

E52

IMS Version 7 System Enhancements

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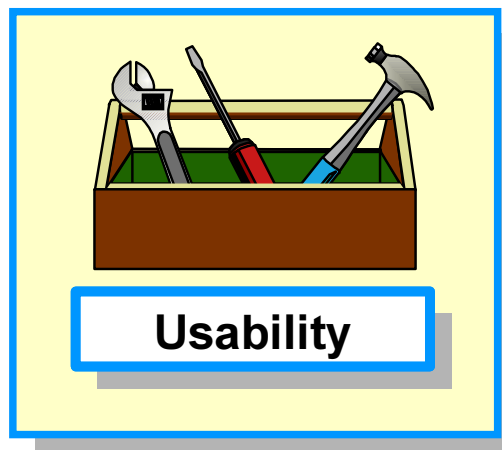
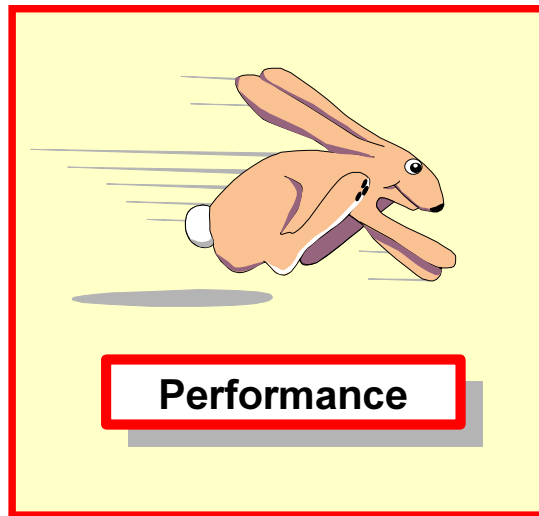
Abstract

IMS Version 7 introduces many enhancements to IMS. This presentation explains the new system capabilities. The performance, usability, and availability enhancements were presented include advances in IMS installation and upgrades, DBRC usability, RECON performance, ACBGEN processing, online change, logging, batch backout performance, and performance monitoring.

Database and Transaction Manager enhancements are covered in other presentations at this conference.

This presentation will be of interest to both IMS TM and DBCTL users.

IMS Version 7



IMS Version 7

▲ System Enhancements

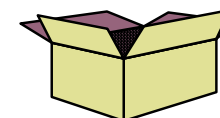
- ▶ Install/IVP process
- ▶ System Parameters enhancements
- ▶ Concurrent upgrade of RECONs
- ▶ Online RECON access preference
- ▶ RECON loss notification
- ▶ Very Large RECON record warnings
- ▶ Dual logging option
- ▶ Online change enhancement
- ▶ ACBGEN processing and limits
- ▶ Batch backout performance improvement
- ▶ ESS (Shark) Support
- ▶ IMS Monitor and IMS PA enhancements



Install/IVP Enhancements

▲ Style and format of Install/IVP panels standardized

- Same look and feel as other IBM products
 - ▶ Action Bar Pull-Downs
 - ▶ Pop-up windows
 - ▶ Standard command and message areas



▲ Sample IVP jobs support DFSMS allocation parameters

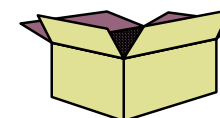
- ▶ STORCLAS
- ▶ MGMTCLAS

Usability

Install/IVP Enhancements

▲ OS/390 Standards

- Data set names
 - ▶ Distribution libraries: ADFS prefix
 - ▶ Target libraries: SDFS prefix
- Macro libraries
 - ▶ One distribution library: ADFS MAC
 - ▶ One target library: SDFS MAC
- Source library
 - ▶ Single source library: ADFS SRC



Usability

▲ Reduction in system definition dependency

- More than 1000 modules moved from sysgen to DFSJCLIN
- Features install using RECEIVE/APPLY/ACCEPT
 - ▶ IRLM 2.1, RSR DLT and RLT

System Parameters Enhancements

▲ System parameters display

- Written to system console and job log at initialization

▲ IMS V6 CPLOG

- CPLOG (system checkpoint frequency) set by system definition
 - Change requires a new system definition
- Default is 1000

