

Experiences with Adabas Migration
From 7.4.4 to 8.1.3
Sacramento, CA

21 June 2010 - Dieter W. Storr







Harbor of Monterey, California – Sea Otters



Highway 1, California – Near Big Sur



Elephant Seals - up to 6.9 m, 22.5 ft



Mainframe and PC Solutions

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- Reasons for Migration
- Lessons Learned
- Problems
- Solutions



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Environment

Hardware:

2094-408 (z9)

2094-505 (z9s)

1751 MIPS, 303 MSU <=

2094-506 (z9)

2094-603 (z10)

z/OS V1R9 Service Expiration is 09/30/2010

z/OS V1R11 Planned Service Expiration is 9/2012





Environment

26 Adabas Databases on the mainframe
DEVL, TEST, UAT, TRAINING, etc

- 200+ files loaded in each database
- Many files contain 50,000,000 – 160,000,000 ISNs
- Some of them streamlined
- Two Reptor databases (TEST and PROD)

	CYL	Blocks	Gbytes
ASSO	119,676	32,312,502	76.56
DATA	388,947	58,342,040	275.15



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Cost and Ownership Info (COW) - Space

DB Id	CylTotal	CylUsed	CylUnused	% Unused
00032	488,677	385,555	103,122	20.62
00033	488,677	369,565	119,112	23.82
00034	418,866	375,308	43,558	8.71
00035	339,082	273,108	65,974	13.19
00037	408,893	325,227	83,666	16.73
00038	96,309	13,598	82,711	82.71
00039	508,623	418,515	90,108	9.01
00045	199,460	164,957	34,503	17.25
00047	508,623	382,476	126,147	12.61

<snip>



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Cost and Ownership Info (COW) – Growth Statistic for Each File

Date	UI Used	NI Used	DS Used	TOPISN
2010/01/04	76,859	6,212,322	10,964,486	159,557,880
2010/01/11	77,168	6,222,334	10,970,774	159,667,866
2010/01/18	77,580	6,237,099	10,980,213	159,833,129
2010/01/25	78,111	6,255,800	10,990,946	160,006,803
2010/02/01	79,997	6,317,149	11,024,588	160,579,128
2010/02/08	80,205	6,323,357	11,028,089	160,638,209
2010/02/15	80,743	6,337,110	11,036,340	160,770,776
2010/02/22	81,841	6,362,691	11,047,896	160,963,775
2010/03/01	83,036	6,394,945	11,060,396	161,173,555
2010/03/08	84,342	6,422,260	11,071,800	161,364,911
2010/03/15	85,154	6,437,871	11,077,981	161,468,331
2010/03/22	87,761	6,490,049	11,099,454	161,822,842
2010/03/29	88,618	6,508,267	11,104,674	161,905,552
2010/04/05	90,889	6,549,158	11,119,482	162,148,671
Gain:	+ 18.25%	+ 5.38%	+ 1.41%	+ 1.55%

<snip>



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26 Databases on the Mainframe

00032 DEVT/SIT	00134 START Production
00033 MOST/SIT	00142 Test/UAT
00034 Allowance Roll Testing	00150 Reserved for AU case Unload
00035 myCalSTRS MOST Load Test	00151 Web Services (Jack's Demo)
00037 DBA Reserved - empty	00153 Reserved for SRPD
00038 START Maint (LetterGen source)	00154 MOST Perf. Test, Before Image
00039 DBA Replicator testing	00155 ERP/SEW
00045 DCU testing	00157 ERP88 fix - Final cases
00047 SRPD - Annual Update (AU)	00189 DBA test
00057 Development Team	00302 Replicator Engine REPTOR
00112 ERP / PMO	00312 Replicator Engine REPTOR
00114 MOST UAT Testing	
00130 MAS	
00131 Training	
00132 EIT Applic.Incident Managemnt	



