarks)



New SAP components are based on Java



SPECjAppServer2004



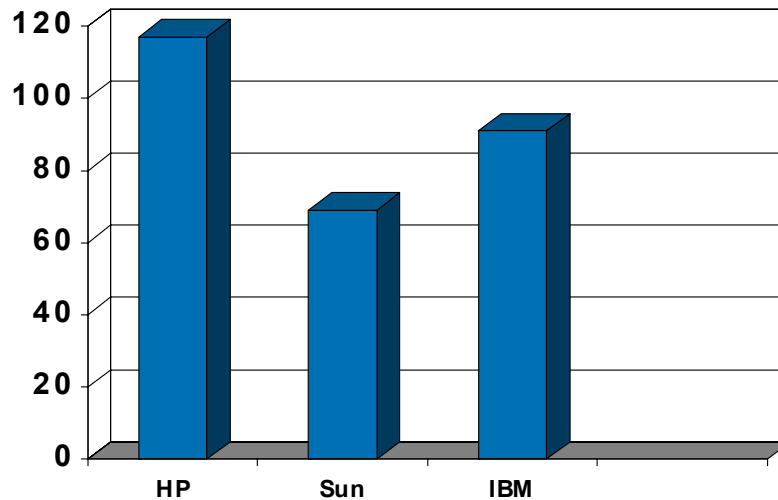
JOPS

Configuration:

HP: 8 x 4 1.6 GHz Itanium rx4640

Sun: 6 x 8 1.2 GHz SPARC T1 SunFire T2000

IBM: 8 x 4 1.9 GHz P5+ p5 550



JOPS/ core

JOPS Summary:

HP 12% better than Sun

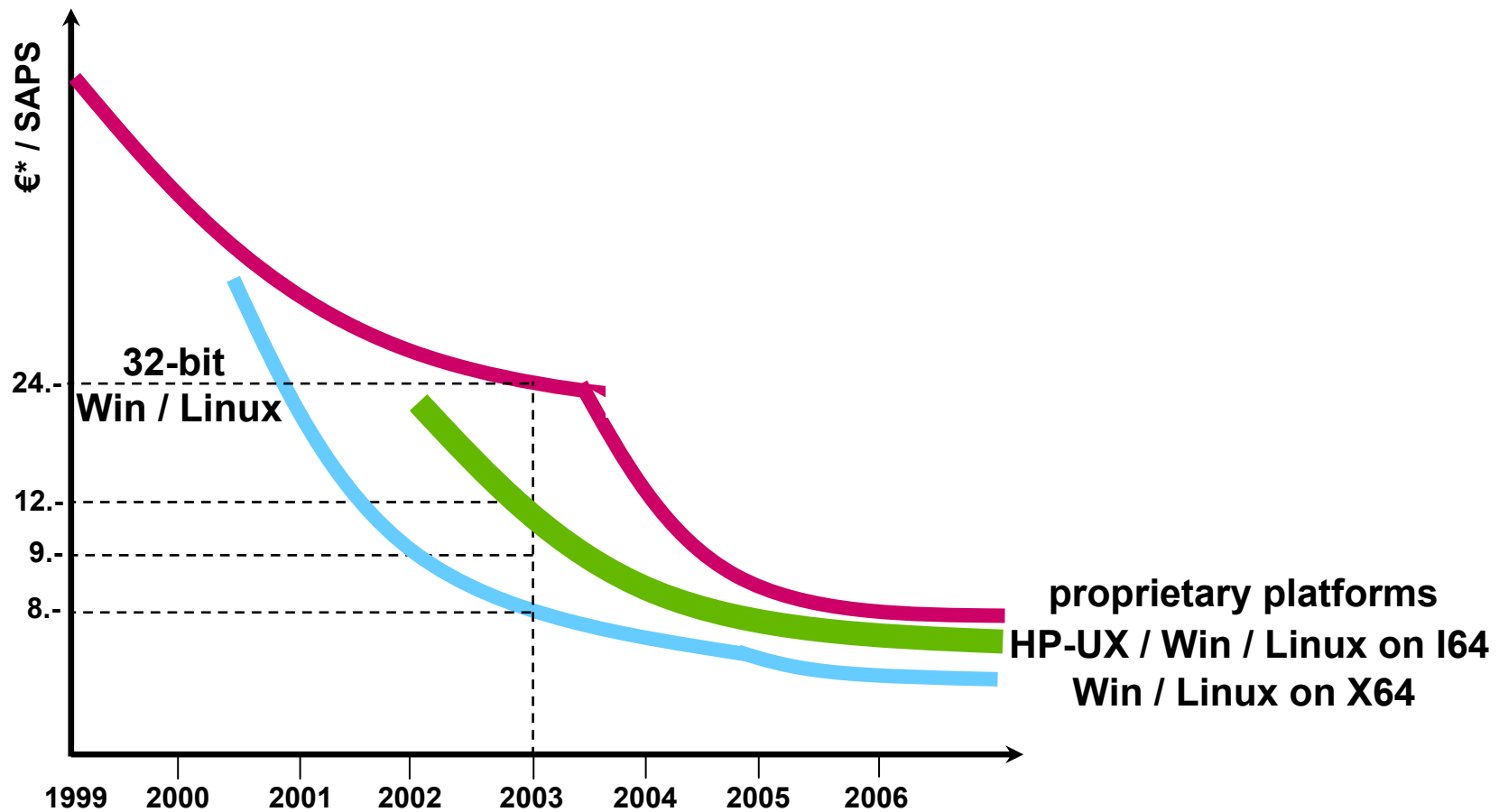
HP 28% better than IBM

JOPS/core Summary:

