

What to do to make your System I Perform better

NEMUG – Jan 16, 2008

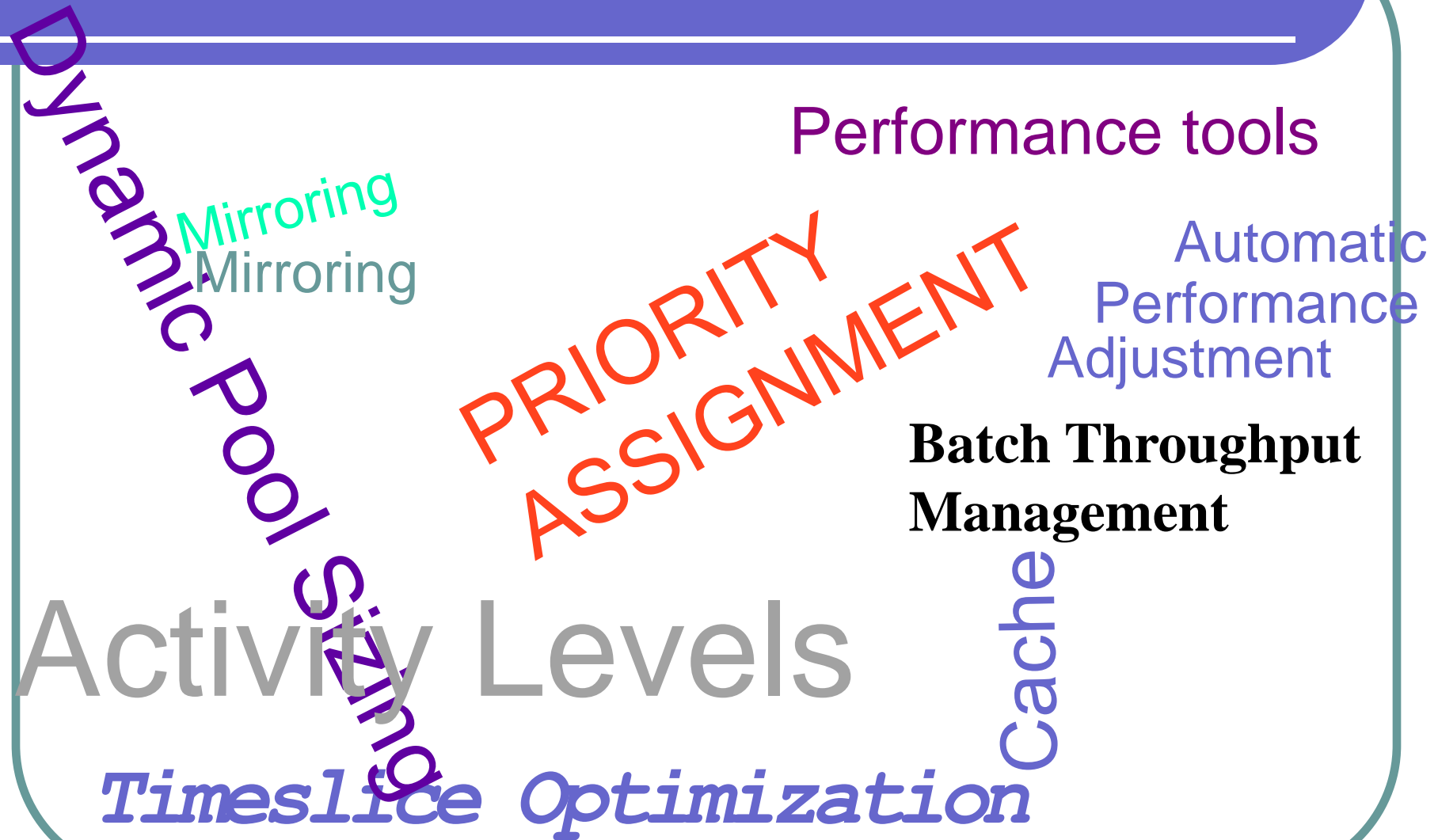
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