Usability

▲ IMS V7 CPLOG

- CPLOG default is 500,000
 - Reasonable default
- CPLOG is execution parameter in DFSPBxxx
- CPLOG may be displayed with /DIS CPLOG command
- CPLOG may be altered by /CHANGE CPLOG command
 - Easily changed

Concurrent Upgrade of RECONs

▲ IMS V6 RECONs are upgraded to V7 without terminating IMS

- Upgraded by DBRC command

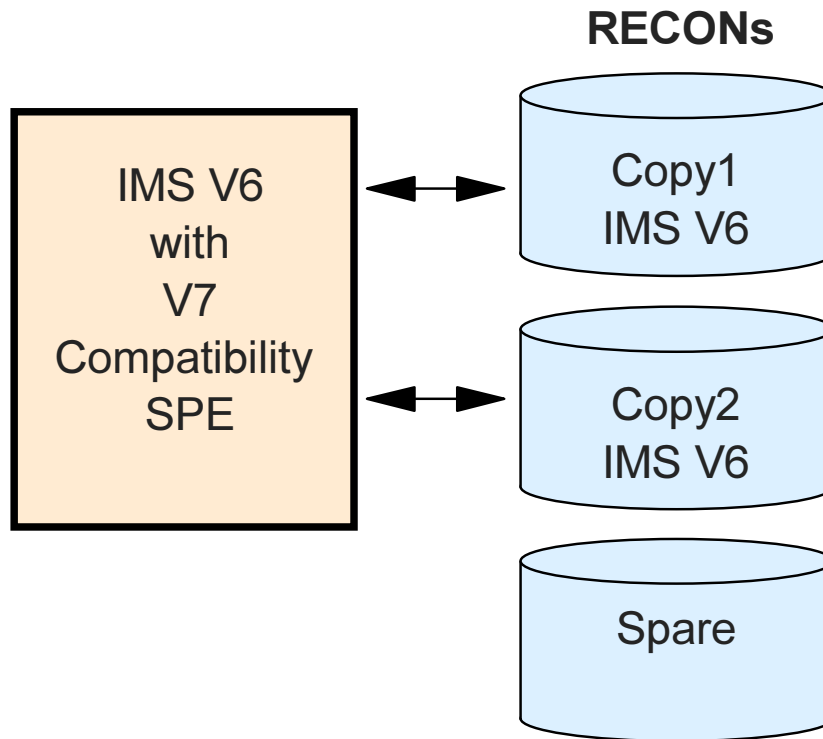
Availability

- CHANGE.RECON UPGRADE

- IMS V5 and/or V6 systems execute during upgrade process
- IMS V7 systems may be started at end of upgrade process