HP 70% better than Sun

HP 28% better than IBM

€ per SAPS



*including hardware and OS licences, HW maintenance and OS support for 3years

64-Bit Platform become mandatory for



- Complex Batch Jobs
 - End of month run's, replenishment etc.
- High User Levels
 - More than 1,000 Concurrent Users
 - Many heavy users
- Business Warehouse / SEM
 - Large 16-Way Table Joins, >200Gb Data
- memory resident databases
 - APO LiveCache
 - High performance Analytics
- VM Container in Web AS 7.0 (approx 1 GB more memory)
- **Unicode compliancy**

Zašto Unicode ?



- Most legacy systems are designed as a single code page systems
Single byte code pages are limited to 256 characters
 - **English alphabet:** ~ 60 characters
 - **Western European :** ~ 300 characters
 - **Korean:** ~12.000 syllables
 - **Chinese dictionaries:** ~ 50.000 letters
 - **Unicode** ~ 90.000 characters
(and room for 1 Million more)
- **Browsers work in Unicode by default**
- **Java works in Unicode only**
- **XML works in Unicode only**
- **SAP note 838402: the default for new installations is the Unicode version. Unicode is also the explicitly recommended system type**

additional resource for Unicode



Text fields are usually bigger in Unicode. Enhanced functionality requires additional resources, depend on the given customer scenario.

- **CPU's**
 - 30% more for old CPU's, 5 to 15% more for new with large caches
- **Main Memory**
 - generally 50%
- **Disk Storage (extremely platform dependent)**
 - Theoretical between 10 and 150%, generally 50%
 - Practical Experience: **Due to the fact that a Unicode migration needs a export import of the DB, which result in a basic reorganization of the DB the Disk volume is lower after the migration in most cases**

Future versions of SAP applications exclusively in 64-bit and Unicode after 2006



Dear customer,

Unicode has become the international standard for character sets. On the other hand, we have noticed that non-Unicode systems face increasing restrictions and incur greater risks. SAP will therefore initiate a step-by-step transition to **make Unicode the standard for all systems.**

New releases of SAP NetWeaver and SAP applications based on SAP NetWeaver, which are released in 2007 or later, **will no longer support** new installations of **Non-Unicode systems.**

64-bit technology now clearly dominates in the server world. With its superior abilities for addressing main memory, improved scalability, and higher performance, it offers potential for completely new types of applications. **Meanwhile, 32-bit servers are increasingly problematic to operate; without fine-tuned configurations they cannot fulfill the latest requirements for main memory.**

For these reasons, **new SAP product releases as of 2007 will be available for 64-bit server operating systems only, including Windows and Linux....** SAP will continue to provide 32-bit versions of components that are used on desktop PCs by end-users – such as SAP GUI or SAP NetWeaver Developer Studio.

Yours sincerely,

Karl-Heinz Hess

Senior Vice President Active Global Support, PPA

A large, white, three-dimensional SAP logo is mounted on the dark facade of a modern building. The letters are bold and sans-serif. The building's structure, including a balcony with some greenery, is visible against a clear blue sky.

SAP



**availability:
All eggs into one basket?**

Where is the issue?



„we had nearly no unexpected downtime with SAP on HP-UX during the last seven years”

largest European car manufacturer

„we have seen no unplanned downtime on our SAP on Superdome since we start it years ago“

large European chemical company

But:

