

SQL Server 2000 Tipps & Tricks

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HP-Services

Agenda



- Query Analyzer
- Transaction Log
- MSDE Governor
- ALIASES
- Locks
- T-SQL Hints
- Traceflags \ DBCC
- Best Practice Analyzer
- Setup Issues
- Blackbox

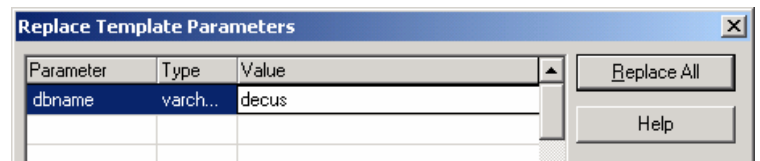
- Adhoc queries
 - Statistiken, Execution plans ..

- Predefined commands

- sp_help (Alt+F1)
- sp_who (CTRL+1)
- sp_lock (CTRL+2)

- Templates (.tql)

- c:\Program Files\Microsoft SQL Server\80\Tools\Templates\SQL Query Analyzer\
- Parametrized Templates
 - <dbname,varchar(30),>
 - Ctrl-Shift-M



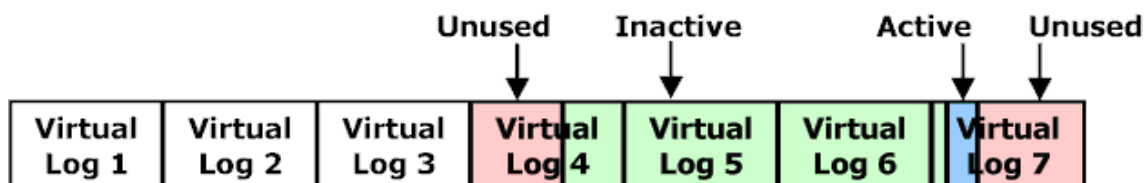
– demo

Transaction log

Strange behaviours ?



- Why does this sequence don't work as expected ?
 - backup log MyDB to DISK = 'C:\MyDB.bck,
 - dbcc shrinkfile ('MyDB_log')



