SAP DB: Reducing Total Cost of Ownership for Data Management

Rudolf Munz

SAP AG

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DBMS are a Commodity !?

Feature-wise: yes

Price-wise: no

DBMS Market

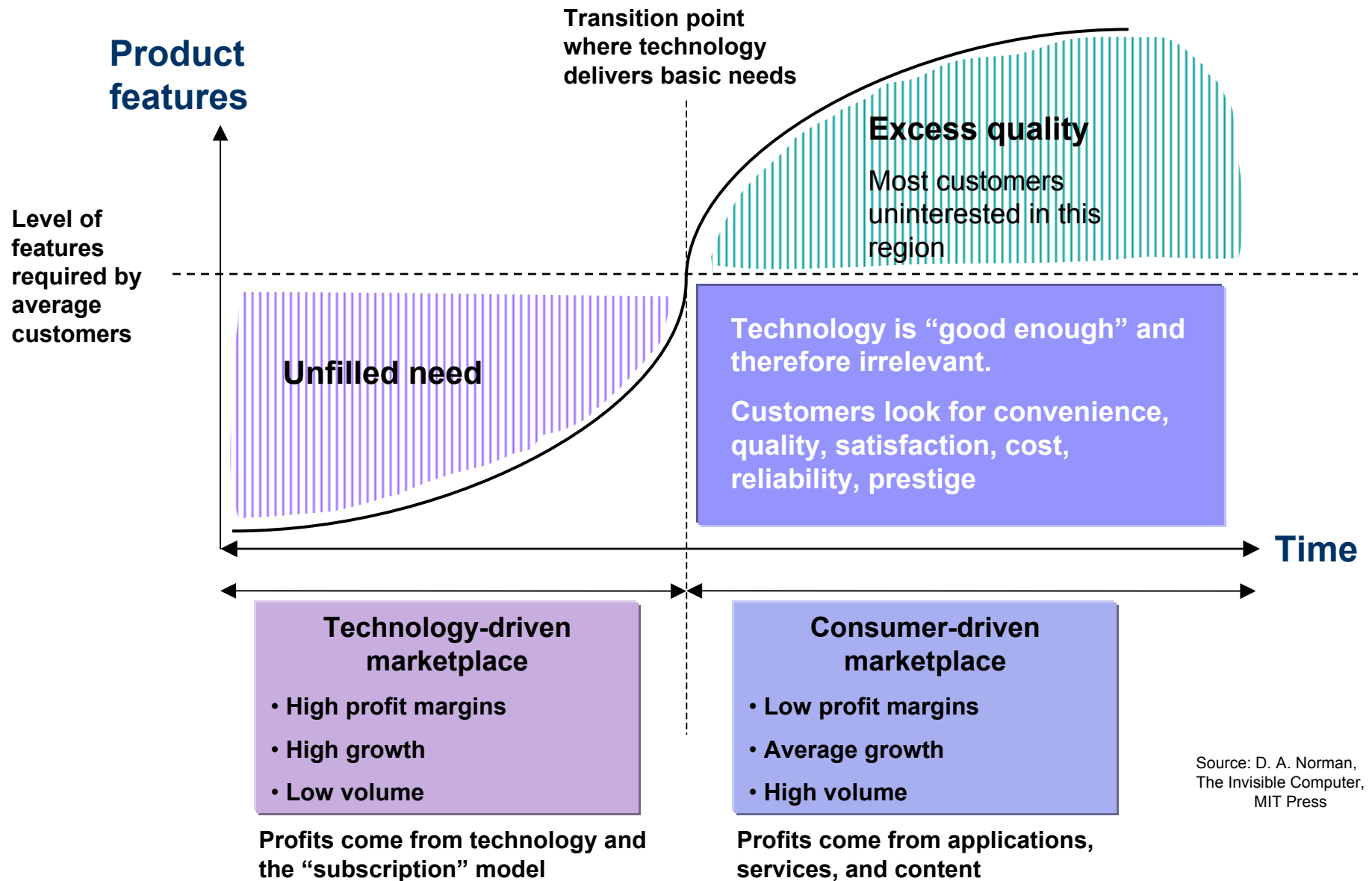**The DBMS market is dominated by three players**

- Oracle
- IBM
- Microsoft

DBMS technology has reached a saturation level

The feature war is over

DBMS pricing has not fully realized this market shift

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DBMS Market Transition

Product features

Transition point where technology delivers basic needs

Level of features required by average customers

Excess quality

Most customers uninterested in this region

Unfilled need

Technology is "good enough" and therefore irrelevant.