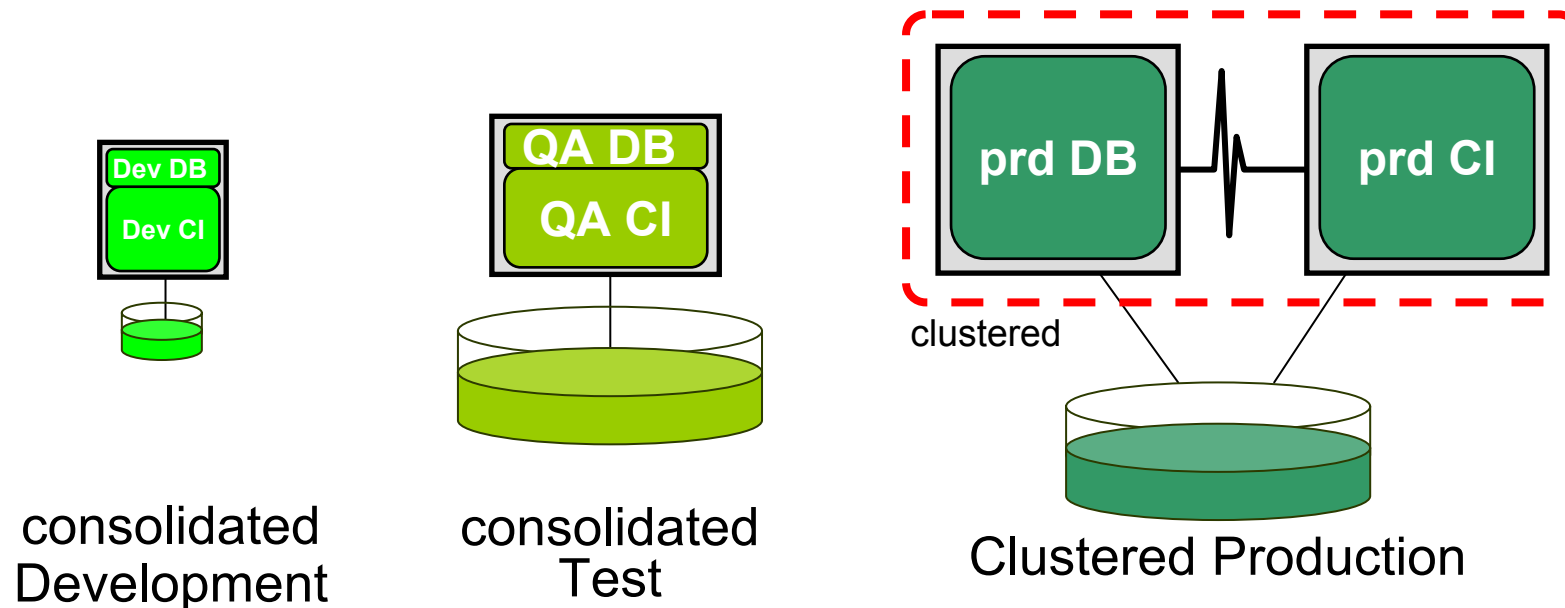
“If anything can go wrong, it will.”

Captain Edward A. Murphy
US Air Force, 1949



“...I can assure you, your order is on the water...”

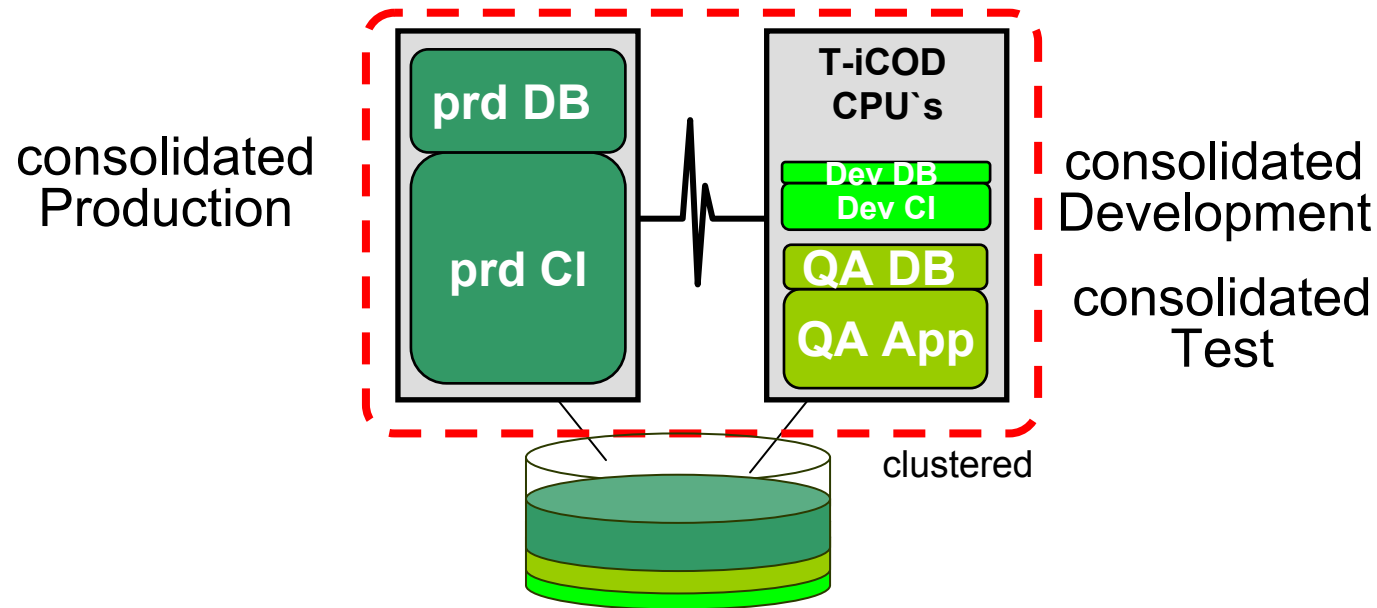
The classic approach



- If one PRD server goes down, the whole system goes down
- With a MTBF* for HP-UX servers of ~ 650 days (Sun ~ 45) the MTBF for the PRD system is: $650/2 = 325$ days
- After the fail over only 50% of the users can work because only 50% of the PRD memory & CPU resources are available