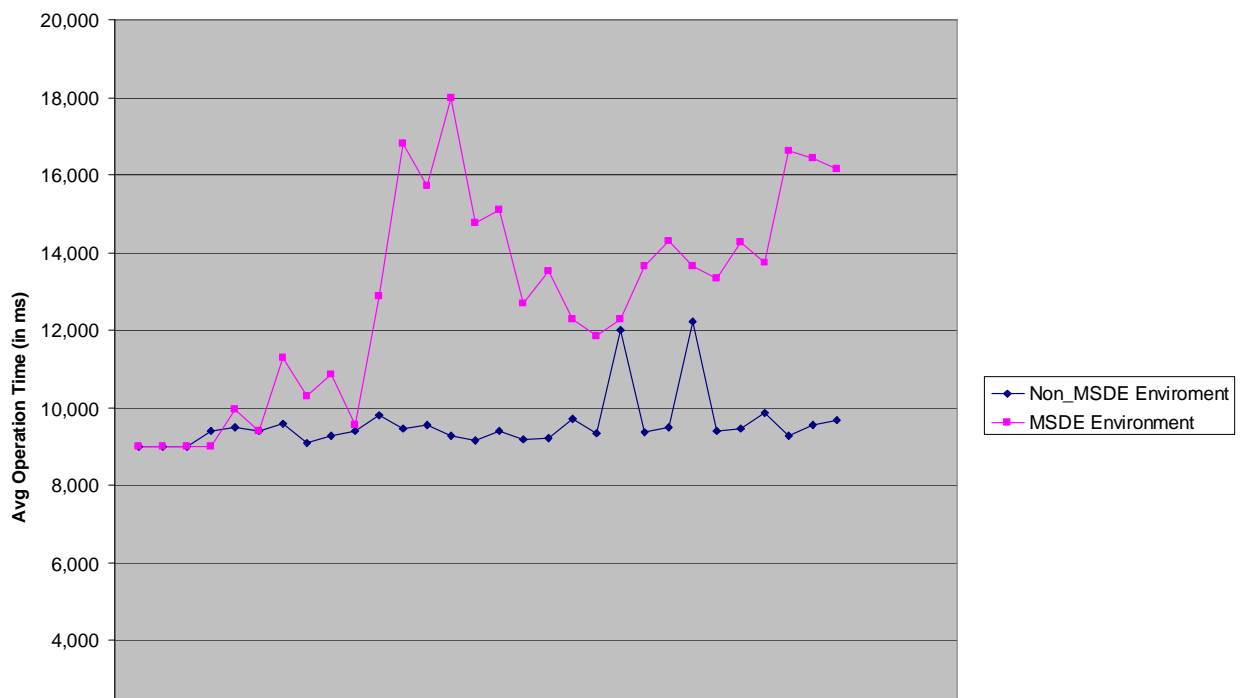
- Demo
 - Dbcc Loginfo

- 2GB Limit, No Tools
 - Setup with `/DISABLENETWORKPROTOCOLS=1`
 - for local apps not needing network (shared mem)
 - Default in sp3a ! Use `SVRNETCN.EXE` to add networks
 - Only DB on W2003 Web edition !
-
- Workload Governor
 - limits performance when more than 5 **BATCHES** are executed concurrently. **NOT connections** !

MSDE Graph



Timings: MSDE versus Non-MSDE



- **DBCC CONCURRENTYVIOLATION**

(RESET | DISPLAY | STARTLOG | STOPLOG)]

- Startlog => eventlog

- Display

Concurrency violations since 2003-12-12 15:36:18.60

1 2 3 4 5 6 7 8 9 10-100 >100

8 4 2 1 0 0 0 0 0 0

⇒ 8 x one more than 5 concurrent batches. 4 x two more (7)

WMI / Scripting



- Need to Install WMI Provider for SQL-Server

- Found on CD-ROM under \x86\other\wmi.

- Set SPSet = **GetObject**("winmgmts:\\.\\root\MicrosoftSQLServer").InstancesOf("MSSQL_Login")

- for each SP in SPSet

- WScript.Echo SP.Name & " " & SP.Caption & " " & SP.Type

benelea\Krautner 0

- Next

sa 2

- Set SPSet = **GetObject**("winmgmts:\\.\\root\MicrosoftSQLServer").InstancesOf("MSSQL_Table")

- for each SP in SPSet

- If Sp.SystemObject=False and SP.Databasename <>"msdb" then

- WScript.Echo SP.Name & " " & SP.Caption & " " & SP.Databasename

[dbo].[Status] BoKaUserMgmt

- end if

[dbo].[Wrkflow] SMSWAF

- Next

[dbo].[WrkMail] SMSWAF

[dbo].[Table1] TESTDB

- Set Table =

GetObject("winmgmts:\\.\\root\MicrosoftSQLServer:MSSQL_Table.SQLServerName='Benelea',DatabaseName='TEST',Name='dbo.Table1'")

- WScript Echo Table Name Table Rows Table DataSpaceUsed Table IndexSpaceUsed

- Usermode not kernelmode
- Cooperative not preemptive
 - Trick : WaitForSingleobject (infinite)
- One UMS per Processor
- Split the pool (255 workerthreads) amongst processors
-
- At connectiontime assigned to the least busy UMS !
 - Two workers end up on the same cpu !
 - Every thread checks on „yield“ the io-,timer-,waiter-queue
 - ⇒ no context switch to thread who initiated I/O necessary
 - ⇒ only for xp_ stuff (unknown behaviour)

User Mode Scheduler and Maximum Worker Threads



• DBCC SQLPERF(umsstats)

Statistic	Value	Value
-----	-----	-----
Scheduler ID	0.0	1.0
num users	13.0	13.0
num runnable	0.0	0.0
num workers	10.0	8.0
idle workers	7.0	4.0
work queued	0.0	0.0
cntxt switches	39478.0	28404.0
cntxt switches(idle)	29724.0	28569.0
Scheduler Switches	0.0	
Total Work	29417.0	

- * 77F94091 Module(ntdll+00014091) (NtWaitForSingleObject+0000000B)
- * 4107144D Module(UMS+0000144D) (UmsThreadScheduler::Switch+0000004C)
- * 410710B4 Module(UMS+000010B4) (UmsScheduler::IdleLoop+00000105)
- * 410715FD Module(UMS+000015FD) (UmsScheduler::Suspend+00000066)