Customers look for convenience, quality, satisfaction, cost, reliability, prestige

Time

Technology-driven marketplace

• High profit margins

• High growth

• Low volume

Profits come from technology and the "subscription" model

Consumer-driven marketplace

• Low profit margins

• Average growth

• High volume

Profits come from applications, services, and content

Source: D. A. Norman, The Invisible Computer, MIT Press

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Do OS or DBMS matter?

OS are important, but they matter less and less

- Linux vs. Windows is important for Microsoft but not for CIOs

DBMS are important, but they matter less and less

- SAP DB vs. any other DBMS is no more important for CIOs

Important questions for CIOs are:

- Do we run the right applications?
- Can they be customized?
- Does everything fit into our budget?
- Can our IT staff handle the systems?
- Who will provide service and support?

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SAP's Motivation to Open Source SAP DB

Energize competition in the DBMS market

- Establish SAP DB in the DBMS market
- End the over-prized phase of the DBMS market
- Define new rules for the DBMS market

Create a community of SAP DB users beyond SAP's customers

Use the Open Source community to get feedback for improvements

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SAP's Commitment to SAP DB

SAP DB is SAP's strategic DBMS offering

- Part of SAP's technology stack
- Runs all SAP applications
- Means one-stop shopping for our customers
- Default DBMS for SAP J2EE Engine in Web AS 6.30

SAP DB's feature set and performance level is comparable to our competitors

SAP DB has been designed for easy administration and minimal costs of ownership

SAP heavily invests into the development of SAP DB

Open sourcing SAP DB is our "sales channnel" to the non-SAP world

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Teaming up with MySQL

Cross licensing and joint development agreement with MySQL

MySQL is the most popular Open source DBMS

Combining the enterprise-ready SAP DB technology with the community and eco-system of MySQL

SAP DB will be renamed with a MySQL branding

Ongoing SAP DB development, maintenance and support by SAP

Joint development of a next-generation DBMS

www.mysql.com

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SAP DB Customers (1)

R/3

Vaillant GmbH, Germany, 650 GB, 1800 user, R/3, HP-UX/64

Intersnack, Germany, 400 GB, 300 user, R/3, Windows

Deutsche Post, Germany, 120 systems (40P), e.g. 8*120 GB, Windows, 8 CPU

TDS, Germany, 80 systems, application service provider

Thyssen TKIS, Germany, 80 systems

Toyota, South Africa

Tenaga, Malaysia

APEX Corp. , Japan

Yamaha, Japan

Showa Denko, Japan

Siderar, Argentina

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APO / *live*Cache

Colgate, USA

Intel, USA

Eli Lilly, USA

Bayer, Germany

Bosch, Germany

Daimler-Chrysler, Germany

Epcos, Germany

Nestlé, Switzerland

Aventis, France

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SAP DB Platforms

IBM AIX

HP-UX

Sun Solaris

Linux

Windows NT, 2000, XP, 2003

It's your choice

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Present and Future DBMS Requirements

1) Performance

2) Availability

3) Ease of use

Our vision:

- Zero administration DBMS
- Invisible DBMS

Your benefit:

- Lowest cost of ownership
- Simplicity
- Convenience

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Design Rationale of SAP DB

Do things right   –   simply elegant

No non-sense   –   less is more

Fight complexity   –   elegant simplicity

Make the product as simple as possible – but not simpler

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Other DBMS

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Anatomy of a SAP DB Instance