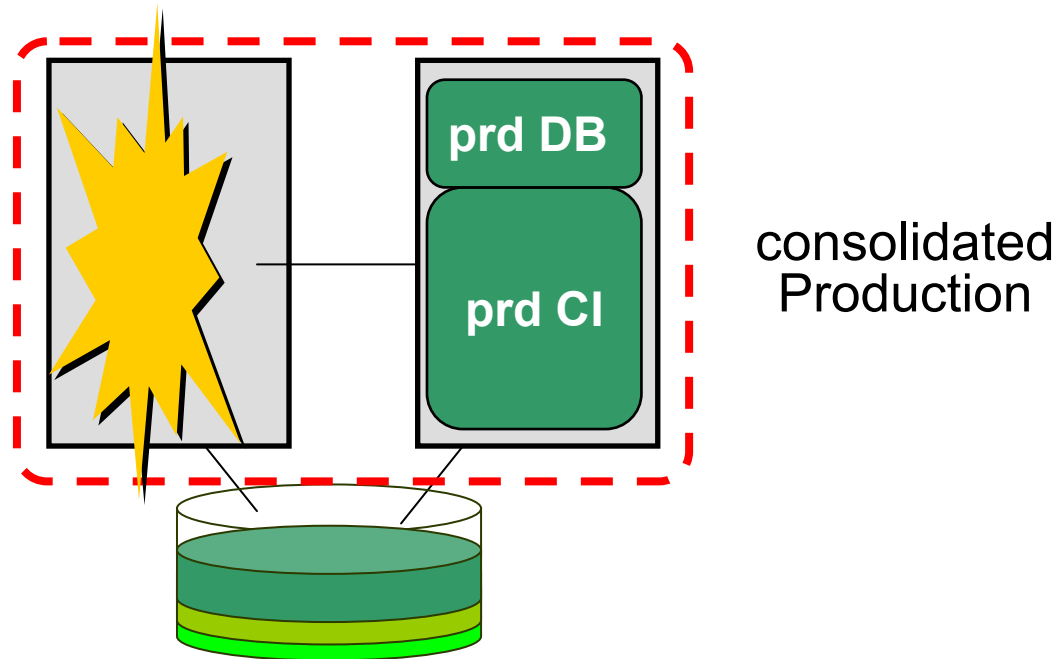
*mean time between Failure Measured by Customer

The consolidated Server approach



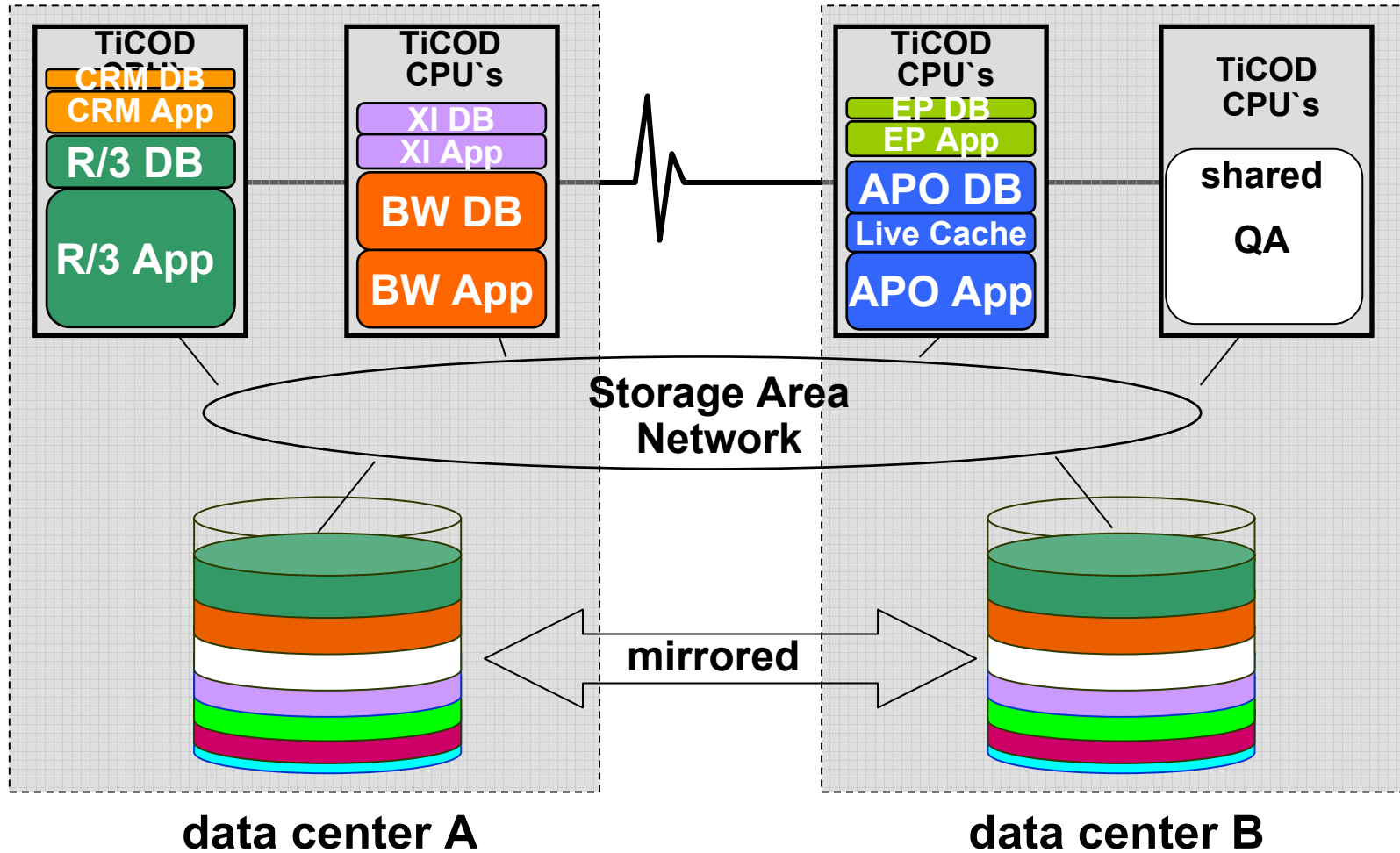
- Dual use of non-productive resources for fail-over capacity
- Temporary Capacity on Demand (TiCOD) resources to fill „the gap“ to production resources (already powered but disabled)