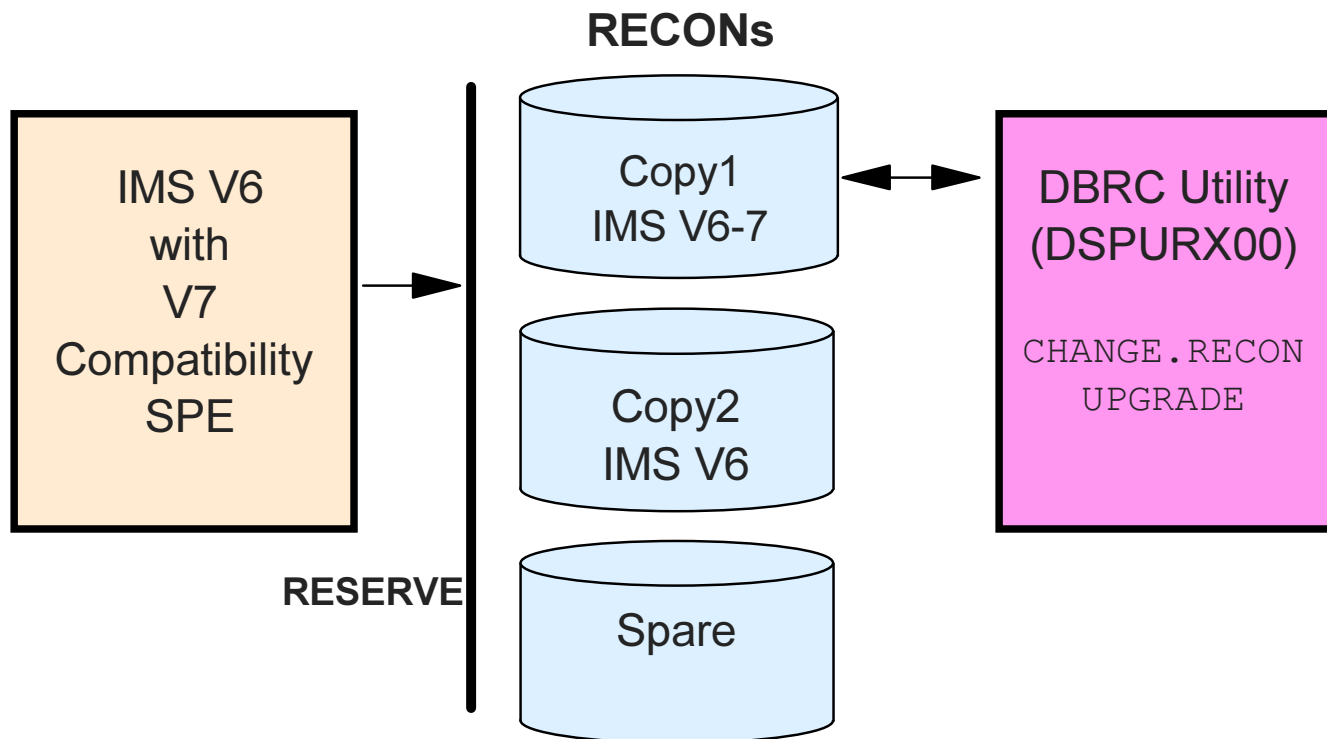
Concurrent Upgrade of RECONs

▲ Upgrade process for IMS V6 RECONs



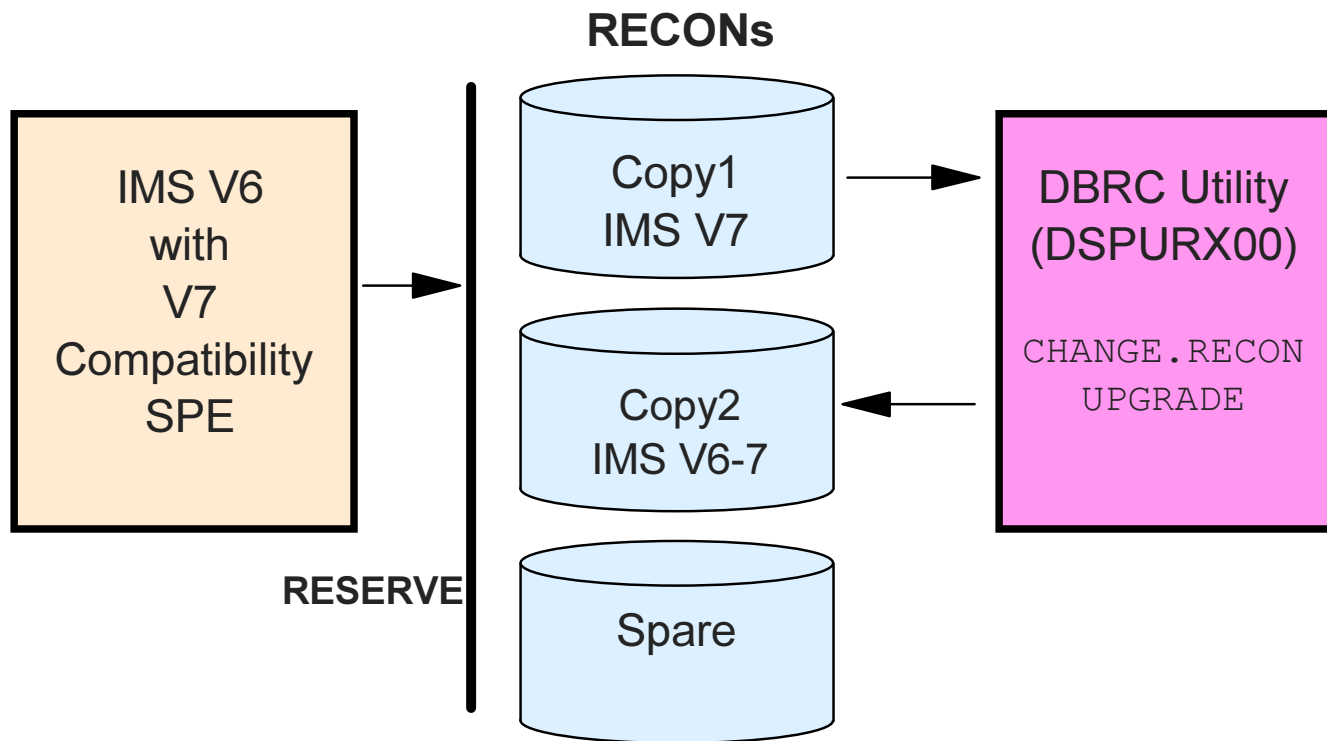
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