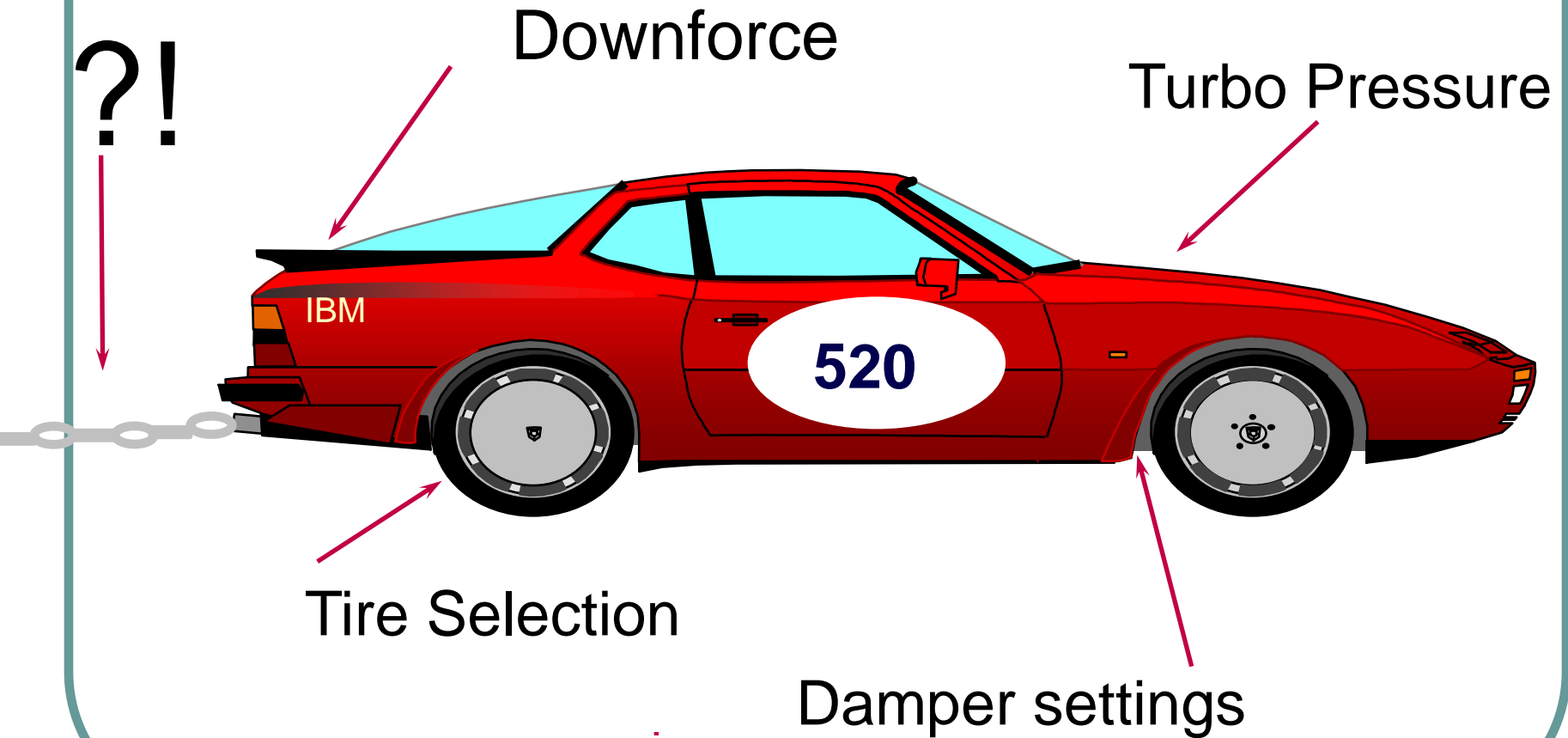
Agenda

- Performance Terms
- Identify the problems
- What needs to be done and why
- Why we currently are not doing this
- What to do tomorrow