The consolidated Server approach



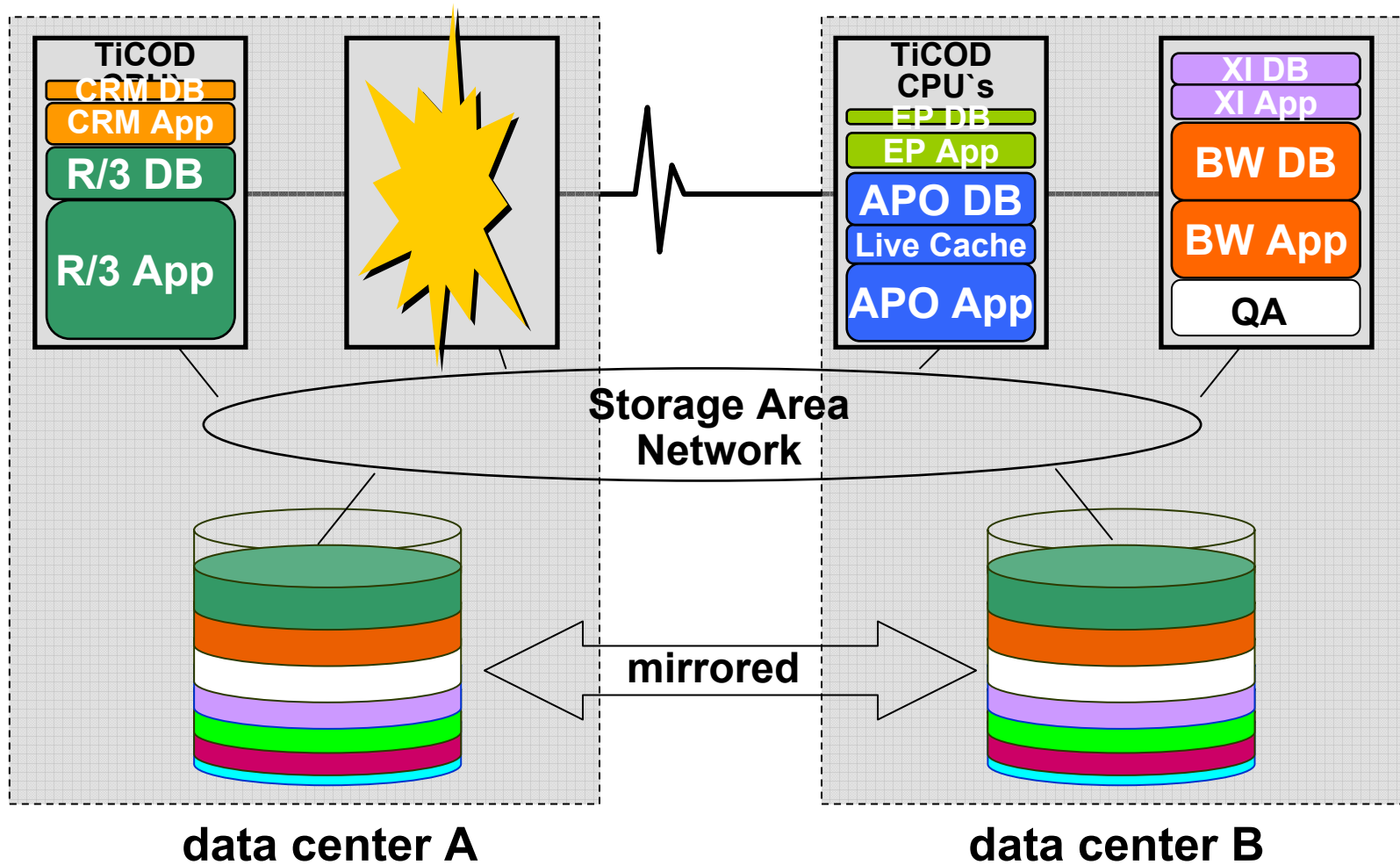
- Only if the PRD server goes down, the Cluster switch over
- The MTBF for the PRD system is ~ 650 days
- After the fail over 100% of the users can work because 100% of the memory & CPU resources are available
- TiCOD resources have to be paid only for time in use