Application

SAP DB Instance

SAP DB
Kernel

One Pool of DB objects

Log Volume

Data Volume

Data Volume
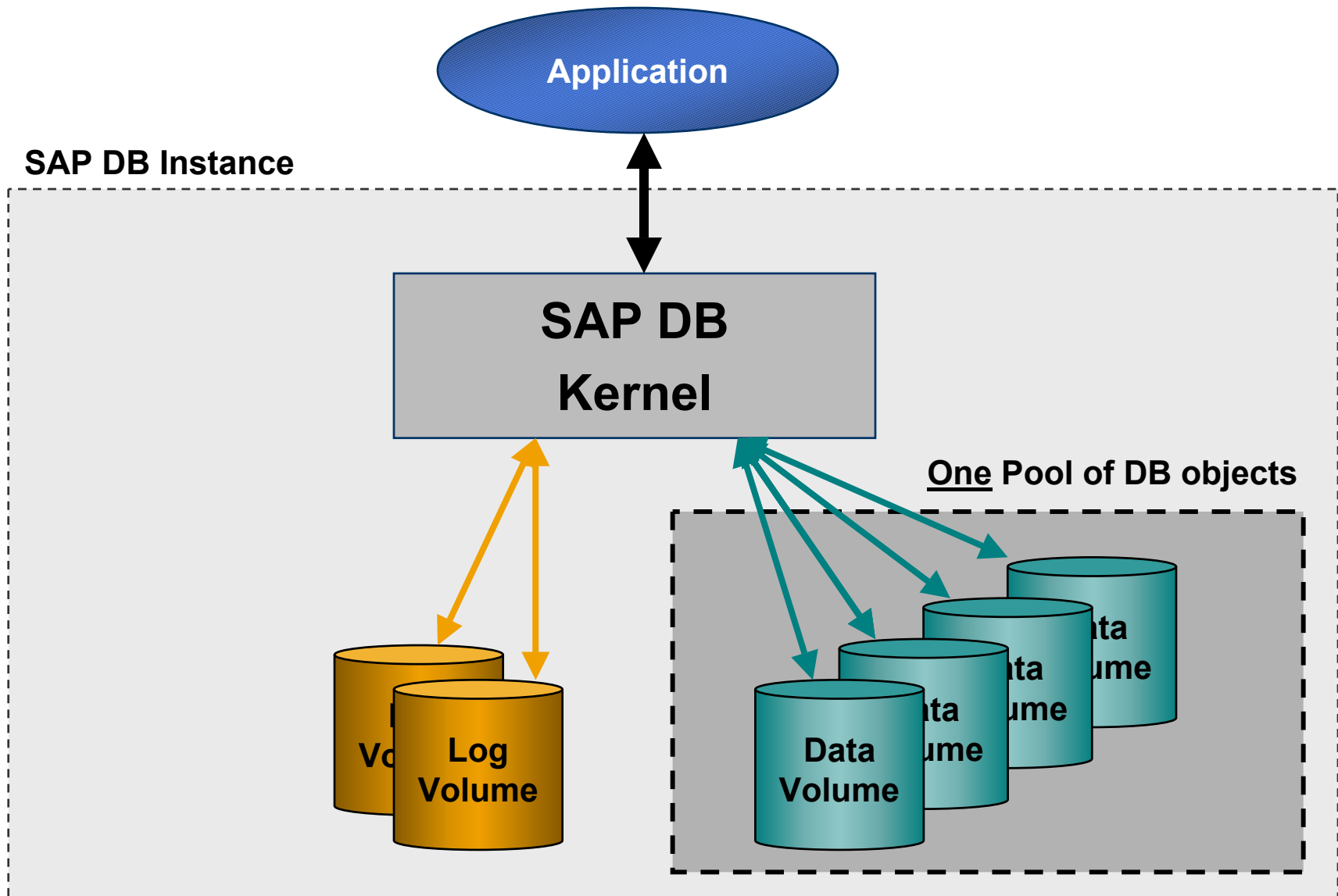
SAP DB's Ease of Use

Few configuration parameters

No size estimates for individual database objects

Automatic space allocation and de-allocation

Automatic balancing of disk I/O

No permanent attention required

Low cost of ownership

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High Availability of SAP DB

No reorganization

Online backup of database and log

Online extension of database and log

Online change of configuration parameters

Parallel backup and restore

Support of cluster and hot-stand-by configurations (failover)

No planned shutdowns, continuous operation

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What Means Minimal Cost of Ownership?

License costs	low impact
Maintenance costs	low impact
Hardware resources	low impact
DBA resources	high impact

TCO means people

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DBMS Experiences of SAP Hosting

System A:

- ◆ **Needs lots of hard disk space**
- ◆ **Needs DB reorg every 3 to 6 months**
- ◆ **Inefficient backup**
- ◆ **Needs higher I/O rate (factor 2) in comparison to SAP DB (same workload)**

System B:

- ◆ **Can not backup logs and DB in parallel**
- ◆ **Needs higher I/O rate (factor 2) in comparison to SAP DB (same workload)**
- ◆ **High CPU consumption**

System C:

- ◆ **Needs lots of hard disk space**
- ◆ **Needs DB reorg every 3 to 6 months**

SAP DB:

- ◆ **More or less no administration needed once the database is set up**
- ◆ **Does not need a DB reorganization**
- ◆ **Less disk and CPU resources needed**

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Disk Space Comparisons Made by SAP Hosting

Migrations from System A → SAP DB:

◆ **Database size shrinks to 30 - 40% of its previous size**

Migration from System C → SAP DB

◆ **Database size shrinks to 30 - 40% of its previous size**

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DBA Resources As Planned by SAP Hosting

DB Size / Instance	SAP DB	System B	System A	System C
0 - 30 GB	0,1	0,2	0,2	0,2
30 - 100 GB	0,1	0,2	0,5	0,5
100 - 500 GB	0,2	0,4	0,5	0,5
500 GB - 1 TB	0,2	0,5	1,0	1,0
> 1 TB	0,3	1,0	1,5	1,5