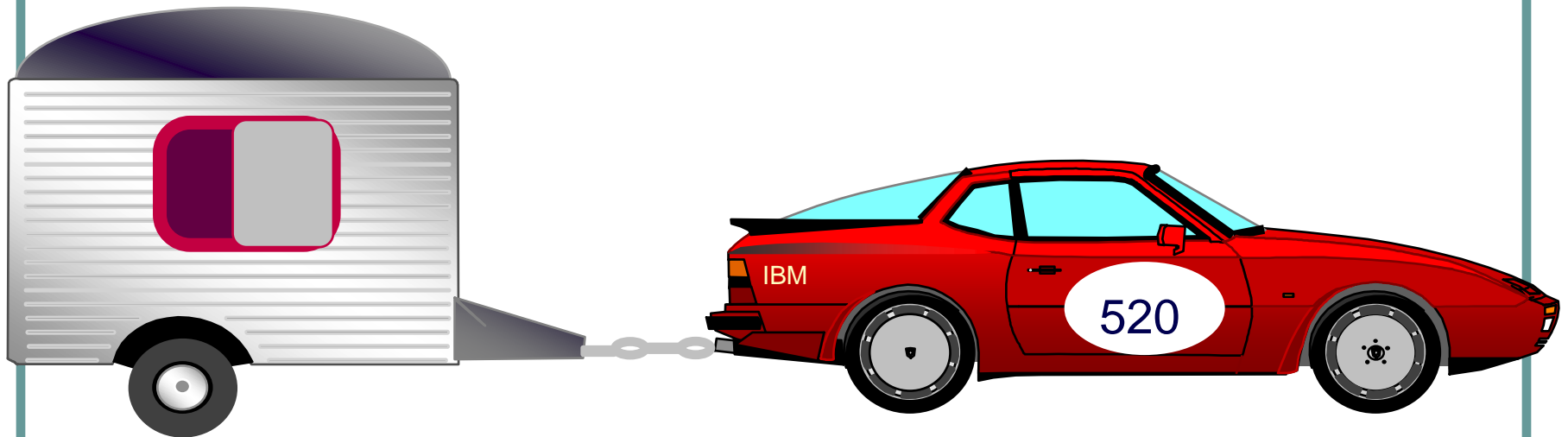
Is this Where to Start Performance Tuning?



IDENTIFYING THE PROBLEM



IDENTIFYING THE PROBLEM



What Performance can you expect?

Why we should be cleaning

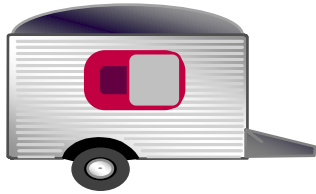
Hidden costs.

“Having a lot of storage is like having children. It can cost you almost nothing to have a child, but the upkeep costs a lot. In fact, Aberdeen’s research and other people’s research show that there can be an order of magnitude difference between the cost to acquire the storage and the cost to maintain it.”

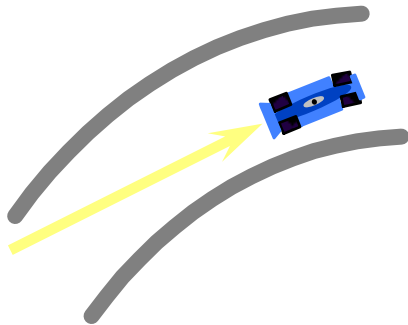
Dan Tanner

Analyst with Aberdeen Group

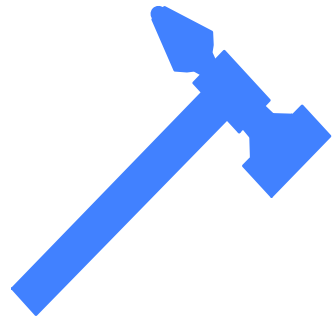
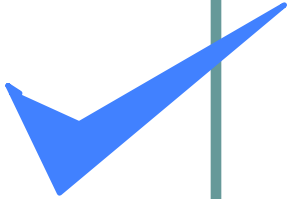
What we will Discuss