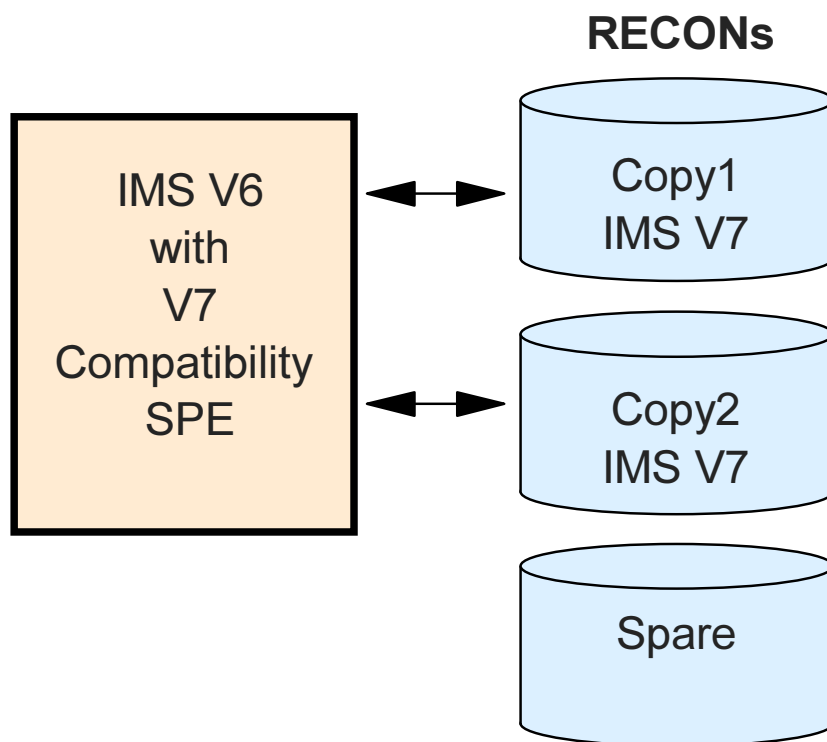
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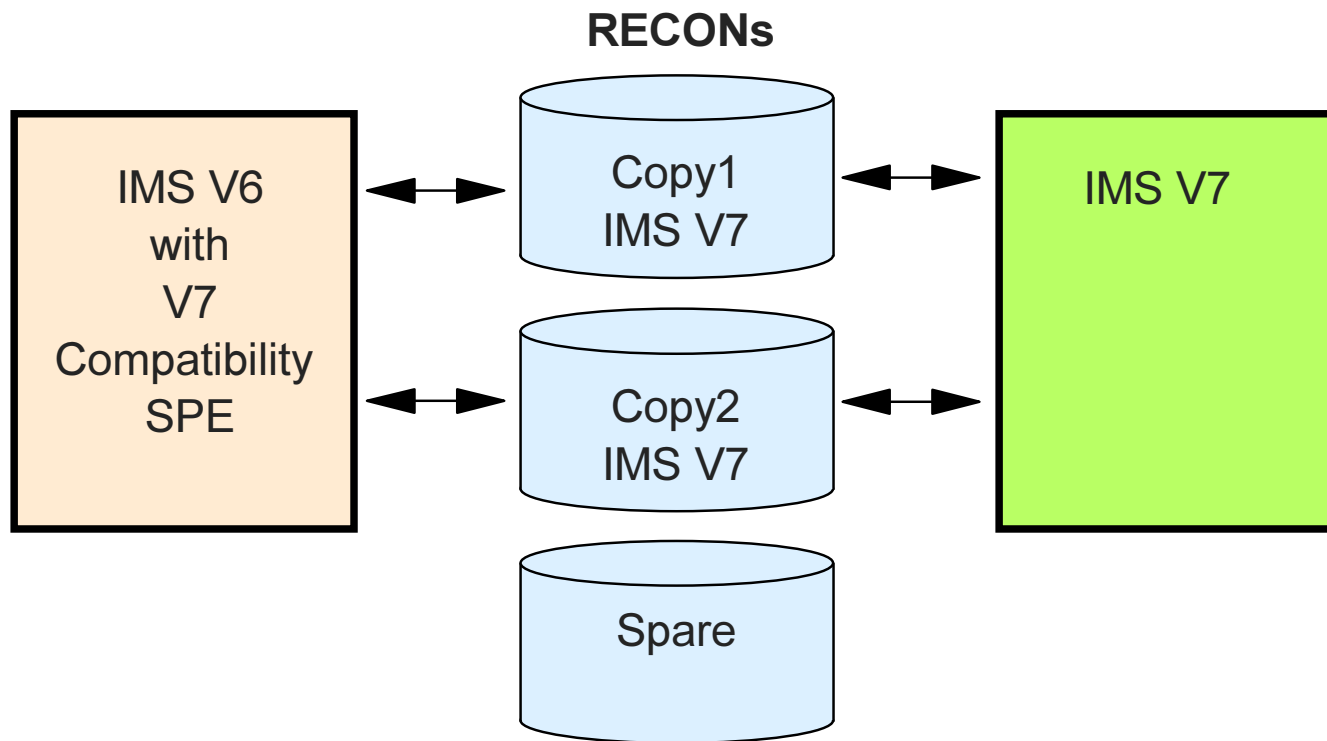
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Concurrent Upgrade of RECONs