- [Q244455](#), INF: Definition of Sysprocesses Waittype and Lastwaittype Fields for SQL 7.0

Lastwaittype	Waittype	Description
LCK_M_SCH_S	0x01	Schema stability
LCK_M_SCH_M	0x02	Schema modification
LCK_M_IS	0x03	Intent-Share
LCK_M_SIU	0x04	Shared intent to update
LCK_M_IS_S	0x05	Intent-Share-Share (Key-Range Lock)
LCK_M_IX	0x06	Intent-Exclusive
LCK_M_SIX	0x07	Share-Intent-Exclusive
LCK_M_S	0x08	Share
LCK_M_U	0x09	Update
LCK_M_II_NL	0x0A	Intent-Insert-NULL (Key-Range Lock)
LCK_M_II_X	0x0B	Intent-Insert-Exclusive (Key-Range Lock)
LCK_M_IU	0x0C	Intent-Update lock
LCK_M_IS_U	0x0D	Intent-Share Update (Key-Range Lock)
LCK_M_X	0x0E	Exclusive
LCK_M_BU	0x0F	Bulk Update

Resource Types

- 1 = NULL Resource
- 2 = Database.
- 3 = File.
- 4 = Index.
- 5 = Table.
- 6 = Page.
- 7 = Key.
- 8 = Extent.
- 9 = RID (Row ID).
- 10 = Application.

Status

- 1 = Granted.
- 2 = Converting.
- 3 = Waiting.

Obtain Info about Locks



- **Sp_lock**

spid	dbid	ObjId	IndId	Type	Resource	Mode	Status
51	1	85575343	0	TAB		IS	GRANT
54	7	0	0	DB		S	GRANT
55	5	1977058079	1	KEY	(02014f0bec4e)	S	WAIT

- **SELECT object_name(1977058079) → authors**

- **sp_who2**

SPID	Status	DiskIO	LastBatch	ProgramName	Login	HostName	BlkBy	DBName	Command	CPUTime
51	sleeping		04/07 23:02:33	SQL Query Analyzer	sa	BENELEA	.	pubs	AWAITING	771 75
...										
55	sleeping		04/07 23:03:13	SQL Query Analyzer	sa	BENELEA	51	pubs	SELECT	20 0

- **select * from syslockinfo**

-> spid, transactionid, mode, type, status, refcnt
 (Mode = exclusive, shared.. Type=transactaion, cursor, session)

- **select * from sysprocessinfo where waittime > 2000**

-> blocked, waittime, waittype, open tran, status, host, user, progname

- **Webcast Microsoft SQL Server Rapid Blocker Script Analysis**
 - [Q271509](#), “INF: How to Monitor SQL Server 2000 Blocking”
 - => provides **sp_blocker_pss80** script !
 - Script collects and combines
 - data from sysprocesses
 - data from syslockinfo
 - data from dbcc sqlperf(waitstats)
 - data from dbcc inputbuffer
- **Script returns only relevant information of the Blocked and blocking processes**
 - i.e. statement, transaction name, waitstats ...

T-SQL ...

```
CREATE TABLE #Errors (vchMessage varchar(255), ID int)
CREATE INDEX idx_msg ON #Errors(ID, vchMessage)
```

```
INSERT #Errors EXEC xp_readerrorlog
```

```
SELECT vchMessage FROM #Errors
WHERE vchMessage ...
... LIKE '%Log backed up%'
... LIKE '%Copyright (c)%'
```

```
DROP TABLE #Errors
```

Virtual vs Physical Names ?



• How to get physical name in cluster environment ?

– They don't do the job:

- select serverproperty('servername')
- select @@servername
- SELECT * FROM :: fn_virtualservernodes()
- EXEC xp_getnetname
- EXEC master..xp_cmdshell "set computername"
- EXEC master..xp_cmdshell "echo %Computername%,,"

– Some kind of solution

- EXEC master..xp_regread @rootkey='HKEY_LOCAL_MACHINE',
@key='SYSTEM\CurrentControlSet\Control\Computername\computername',
@value name='Computername'

- How to select/display a Random Record ?
 - select top 1 * from authors order by rand() .. No ..
 - select top 1 * from authors order by **newid()** .. Works ..
- DBCC ... WITH TABLERESULTS (SQL 2000 only)


```
create table #temp1(c1 varchar(50),c2 varchar(50),c3 varchar(50),c4 varchar(50))
insert #temp1 exec('DBCC dbinfo (pubs) with tableresults ')
select * from #temp1
```

Binary Documents !?