Disaster tolerant data center



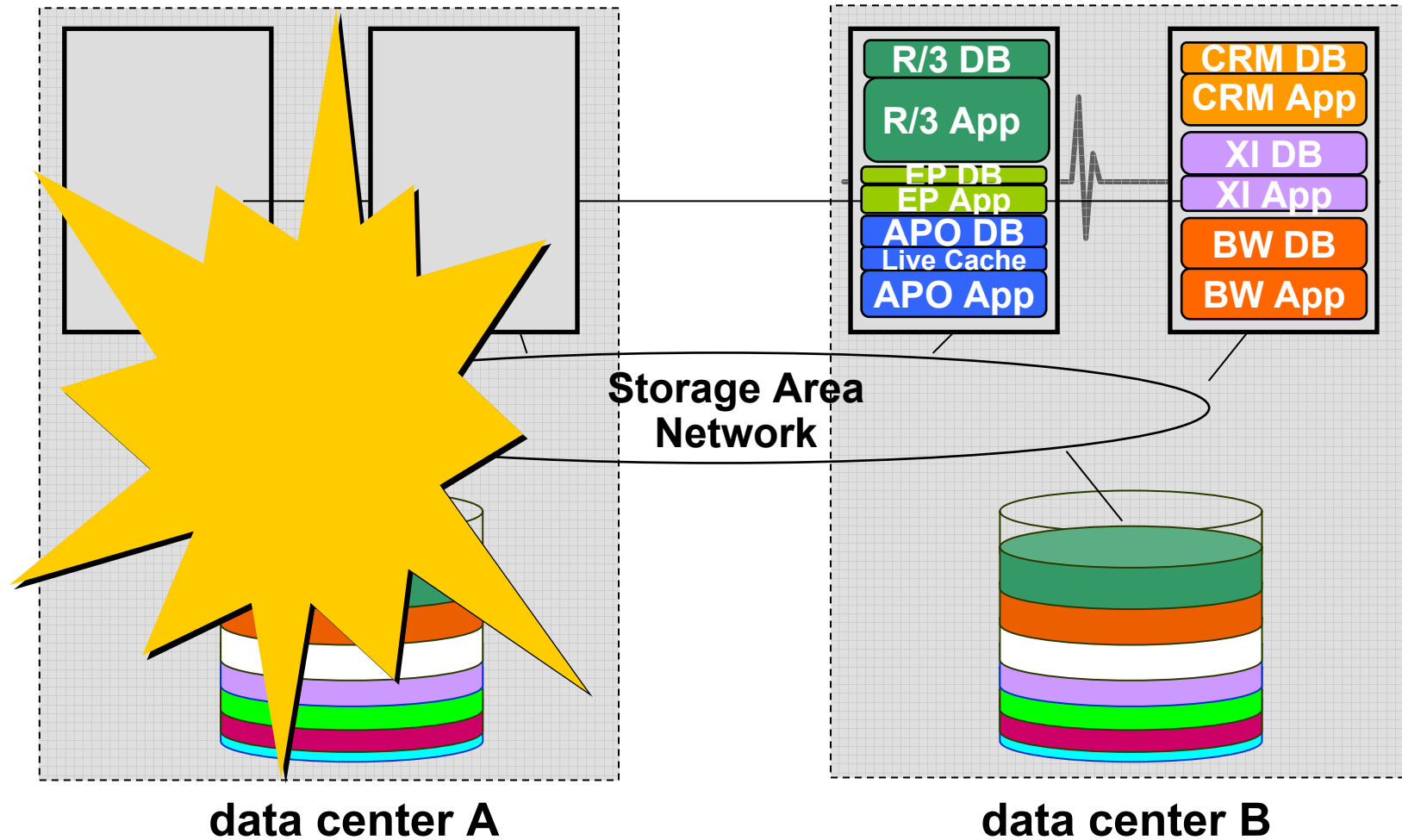
➤ Redundant Array of Consolidated Servers

Disaster tolerant data center



- no performance impact if one server goes down
 - Allows maintenance during office hours

Disaster tolerant data center

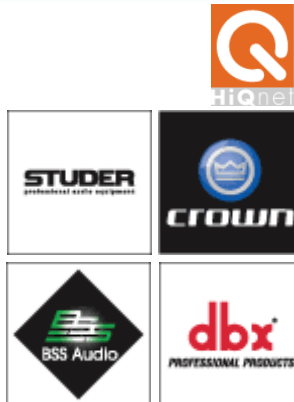


- minimal performance impact if a data center goes down without stand-by resources



“It only takes three minutes to failover and have users continue their SAP operations [...] ServiceGuard Extension for SAP removes a lot of the manual intervention typically required to re-instate SAP operations. We are in the process of enhancing this capability further by working with HP consultants to install Replicated Enqueue, which will maintain the users’ temporary transaction locks during a failover and all they will experience is an extended hour-glass until the rollover is complete.”