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SAP DB Performance

Multi-process / multi-threaded server

SMP scalability

Minimal I/Os

Parallel CREATE INDEX

Specific tuning for SAP applications

Competitive performance level

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SAP DB Benchmark – Small Configuration

- **1 Central Server**
  - **2-way SMP, Intel Xeon 3.06 GHz**
  - **512 KB L2 Cache, 3 GB main memory**

- **292 concurrent users in SAP's SD Benchmark Profile**

Average Dialog Response Time	**1,96 sec**
CPU utilization on DB server	**98 %**
SAP DB Version	**7.3**
Operating System	**SuSE SLES 8**
Total Disk Space	**108 GB**
Throughput	**1.470 Benchmark Items (SAPS)**

- **www.sap.com/benchmark**

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SAP DB Benchmark – Small Configuration II

- **1 Central Server**
  - **4-way SMP, Intel Itanium II, 1 GHz**
  - **Caches: 32 KB L1, 256 KB L2, 3 MB L3**
  - **7 GB main memory**

- **470 concurrent users in SAP's SD Benchmark Profile**
  - **Average Dialog Response Time**   **1,74 sec**
  - **CPU utilization on DB server**   **99%**
  - **SAP DB Version**   **7.3**
  - **Operating System**   **SuSE SLES 8**
  - **Total Disk Space**   **51 GB**
  - **Throughput**   **2.400 Benchmark Items (SAPS)**

- **www.sap.com/benchmark**

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SAP DB Benchmark – Medium Large Configuration

- **1 Database Server**
  - 8-way SMP, Intel Xeon 2.0 GHz
  - 2 MB L3 Cache, 8 GB main memory

- **61 Application Servers**
  - 48 Dialog Servers, 2-way SMP
  - 12 Update Servers, 2-way SMP
  - 1 Message/Enqueue Server , 1-way

- **5500 concurrent users in SAP's SD Benchmark Profile**
  - **Average Dialog Response Time**   1,96 sec
  - **CPU utilization on DB server**   98 %
  - **SAP DB Version**   7.3
  - **Operating System Database Server**   SuSE SLES 8
  - **Operation System Applic. Servers**   SuSE SLES 7
  - **Total Disk Space**   2.500 GB
  - **Throughput**   27.770 Benchmark Items (SAPS)

- **www.sap.com/benchmark**

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Customer Statement of Translogic Corporation (1)

Located in Denver, CO

Part of Swisslog, Switzerland

Product portfolio:

- **Pneumatic tube systems**
- **Electric track vehicles**
- **Automatic guided vehicles**
- **Selective vertical conveyors**

SAP system landscape:

- **2 application servers (2-way Intel boxes)**
- **DB server with 2 GB memory and 270 GB disk space**
- **140 named R/3 users**
- **SAP DB customer since 1996**

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Customer Statement of Translogic Corporation (2)

Quotes from Charlie Brann, SAP Adminstrator:

During these last seven years, we have found this database product to be very stable and highly reliable. We have a relatively small IT staff with only one SAP Technical Resource person: me. I serve as ABAP programmer, Security administrator, Basis administrator, and DBA.

I've worked with System A and System B in the past, but I find SAP DB to be easier to administer, more stable, and it requires a great deal less of my time.

There is no recurring daily, weekly, or monthly process that must be accomplished to keep the DB humming. I spend only an hour or so a week on the DB directly, just checking and verifying – just in case ...

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SAP DB Interfaces & Tools

Operations	Tools	Interfaces
Database Manager **DBMGUI** (Windows) **Web DBM** **DBMCLI** **DBAnalyzer** • **Installation** • **Configuration** • **Monitoring** • **Backup/Restore** • **AutoSave**	**SQL Studio** (Windows) **Web SQL** **Loader**	**C/C++ precompiler** **ODBC 3.5** **JDBC 3.0** **Perl** **Python** **PHP** **SQLCLI**

SAP DB Kernel

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SAP DB Database Manager (1)

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SAP DB Database Manager (2)

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SAP DB Database Manager (3)

Web DBM

SAP DB SQL Studio

SAP DB Web SQL Studio

Summary

Buying a DBMS is no longer a strategic but a tactical decision

Reasons to buy SAP DB

- **SAP DB automates most DBA activities which means minimal TCO**

- **Buying your DBMS from SAP means one-stop shopping**

- **SAP DB is fit for the job and tuned for SAP applications**

SAP DB

The Enterprise Open Source DBMS

www.sapdb.org

Test it!

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