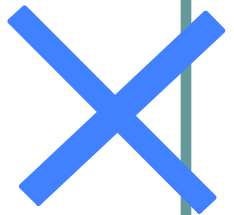
Removing Excess Baggage



Optimization



Tuning



All about I/O

- Techniques to improve what you have
- Faster Disks
- New Disk controllers – “*Cache is King*”

New Disk Controllers



	New controller (Feb 2007)	#2780/5580 (annc 2004)	#2757/5581 (annc 2003)
Write cache	2x 1500MB	757MB	757MB
Read cache	1.6x 1600MB	1000MB	0
RAID-6 in addition to RAID-5 and mirroring	New Y	No	No
Hot-plug battery	Y	Y	No
Minimum i5/OS	V5R3	V5R2	V5R2
Smart IOA (5xx with V5R4)	YES	No	No
Auxiliary write cache IOA for RAID-5/6 to reduce single point of failure	Required	Strongly recommended	Strongly recommended

And at same price as #2780/5580 !

Logical Files

- Size
- Sharing
- Performance
- Maintenance Level
- Onetime Fixes
- 3rd Party Software

Sharing Access paths

Session B - [27 x 132]

File Edit View Communication Actions Window Help

Display Spooled File

File : QPDSPFD
Control :
Find :
*...+...1...+...2...+...3...+...4...+...5...+...6...+...7...+...8...+...9...+...0...+...1...+...2...+...3

Access path valid	Yes
Implicit access path sharing	Yes
Access path journaled	No
Number of unique partial key values	
Key field 1	17486
File owning access path	LXLIB/LMABRELA
Member	LMABRELA
Shared access path attributes	
Maintenance	*IMMED
Access path recovery	*NO
Force keyed access path	*NO
Keys must be unique	No
Last change date/time	01/26/05 04:09:47
Last save date/time	03/01/07 10:45:09
Last restore date/time	01/31/02 14:17:33
Last used date	03/02/07
Days used count	2
Reset date	
Number of data members	1

More...

F3=Exit F12=Cancel F19=Left F20=Right F24=More keys

MA b 03/022

Printed 1 screen(s).

Win2PDF on PDFFILE:

Sharing Example

- Sales Physical File
- Logical File A
 - Keyed by Country
- Logical File B
 - Key by Country, State

Logical Files

- Size
- Sharing
- Performance
- Maintenance Level
- Onetime Fixes
- 3rd Party Software

Physical Files

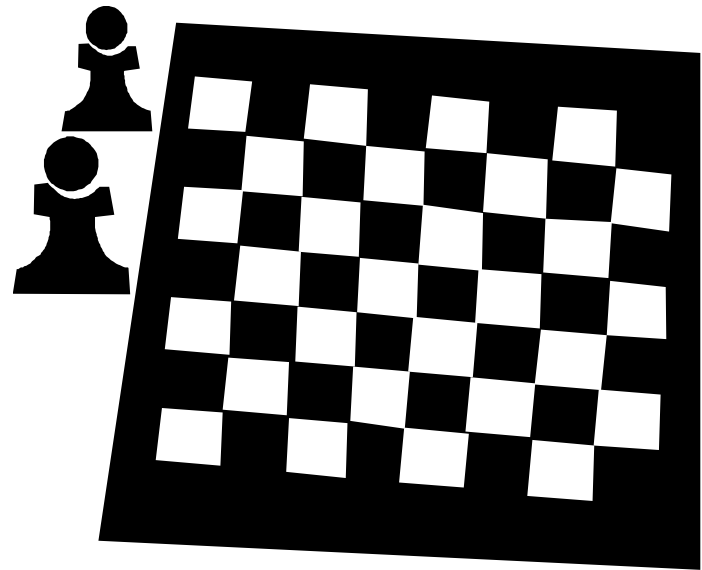
- Size
- Reorganize (normal and while active*)
- Blocking
- Resequence
- Purge & Archive
- 3rd Party Software

RGZPFM

Page of Records contains

Deleted records

Active records



RGZPFM

Session B - [24 x 80]

File Edit View Communication Actions Window Help



Work with Member Locks

File : BIGFILE
Library . . . : ITECHDB

System: OSS103
Type : PHY
ASP device . . : *SYSBAS

Type options, press Enter.