Eldon Jenkins
Senior Architect
Harman Pro Group

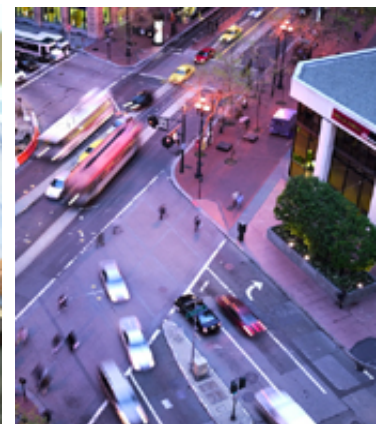




“This solution give us a fast recovery system and a higher level of flexibility in managing the system. We use Serviceguard to create and maintain a highly available environment. It has meant a massive increase in performance, high availability and reliability of the systems. Combining HP and Oracle solutions in this way will definitely enable us to avoid downtime costs.”

Ezio Bombardelli

IT Systems manager, Pirelli





“Integration with SAP with seamless failover of SAP R/3 & applications were paramount to ensure that there were no downtimes.”

“I get peaceful sleep in the night since the application startup/shutdown controlled by the SGeSAP scripts during failover is very smooth.”

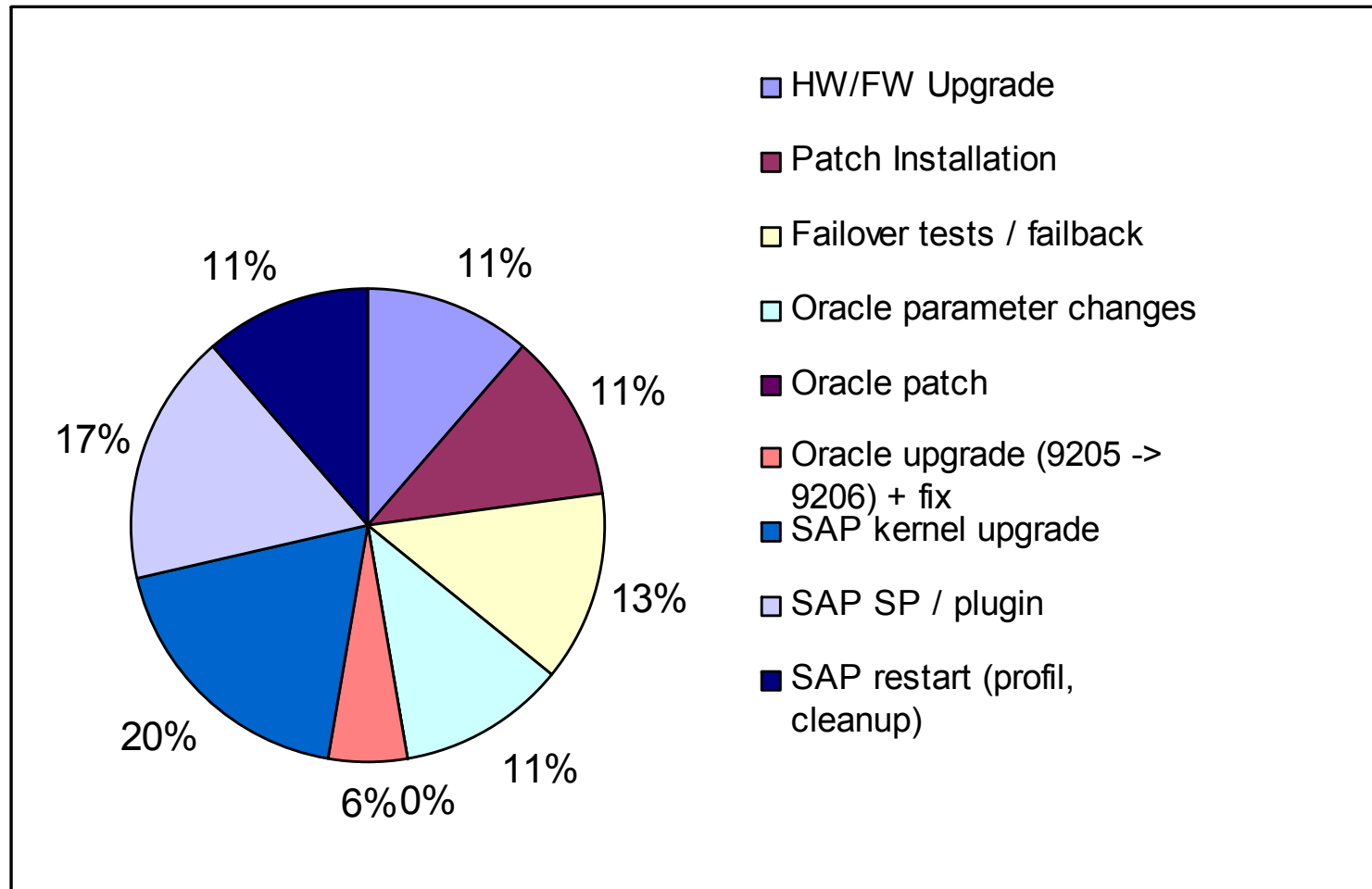
Mr. Yogesh Zope
VP, IT Services
Bharat Forge Ltd.