▲ Upgrade process for IMS V6 RECONs



Online RECON Access Preference

- ▲ **Reserves of RECONs by batch jobs will be serialized**
 - Only one batch job per MVS will request a RESERVE at any time
 - ▶ Batch jobs will request exclusive enqueue before issuing RESERVE
 - ▶ Utilities are included in "batch" jobs

- ▲ **Avoids batch jobs locking out online systems from RECONs**

Performance

RECON Loss Notification

▲ Loss of RECON requires all IMS subsystems to reconfigure

- Switch to "spare" RECON
- Required to delete and redefine bad RECON

Availability

▲ Reconfiguration occurs on next RECON access

- RECONS may be infrequently accessed

▲ IMS V7 adds MVS console message on RECON loss

- Message identifies all subsystems using RECONS

▲ Allows automation to force reconfiguration

Very Large RECON Record Warnings

▲ Previous releases of IMS

- Issue DSP0287W when PRILOG nears the maximum record size

- ▶ Based on room to hold only 3 more data set entries each with 16 volumes

```
DSP0287W *WARNING* PRILOG RECORD LENGTH CRITICAL
```

- Terminates IMS (U0071 abend) when archives would cause PRILOG to exceed maximum record size

```
DSP0287I OLDS SWITCH PROCESSING TERMINATED  
PRILOG RECORD LENGTH CRITICAL
```

- User could not control when warning messages were sent

Very Large RECON Record Warnings

▲ Two PRILOG record size warning messages

- Based on room left to archive user specified number of data sets and volumes
 - ▶ One message may be used as an early warning
 - ▶ Other message may be used as a critical warning

▲ Record size warning message for any RECON record

- Based on user specified percent of maximum record size used

▲ Parameters specified in CHANGE.RECON command

Very Large RECON Record Warnings

▲ Messages:

- Early warning message (new):

```
DSP0387W WARNING: rrrrrrrr SIZE ALERT  
DSP0387W RECORD LENGTH = lllllll, pp% OF RECORDSIZE SSSSSS  
DSP0387W SSID = iiiiiiiii STARTIME = tttttttt
```

- Critical warning message (as in previous releases):

```
DSP0287W *WARNING* PRILOG RECORD LENGTH CRITICAL
```

- Record size warning message (new):

```
DSP0007I RECORD LENGTH APPROACHING RECON MAXIMUM  
DSP0007I RECORD LENGTH = lllllll pp% of RECORDSIZE ssssss  
formatted record key
```

Dual Log Selectable Degrade Option

▲ New OLDSDEF parameter in DFSVSMxx

```
OLDSDEF ... DEGRADE=YES | NO
```

- Applicable to dual logging environments that lose OLDS pairs due to I/O errors
 - ▶ No pairs are left
- Specifies whether IMS continues processing in single logging mode or terminates
 - ▶ NO causes termination