4=End job 5=Work with job 8=Work with job locks

Opt	Member	Job	User	Lock Type	Lock	Status	Share
█	BIGFILE	PETEMA1	PETEM	MBR	*SHRRD	HELD	
—				MBR	*SHRRD	HELD	
—				DATA	*SHRUPD	HELD	
—				DATA	*SHRUPD	HELD	

Bottom

F3=Exit F5=Refresh F11=Display thread data F12=Cancel

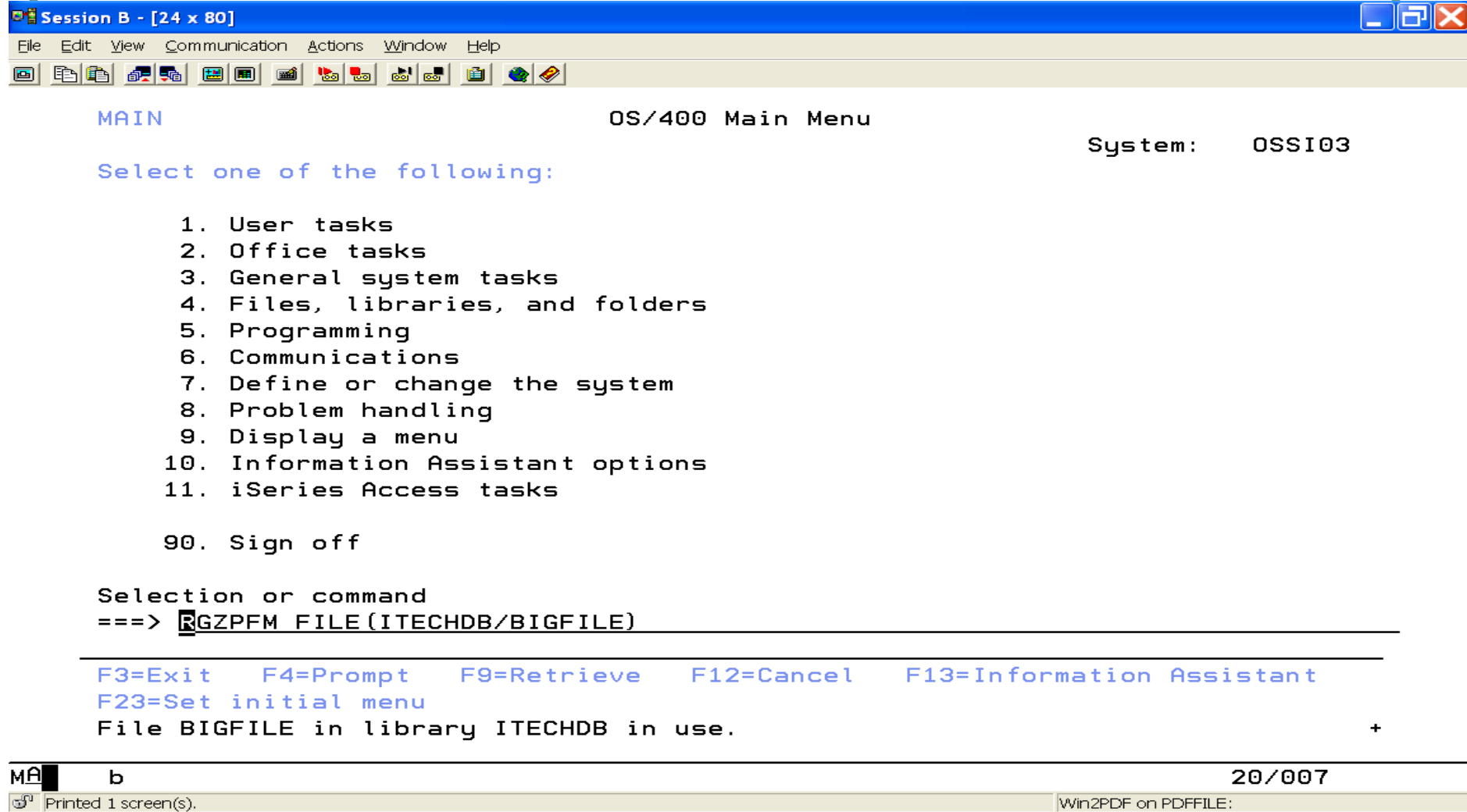
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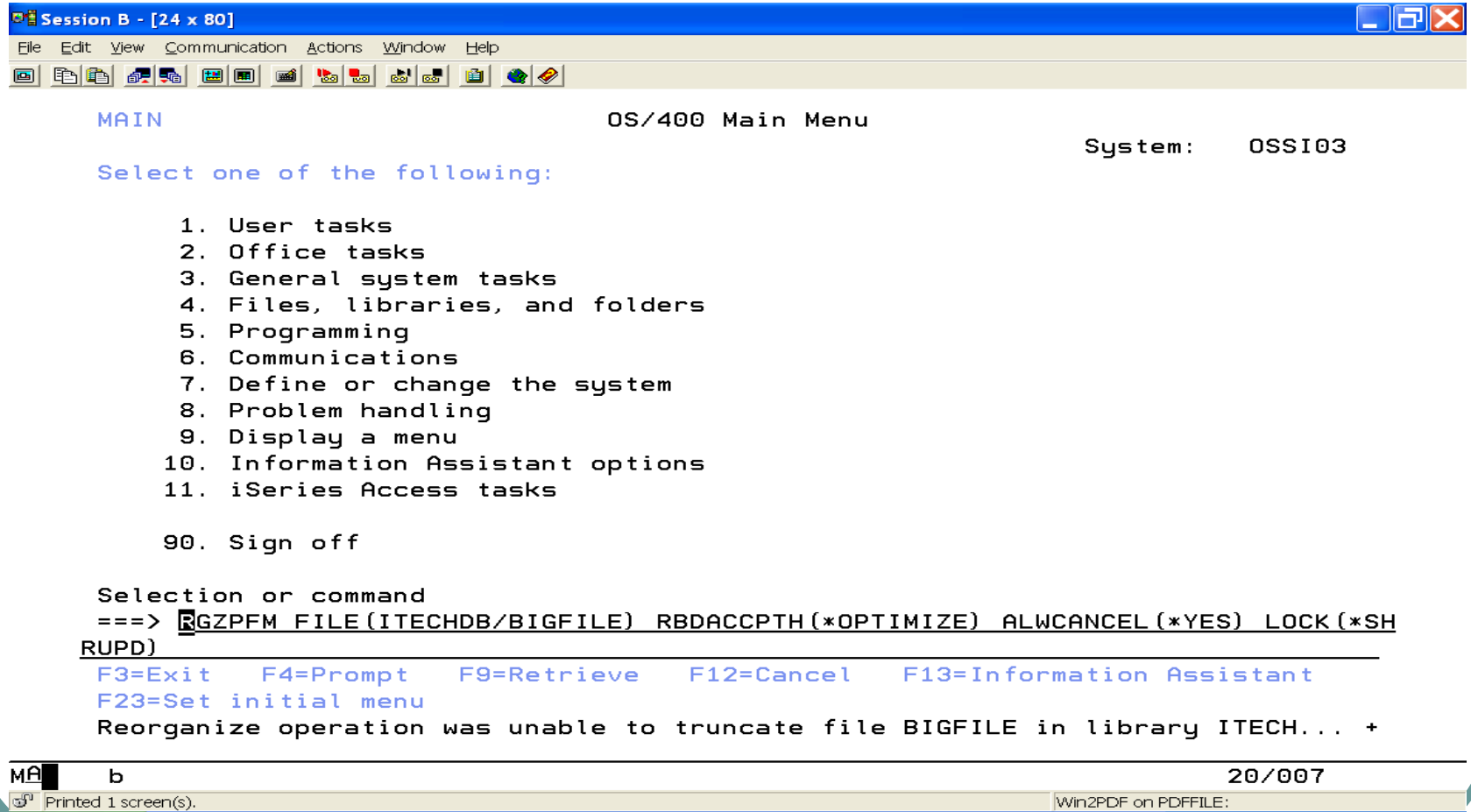
Printed 1 screen(s).