- How to insert a Binary Dokument ?
 - Use an **image** column and init it with 0xFFFFFFFF
 - Use ADO, OLEDB ... (see Books online)
 - Or textcopy.exe from BINN directory
 - Example


```
textcopy /S Matar /D pubs /T stores /C worddocs
          /F C:\test.doc /W "where stor_id=6380" /I
```

TEXTCOPY Version 1.0
 DB-Library version 8.00.194
 Type your login: sa
 Type your password: ****
 Data copied into SQL Server image column from file 'C:\test.doc'.

- BCP Common misconception: tables only ?
 - But:


```
bcpl "SELECT * FROM pubs..authors WHERE state = 'CA'" queryout
c:\CAauthors.txt -c -T -S
```
- Views
 - Server: Msg 1033, Level 15, State 1, Procedure vProducts, Line 4
The ORDER BY clause is invalid in views ...
 - workaround:


```
CREATE VIEW
vProducts as SELECT TOP 100 PERCENT *
FROM Products
ORDER BY unitprice
```
- SET QUOTED_IDENTIFIER OFF
 - INSERT INTO Mytable (Lastname, age) VALUES("O'Hara", 32)

Who's file is most busy



- ```
SELECT * FROM :: fn_virtualfilestats(dbid, fileid)
In master do -1
SELECT sysdatabases.name AS Database_Name,
sysdatabases.dbid AS Database_ID,
sysaltfiles.fileid AS File_ID
FROM sysaltfiles INNER JOIN sysdatabases
ON sysaltfiles.dbid = sysdatabases.dbid
ORDER BY sysdatabases.name, sysaltfiles.fileid
```

| Dblid | Fileid | TimeStamp | NumberReads | NumberWrites | BytesRead | BytesWritten |
|-------|--------|-----------|-------------|--------------|-----------|--------------|
| 7     | 2      | 75041640  | 25          | 160          | 2380288   | 4946944      |
|       |        |           |             |              |           | 0            |

Calculate IoStallMS / ( NumberReads+NumberWrites) >10-15 msec ?

- View Perfmon SQL Performance Counters

- Old Tools (6.5/7.0) like ISQLW
  - "Client unable to establish connection"
- On Serverside use *Server Network Utility*
  - TCP: retrieve **port#**
  - Netbios: retrieve **Pipename**
- On Clientside use *Client Network Utility*
  - Create NP (or TCPIP Alias)
  - Subsitute . with nodename

**\\nodename**\pipe\\$\\$\**FKRSQL\MSSQL\$INSTANCE1**\sql\query
- Install SQL2000 on W2003
  - PRB: Installation of a Named Instance of SQL Server 2000 Virtual Server on a Windows 2003-Based Cluster Fails (Sqlclstr.log contains .... **native error = 35** )

## Traceflags

Good to know



- Need Sysadmin Rights
  - dbcc traceon( xxx, ... )
  - Setting Traceflags impacts **all** connections which issued a traceon !
  - Dbcc tracestatus(xxx) or (-1) for all
  - dbcc traceoff (xxx,...)
  - Sqlservr -dmaster.mdf -Txxx -Tyyy
- BOL documents:
  - 1807: Attach Network Database (UNC)  
(Backup to mapped drive ? Use [\\node\share](#) !)
  - 2528: Disables parallel checking by DBCC CHECKDB, CHECKFILEGROUP, CHECKTABLE
  - 1204 deadlock info (errlog)
- 60+ documented in

- 8602 - turn off **all index hints** for the current connection.
- 8755 - turn off **all locking hints** for the current connection.
- 8722 - turn off **all other hints** (other than index and locking)
  
- turn off one or more hints for the **entire server**  
DBCC TRACEON(8602, 8755, 8722, **-1**)
  
- **2520** – extended help for DBCC
- 3604 - Sends trace output to the client (for 'silent' DBCC commands)
- 4022 - Bypasses automatically started procedures
- 8687 - Used to disable query parallelism.
- 8721 - Dumps info into the error log when AutoStats has been run.
  