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Costs of the Databases

DB Id	Month \$	Refr \$
00032	7,194	1,416
00033	6,826	467
00034	6,973	1,394
00035	5,032	815
00037	6,243	1,215
00038	246	0
00039	7,643	828
00045	3,028	0
00047	7,046	1,565
00112	7,344	1,483
00134	7,357	0
00142	7,233	1,447

- **Monthly costs for space**
- **Refresh costs based on a restore job with backup data (ADASAV) from production**
FMOVE FILE=xxx



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Number of Update Commands Monthly Allowance Roll

DATE	HR	QTR	CMD COUNT	CMD COUNT	PCT TOTAL CMDS	PCT TOT IO	SUM TOT IO	SUM TOT IO
100315	19	78	874,107	=====	11.4	11.2	=====	755,656
100315	19	79	1,488,111	=====	19.4	18.9	=====	1,278,291
100315	20	80	1,517,170	=====	19.8	19.6	=====	1,324,734
100315	20	81	1,581,223	=====	20.6	20.5	=====	1,386,234
100315	20	82	1,467,842	=====	19.1	19.5	=====	1,318,488
100315	20	83	740,750	=====	9.6	10.3	=====	697,749
100315	21	84	11,484		0.1	0.1		9,958

➤ **7.6 million update commands in 90 min**

➤ **85.214 commands per min**

➤ **1,421 cmds per sec**



➤ **6 million update commands per hour**

Test: Larry Frazin



Reasons to Migrate

- ADABAS V7.4.4 ran out of support and retired in Q1/2009, according to SL24 (now Empower).
- Other SAG software needed ADA813

Product Roadmap			2008				2009				2010			
Product	Version	OS Vers - HW	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
 Adabas	7.4.4	z/OS 1.9 - IBM	■	■	■	■	MS	■	■	■	■	■	■	■
 Adabas	7.4.4	z/OS 1.8 - IBM	■	■	■	■	MS	■	■	■	■	■	■	■



Easy to Install

- From all products, Adabas was and is the easiest to install – followed by:
 - Predict
 - Natural
 - Construct



Dependencies (1)

- Adabas V8 needs **V8 SVC**
- **Adabas Caching Facility (ACF)** V8.1 needs Adabas V8
- **Adabas Delta Save (ADE)** V8.1 needs Adabas V8; Delta Save V7.4 doesn't work with Adabas 8



Dependencies (2)

- **Adabas Fastpath** (AFP) V8.1 needs Adabas V8 if new functions from Adabas 8 are used for example spanned records, increased limits, or large object fields. Otherwise, AFP 7.4 runs with Adabas V8
Recommendation: upgrade to ADABAS Fastpath V8.1.2 to improve the aging algorithm. V7.4 turns automatically off Direct Access, which will cause more CPU time. New parameters in V8.1.2 will control Direct Access, Optimization, etc.



Dependencies (3)

- **Adabas Online System (AOS) V8.1** can access Adabas V8 and V7 databases. But you cannot access Adabas 8 databases using Adabas Online System 7.4
- **Entire Net-Work (WCP) Version 6.1 and above** fully support Adabas 8 databases and expanded features, as well as ACBX interface direct calls. Version 5.9 releases support Adabas 8 databases that do not make use of the expanded features (for example, spanned records, increased limits, or large object fields) available in Adabas 8. In addition, only ACB interface direct calls are supported in version 5.9 releases; ACBX interface direct calls are not supported.



Dependencies (4)

- **Event Replicator for Adabas (ARK)** Version 3.1 and above supports Adabas V81 databases
- **Predict** Version 4.5 fully supports Adabas 8 databases and expanded features. Version 4.4 does not support Adabas 8 databases.
- **EntireX Communicator** Version 7.2.1 fully supports the Adabas 8 SVC and the use of an Adabas 8 database as a persistent store. Should be tested if TCP/IP and SVC connection is used.