Win2PDF on PDFFILE:

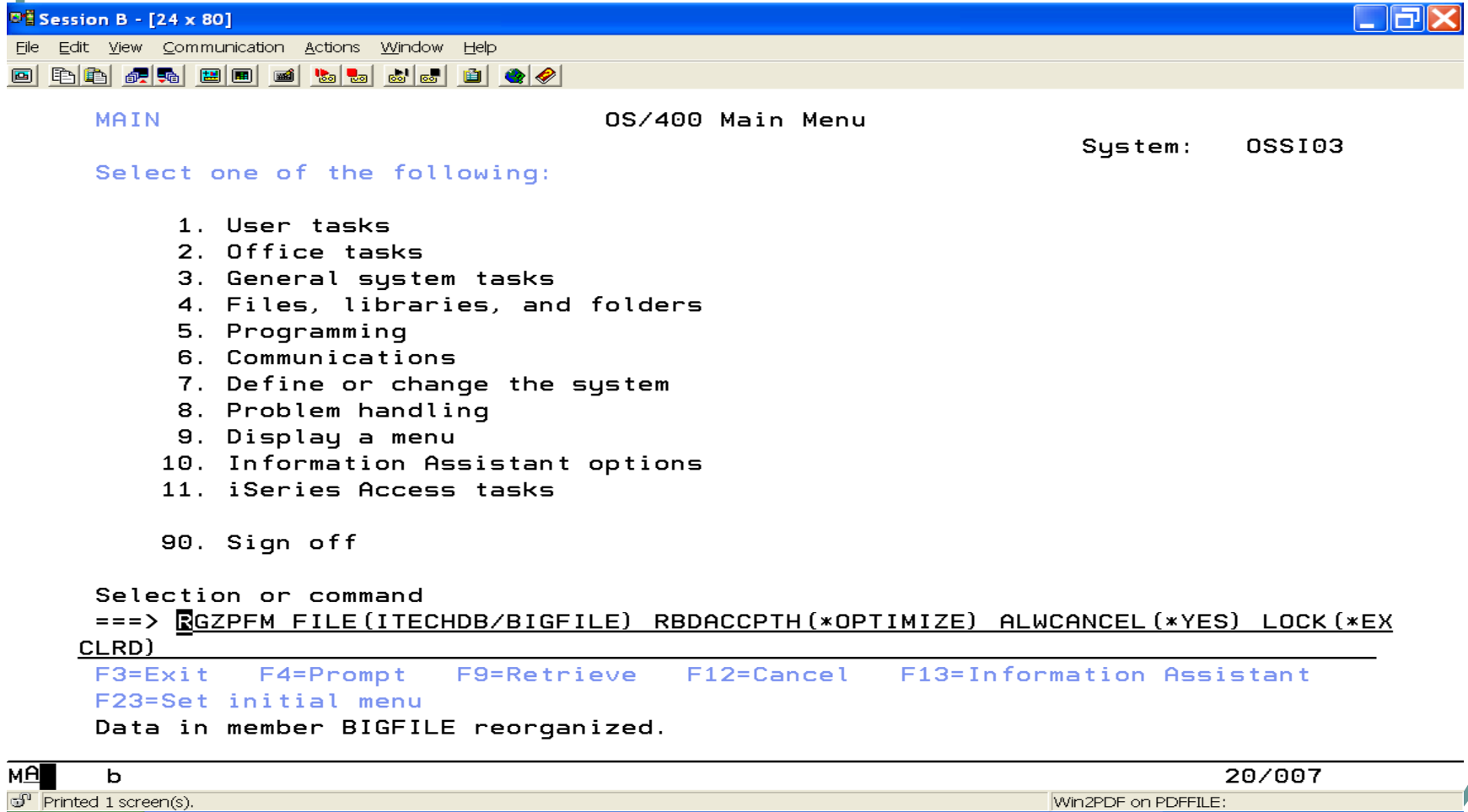
The old way



Requires file to be Journalled



Locked, others can read



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Session B - [24 x 80]
File Edit View Communication Actions Window Help

MAIN                                     OS/400 Main Menu                                     System:  OSS103

Select one of the following:

1. User tasks
2. Office tasks
3. General system tasks
4. Files, libraries, and folders
5. Programming
6. Communications
7. Define or change the system
8. Problem handling
9. Display a menu
10. Information Assistant options
11. iSeries Access tasks

90. Sign off

Selection or command
==> RGZPFM FILE(ITECHDB/BIGFILE) RBDACCPH(*OPTIMIZE) ALWCANCEL(*YES) LOCK(*EX
CLRD)
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F13=Information Assistant
F23=Set initial menu
Data in member BIGFILE reorganized.

MA b                                     20/007
Printed 1 screen(s). Win2PDF on PDFFILE:
```


Physical Files

- Size
- Reorganize
- Blocking
- Resequence
- Purge & Archive
- 3rd Party Software

Programs

- Symbol Table
- V5R1 Observability
- Types of Compression
- **Optimization**
- Usage

Removing Excess baggage *Objects*

- Device Files
- Menus
- Panel Groups
- Source Files
- Spool files

Removing Excess baggage

Other