HP Services that enhance reliability

planned Downtimes



charts shows:

- Planned downtime for technical needs.
- SAP upgrade (every 4 years) and Oracle major upgrade (every 2 years) are not accounted because they are managed as a project.

SAP specific high availability solutions



HP Serviceguard extension for SAP for HP-UX and Linux

- ✓ Unique cluster consistency monitor detects operator errors
- ✓ SAP application is available during HW and SW maintenance.

HP competent cluster for SAP on Windows

- ✓ Enables SAP consolidation for mission critical systems on Windows
- ✓ Multiple SAP Solutions, SQL instances and Server nodes within a single cluster

Customers benefit:

- ✓ Fully integrated & standardized solution for any SAP Solution
- ✓ Granted availability of mission critical systems
- ✓ Reduced hardware, software, maintenance and operation costs
- ✓ Fully tested & certified by both SAP and HP (single point of support)



HP Serviceguard extension for SAP



- ✓ **protects SAP Central Instance & database** within an HP-UX SG cluster
- ✓ **Easily integrated & standardized solution** using simple Serviceguard commands
- ✓ **Continuously monitors the health of each SAP node & automatically responds** to failures or threshold violations
- ✓ Provides **faster failure detection & restoration of any SAP application**, as well as **faster upgrades**
- ✓ The **SAP application is available during HW and SW maintenance**. You can use the backup node as a SAP app server, a host for a SAP test instance, or other applications (doesn't have to be idle).
- ✓ **Fully tested & certified by both SAP and HP (single point of support)**
- ✓ Available on HP-UX and Linux
- ✓ Next release: Replicated enqueue, SAP toolkit for WLM, cluster awareness to central instance with transparent failover to the user...



HP Cluster Consistency Service*



- ☺ Grant cluster consistency by proactive cluster diagnostic
- ☺ Collects and compares all relevant parameters of all cluster nodes (several thousand)
- ☺ Uses rules based on the know-how of experienced cluster specialists
- ☺ Avoids failed fail-over due to inconsistent parameter settings
- ☺ Reports in ASCII or HTML for integration in system management
- ☺ Detailed messages support Administrators during troubleshooting and change management

*HP-UX



HP Change Alert Service

- ☺ Monitors all nodes & application components (Interfaces, Spool, DNS, NFS-Server etc.)
- ☺ Detect and report all kind of configuration changes (wanted & unwanted) during the operation
- ☺ Recognize potential problems before they cause downtime
- ☺ Minimize downtime if a problem occurs by providing the required information
- ☺ Enables you to track down the cause of a problem
- ☺ Provides a central repository for Change issues over time
- ☺ Supports Change Management in complex environments proactively

➤ **automating a key discipline of ITIL**

Performance Services for SAP



- ☺ System and Application Resource Analysis (SARA)
Analysis of hardware resource consumption
- ☺ Performance Analysis for SAP Systems (PASS)
as before plus DB and SAP basis analysis
- ☺ Transaction Volume Measurement Service (TVM-S)
document volume measurement for re-sizing
- ☺ Trend Analysis Measurement Service (TAM-S)
Evaluating trends in workload, performance and HW utilization
- ☺ Single Analysis Measurement Service (SAM-S)
Status quo analysis of SAP systems
- ☺ **Years of experience delivering SAP standard Services**
 - GoingLive (for new systems, upgrades, migrations)
 - EarlyWatch (regular health check)



HP Output Manager for SAP

- ☺ Delivery assurance of business-critical information
- ☺ Confirmation to SAP user that the document is delivered
- ☺ Single interface for printing, emailing, web-publishing and faxing
- ☺ Automatically transformation to proper output formats
- ☺ Service Level improvements
 - Retries and retains print jobs
 - Integrates seamlessly with OpenView framework
 - Enables help desk to resolve the 30% of problems related to output
- ☺ TCO reduction
 - Reduced network traffic, paper and forms costs,
 - Reduced help desk & administration costs

SAP included HP Output Server as a key component in SAP's IT Service & Application Management portfolio

**HP
RUNS
SAP.**

**SAP
RUNS
ON HP**

THE BEST-RUN BUSINESSES RUN SAP