- DEMO

# DBCC Loginfo / DBCC Log(pubs,lvl)



### Dbcc loginfo

| Fileid | FileSize | StartOffset | FSeqNo | Status | Parity | CreateLSN        |
|--------|----------|-------------|--------|--------|--------|------------------|
| 2      | 253952   | 8192        | 3      | 0      | 64     | 0                |
| 2      | 253952   | 262144      | 5      | 2      | 64     | 0                |
| 2      | 270336   | 516096      | 4      | 0      | 64     | 3000000045700005 |

### Dbcc log (pubs,1)

| Current LSN            | Operation       | Context       | Transaction ID | Tag           | Bits   | Log Record Length | Previous LSN |
|------------------------|-----------------|---------------|----------------|---------------|--------|-------------------|--------------|
| Flag                   | Bits            | Description   |                |               |        |                   |              |
| 00000005:00000060:0001 | LOP_BEGIN_CKPT  | LCX_NULL      |                | 0000:00000000 | 0x0000 | 96                |              |
| 00000005:0000005e:0001 | 0x0000          |               |                |               |        |                   |              |
| 00000005:00000061:0001 | LOP_END_CKPT    | LCX_NULL      |                | 0000:00000000 | 0x0000 | 136               |              |
| 00000005:00000060:0001 | 0x0000          |               |                |               |        |                   |              |
| 00000005:00000062:0001 | LOP_MODIFY_ROW  | LCX_OBJECT_ID |                | 0000:00000000 | 0x0000 | 68                |              |
| 00000000:00000000:0000 |                 |               |                |               |        |                   |              |
| 00000005:00000062:0002 | LOP_BEGIN_XACT  | LCX_NULL      |                | 0000:000002f1 | 0x0000 | 64                |              |
| 00000000:00000000:0000 | 0x0200 sp_jk    |               |                |               |        |                   |              |
| 00000005:00000062:0004 | LOP_INSERT_ROWS | LCX_CLUSTERED |                | 0000:000002f1 | 0x0000 | 116               |              |
| 00000005:00000062:0003 | 0x1200          |               |                |               |        |                   |              |

### dbcc log (pubs,3)

| Current LSN | Operation | Context     | Transaction ID | Tag | Bits | Log Record Length | Previous LSN |
|-------------|-----------|-------------|----------------|-----|------|-------------------|--------------|
| Flag        | Bits      | Object Name |                |     |      |                   |              |
|             |           |             |                |     |      |                   |              |

**BUFFERS (in MRU to LRU order):**

PAGE: (1:88)

-----

.....

Page @0x431F0000

-----

```
m_pageId = (1:88) m_headerVersion = 1 m_type = 1
m_typeFlagBits = 0x0 m_level = 0 m_flagBits = 0x0
m_objId = 1977058079 m_indexId = 0 m_prevPage = (0:0)
m_nextPage = (0:0) pminlen = 24 m_slotCnt = 23
m_freeCnt = 6010 m_freeData = 5397 m_reservedCnt = 0
m_ghostRecCnt = 0 m_tornBits = 25146
```

...  
**DBCC BYTES (1126105088, 500 )** , 0x431F0000 in dezimal

-----

```
431F0000: 00000101 00000000 00000000 00180000
431F0010: 00000000 00170000 75d7831f 1515177auz...
....
431F0060: 00180030 20353134 2d383536 32333939 0...415 658-9932
431F0070: 34394143 01353037 00000009 00330005 CA94705.....3.
431F0080: 00400039 00580050 2d393034 372d3635 9.@.P.X.409-56-7
431F0090: 42383030 656e6e65 72624174 6d616861 008BennetAbraham
431F00A0: 33323236 74614220 6e616d65 2e745320 6223 Bateman St.
431F00B0: 6b726542 79656c65 00180030 20353134 Berkeley0...415
431F00C0: 2d363839 30323037 34394143 01383136 986-7020CA94618.
431F00D0: 00000009 00330005 00400038 005800513.8.@.Q.X.
```