- Temporary & Spool Storage – RCLTMPSTG & RCLSPLSTG
- IFS
- Reclaim Storage - RCLSTG *ALL | *DBXREF | *DIR
- Resizing of Objects
- History Logs, Spool Files, Journal Rcvrs

General Performance

- Queries
- Indexes
- Backups
- Balanced Disks – STRDSKRGZ & STRASPBAL

FEAR UNCERTAINTY & DOUBT (FUD)

It can't be true!

You can't do it safely?

What does IBM think?

What will my BP think?

Recovery implications?

What are the alternatives?

Ridiculous alternatives to improving performance

- Buy a bigger CPU \$\$\$\$
- Buy More DASD (each month) \$\$
- Buy additional Memory \$\$\$
- Bring in a Performance consultant? \$
- Rewrite all your programs \$\$\$\$
- Stop letting end-users run Queries \$
- Have the programmers work 2nd shift

WHERE TO START

Programs

Optimization – CHGPGM
Symbol Tables - CPROBJ

Compression *ALL | *OBJ

Physical Files

Reorganize - RGZPFM

Resequence - keyfile(name)

Purge, Purge, Purge

Logical Files

Access Path Sharing

Access Path Maintenance -
CHGLF

WHERE TO START

Objects

Compress - CPROBJ

Delete

Clear

ARCHIVE!!!

Object
Types

Logs

Journals

Queues

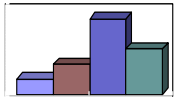
Oversized Objects

Spool Members

Reclaim Storage

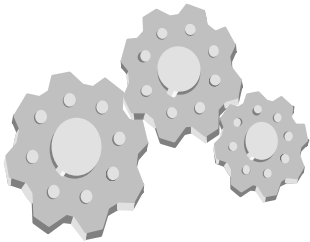
Online Education

MANAGEMENT



Information

Growth
Performance



Automation

Continuous
Regular



Simplicity

Ease of use
Generics

Questions???