New Functions

- Limitless contiguous database block sizes
- New record-spanning capabilities
- Options for defining large object fields
- Managing multimedia content
- Extended Adabas control blocks
- ASSO and DATA up to 99 physical extents

Users of these new functions:

- City of Vienna, Peter Leibl
- EDS/Verizon, Jim Poole



New User Exit 2 – (since ADA74)

- UEX2 – dual PLOG/CLOG copy
- UEX12 – copy multiple PLOG/CLOG datasets (up to 8)

I don't recommend to include JCL into the assembler code



No More Source Code for ADALNK(R)

Macro LGBLSET change

- Default DBID
- Site-specific DBID
- Default Adabas SVC number
- Site-specific Adabas SVC number
- Default LUINFO value
- Site-specific LUINFO value
- Length of RVINFO
- No RVINFO
- UES-enabled
- UES not enabled



Problems with ADA813 (SL24 Solutions)

- LUINFO cannot be set in V813 because ADALNK source is no longer delivered
- Set it in the B2CONFIG macro and assemble SSFB2C – Apply zap AB813024
- ADALNK LUInfo rc 218 from Natural:
Natural running with ADALNK 48 calls(X48=Y) with ADALNK V8 and a target db V7 gets rc 218/sc 74. * Apply zaps AB813030 and AB813024
- Module ADAL2P is missing in ADA813 loadlib
The ADALNK module consists of ADALNK, ADAL2P and LNKUES.
ADAL2P is not necessary anymore as an independent module



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Problems with ADA813 – Wrong STEPLIB

ADARES BACKOUT

V7 Steplib against V8 DB

ADARES PLOGNUM=14

ADARES TOPLOG=14,TOBLK=30,TOCP=SYNC

ADARES EXCLUDE=123,188,247,250,252,201,203,204,205

ADARES MTR=NO

* CPTYPE=28 - PLCOPY

* CPNAME=SYNP, CPBLK=27038, Session=14, Jobname=SYPLOGS4

* CPNAME=SYNP, CPBLK=27038, Session=14, Jobname=SYPLOGS4

* CPTYPE=28 - PLCOPY

* CPNAME=SYNV, CPBLK=27037, Session=14, Jobname=SYPLOGS4

BACKOUT Input Volume = 832664, PLOGNUM = 14

FROMBLK = 27759, FROMTIME = 2010-05-28 11:37:19

TOBLK = 26999, TOTIME = 2010-05-27 18:54:38

ADARES: File 33020 caused nucleus response 9

Time limit exceeded (TT,TNAA,TNAE,TNAX)

File excluded from REGENERATE/BACKOUT.

* Remove the cause of the error and repeat *

* the ADARES run for this file *



Differences

ADAREP

- System Files: V74 lists the file number, V81 breaks them out into file type (i.e. Checkpoint, Security, etc.)
- Padding Factor is dropped and Extents spacing in changed.
- Additional file options are added and spacing of the flags has changed.
- Additions information is included when reporting on individual files.



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Separate Zaps

```
//NATURAL EXEC NATBATCH
//CMSYNIN DD DISP=SHR, BUFNO=30, DSN=&SYSUID..DBA.CNTL(NSC)
// DD *
LOGON DBATOOLS
ZAPEDIT
FIN
//CMWKF01 DD DISP=SHR, BUFNO=30, DSN=ADABAS.ADA813.Z000
//CMWKF02 DD DISP=(, PASS), BUFNO=30, DSN=&&FIXES, BLKSIZE=0,
// AVGREC=U, SPACE=(80, (10000, 8000), RLSE), RECFM=FB
//LOAD EXEC IEBUPDTE, PARMOPT=NEW
//SYSIN DD DISP=(OLD, PASS), BUFNO=30, DSN=&&FIXES
//SYSUT2 DD DISP=(, CATLG), DSN=ADABAS.ADA813.ZAPS.TEMP,
// AVGREC=U, SPACE=(80, (10000, 8000, 12), RLSE), RECFM=FB,
// BUFNO=30, BLKSIZE=0, LRECL=80
```



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Upgrade done!

The End