# DBCC Page ( pubs, filenum, pagenum )



PAGE: (1:2)

-----

BUFFER:

-----

BUF @0x00D73500

-----

```
bpage = 0x42D18000 bhash = 0x00000000 bpageNo = (1:2)
bdbid = 5 references = 1 bstat = 0x9
bspin = 0 bnext = 0x00000000
```

PAGE HEADER:

-----

Page @0x42D18000

-----

```
m_pageId = (1:2) m_headerVersion = 1 m_type = 8
m_typeFlagBits = 0x0 m_level = 0 m_flagBits = 0x0
m_objId = 99 m_indexId = 0 m_prevPage = (0:0)
m_nextPage = (0:0) pminlen = 90 m_slotCnt = 2
m_freeCnt = 6 m_freeData = 8182 m_reservedCnt = 0
m_lsn = (4:320:10) m_xactReserved = 0 m_xdesId = (0:0)
m_ghostRecCnt = 0 m_tornBits = 1073741822
```

Allocation Status

-----

## DBINFO @0x01A4F1B0

```

dbi_dbid = 8 dbi_status = 16 dbi_nextid = 1993058136
dbi_dbname = decus dbi_maxDbTimestamp = 100
dbi_createVersion = 539 dbi_ESVersion = 0 dbi_version = 539
dbi_nextseqnum = 1900-01-01 00:00:00.000
dbi_crdate = 2004-04-09 11:27:10.957 dbi_filegeneration = 0
```

### dbi\_checkpointLSN

```

m_fSeqNo = 9 m_blockOffset = 41 m_slotId = 1
```

```
.....
entry 0
```

```

m_fSeqNo = 9 m_blockOffset = 41 m_slotId = 1
m_guid = cd8183ed-3b82-43c7-8ad2-891c2b413004
```

```
entry 1
```

```

m_fSeqNo = 0 m_blockOffset = 0 m_slotId = 0
m_guid = 00000000-0000-0000-0000-000000000000
dbi_differentialBaseGuid = 36eb26d9-c423-4ac0-8d34-489e13e74641
dbi_collation = 872468488 dbi_category = 0
dbi_maxLogSpaceUsed = 2057728
```

## DBTABLE @0x42CB2030

```

dbt_dbid = 5 dbt_dbname = pubs dbt_spid =
dbt_cmptlevel = 80 dbt_crtime = 2000-08-06 01:40:58
dbt_dbdes = 0x66793EC0 dbt_protstamp = 2657621 d
dbt_dbname = pubs dbt_stat = 0x18 dbt_stat2
dbt_relstat = 0x41000000 dbt_maxDbTimestamp = 200 (
dbt_dbVersion = 539 dbt_repltrans = 23327200 dbt_r
dbt_replrate = 0.000000 dbt_repllatency = 0.000000
dbt_logmgr = 0x42CB3340 dbt_BackupManager = 0x42(
distbackupsln = (0:0:0) distlastlsn = (0:0:0) replbeginls
replnextlsn = (0:0:0) dbt_category = 0 dbt_dbccLo
dbt_dbccLoggingFailure = 0 dbccLogging,
nonLoggedAllocActive = 0 WorkfileExtents = 0
FCB @0x42CB3530
```

```

fcb_hdl = 0x30c fcb_dbid = 5 fcb_fileid = 1
fcb_name = C:\SQLServer\MSSQL\data\pubs.mdf fc
fcb_nwrt = 0 fcb_nread = 0 m_status = 51
m_size = 160 m_maxSize = 4294967295 m_mi
m_allocSize = 160 m_growth = 10 m_perf = (
m_FormattedSectorSize = 512 m_ActualS
```

### FCB @0x42CC86A8

```

fcb_hdl = 0x33c fcb_dbid = 5 fcb_fileid = 2
fcb_name = C:\SQLServer\MSSQL\data\pubs_log.ldf fc
fcb_nwrt = 0 fcb_nread = 0 m_status = 51
m_size = 96 m_maxSize = 4294967295 m_mir
m_allocSize = 96 m_growth = 10 m_perf = 0
```

# DBCC memorystatus (dbcc memusage)

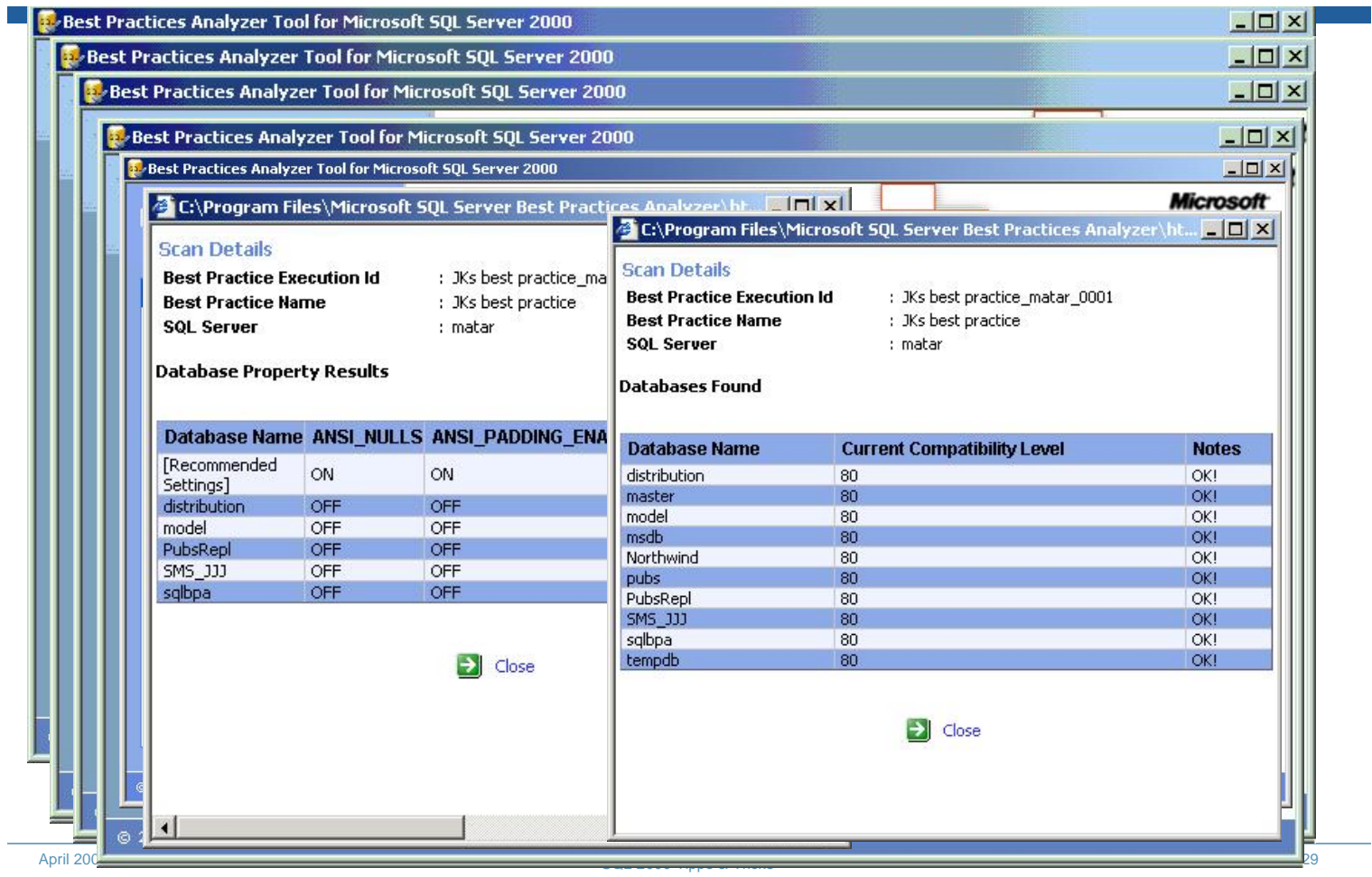


## • DBCC Memorystatus

Displays several pages worth of info about

- Buffer Distribution  
Stolen, Free, Procedure, Inram, Dirty, Kept, I/O, Latched
- Buffer counts  
committed, target, hashed, reservers ...
- Procedure Cache  
total, inuse ..
- Dynamic Memory Manager  
OS reserved, committed, is use, queryplans ..
- Global Memory Objects  
Resource, Locks, SQL Cache
- Query Memory Objects  
Grants, waiting, available

## • DBCC Memusage



## Blackbox



- Automatic Tracing of Executions into file (5MB)
  - C:\Program Files\Microsoft SQL Server\MSSQL\Data\blackbox.trc
- Analyzed with SQL-Profiler
- Usefull on Crashes or Hangs
- Easy to setup
  - USE master
  - CREATE PROC startblackbox
  - AS
  - declare @TraceID int
  - exec sp\_trace\_create @TraceID output, 8 (8=TRACE\_PRODUCE\_BLACKBOX)
  - exec sp\_trace\_setstatus @traceID, 1 (1=start, 0=stop)
  - RETURN
- To start the black box recorder at startup of SQL Server

- SQL2000 SP3a fails to restart sqlserver if . (dot) is in the path
  - Sqlsp.log:  
**Process Exit Code: (1460) This operation returned because the timeout period expired.**
  - Filemon shows ssnetlib can't be found  
**(instead of ssnetlib.dll !)**
- Microsoft has changed the loading of DLLs in the storageengine.
- Unfortunately there is a Windows bug  
 "Q324673 The LoadLibrary() Function Cannot Find the DLL Name,, which breaks the new SQL behaviour !
- Installing the preSP4-Windows2000 Hotfix Q324673 solves the problem.
- Reapply SQLServer SP3 to get into a consistent state.

## Collations / Codepages



- Defaults:
  - SQL 7.0 : SQL\_Latin1\_General\_CP1\_CI\_AS
  - SQL2000: Latin1\_General\_CI\_AS
- select SERVERPROPERTY ('Collation')
- Update: keeps existing Server sort order and code page
- Attach: keeps existing DB sort order and code page
- On Reinstall:
  - Tempdb ?



- **Autoshrink**
  - Only in development please !
  - Kicks in on more than 25% unused space
  - Shrinking cost lot of Cpu & I/O.
- **Autoclose**
  - closes db if last user ends connections
  - Don't do it.
- **Auto create statistics**
  - Builds missing statistics needed for query optimization
- **Auto update statistics**
  - Rebuild out-of-date statistics needed for query optimization



**i n v e n t**

- `sp_spaceused` reports negative rowcount numbers !
  - Wrong values in `sysindexes` table (don't modify manually)
  - `sp_spacesused 'tablename', True` .... doesn't work !
  - Use `Dbcc updateusage ('dbname', ,tablename, )` with `count_rows`  
... "changed from (555) to (2222) rows.
- Using *ALTER TABLE DROP COLUMN*
  - No automatic reclaim of space (`varchar,text..`)
  - Use **DBCC CLEANTABLE** (`database_name, table_name`)
- `select avg(datalength(au_lname)) from authors` -> calc rows/page

## No Privileged Access ?



- No SYSADMIN Access
  - Deleted BUILTIN\Administrators
- Modify **LoginMode** under  
HKLM\SOFTWARE\Microsoft\MSSQLServer\MSSQLServer
  - 1 = Windows authentication only
  - **2** = mixed mode

- Impact on IDENTITY Values
  - delete from Mytable
  - Truncate Mytable
  - DBCC CHECKIDENT (Mytable, RESEED, n)
    - usefull after delete to resync ID column
    - usefull to set starting value after delete/truncate
- List Servers on the net ?
  - isql -L

## SQL 2000 on clusters and W2003



- Cluster
  - The value named NoRemapPipes in the server's Registry key LanmanServer\Parameters was invalid. The value was ignored, and processing continued.
  - SuperSocket info: (SpnRegister) : Error 1355.  
To be ignored. Tries to register into AD
- Windows 2003
  - PRB: Installation of a Named Instance of SQL Server 2000 Virtual Server on a Windows 2003-Based Cluster Fails (Sqlclstr.log contains .... native error = 35 )

- 
- `exec sp_indexes_rowset 'titles'`
  - `exec sp_indexes_rowset;2` 'alle in einer DB'

- **INFORMATION\_SCHEMA.VIEWS**

- `Dbcc sqlperf (logspace)`