▲ Supports the need to always have dual logging in effect

- Environments that cannot tolerate reverting to single logging for availability
 - ▶ For example, dual copy goes to a remote site

Availability

Online Change for ACBLIB Enhancement

▲ Storage for ACBLIB online change moved above the 16M line

- BLDL used temporary storage below the line in previous releases
 - ▶ Insufficient storage in control region private could cause online change to fail
- Removes constraint for users with large numbers of databases and PSBs

Availability

Usability

ACBGEN Enhancements

▲ New PSB Limits

- Maximum SENSEGs increased to 30,000
- Maximum PCBs increased to 2500
- Maximum PSB size increased to 4 Meg

Usability

▲ Generally, available ACBGEN buffer storage will be exceeded before limits are reached

Reduction of ACBGEN PSB Rebuilds

▲ IMS V7 does not rebuild PSBs for many DBD changes

■ Examples:

- ▶ Change of exit routine names
- ▶ Change of exit routine parameters
- ▶ Change in field names

Performance

Availability

▲ Shortens ACBGEN times

▲ PSB rebuilds still required for some DBD changes

■ Examples:

- ▶ Addition of exit routines
- ▶ Changes in segment descriptions

Batch Backout Performance Improvements

▲ Backout of batch jobs

- Saves log records on forward pass
 - ▶ Saves in address space or data spaces
- Does not read backwards unless specifically requested
- It behaves like backout of online in previous releases

Performance

▲ Backout of online and batch

- Uses data spaces when address space memory is exhausted

▲ The READBACK statement may be used

- Log records are not saved during forward pass
- Read backwards is performed
- The READBACK statement should be used when Batch Backout requires more memory than is available in the address space and the use of data spaces is limited

Enterprise Storage Server (Shark) Support

▲ **ESS allows concurrent I/Os to the same volume**

- Parallel Access Volumes (PAV) provide support for concurrent I/Os from one OS/390 system
- Multiple Allegiance provides support for concurrent I/Os from different systems
- Concurrent reads to any data on a volume
- Concurrent write must be to a different "extent" (except for OSAM)
 - ▶ Extent is set by access method's define extent command

▲ **OSAM allows concurrent reads and writes to the same extent!**

- OSAM provides its own serialization (database locking)
- PQ37003 for IMS V7, PQ37020 for IMS V6

▲ **No need to spread data across volumes to avoid I/O bottlenecks**

Performance

IMS Monitor and IMS Performance Analyzer

▲ Tracing of Fast Path added by IMS Monitor

- DEDBs, MSDBs, EMH, and IFP regions

▲ IMS monitor subsetting added

- Limit tracing to a set of databases or regions
- Limit tracing to a time interval

▲ Good defaults for block size and BUFNO

▲ IMS Performance Analyzer reports Fast Path activity

- IMS Monitor report program does not report Fast Path activity
 - ▶ IMS Monitor report program is not being enhanced

Usability

Performance

IMS Monitor and IMS Performance Analyzer

▲ Fast Path Support adds *monitoring* for

- Fast Path databases (DEDBs, MSDBs) and Areas
- Fast Path message queues (EMH Queues, BALGs)
- IFP dependent regions

▲ Events newly monitored include:

- Scheduling activities in IFP regions
- DEDB I/O activities
- Coupling Facility (CF) I/O activities
- MSDB checkpoint I/O activities
- FP buffer usage
- DB locking activities (CI, UOW, segment-level)

IMS Monitor and IMS Performance Analyzer

▲ Extensions to the /TRA SET ON MONITOR

- Limits monitoring to a specified subset

▲ Applicable to full function and Fast Path

- Ability to limit monitoring to particular DB names, Partition names, or Area names
- Ability to limit monitoring to specific dependent regions (id's or names)
- Ability to limit monitoring to a particular time interval (<24 hours= 86,400 seconds)



IMS Monitor and IMS Performance Analyzer

▲ Good defaults for IMSMON dynamic allocation member

- Default block size is 27992 for DASD, 32K for tape
- Default BUFNO is 5

▲ IMS Performance Analyzer reports all activity, including Fast Path

- Session E29, Using the IMS Log and IMS Performance Analyzer to Tune Your IMS System, shows the reports

[Session E29](#)

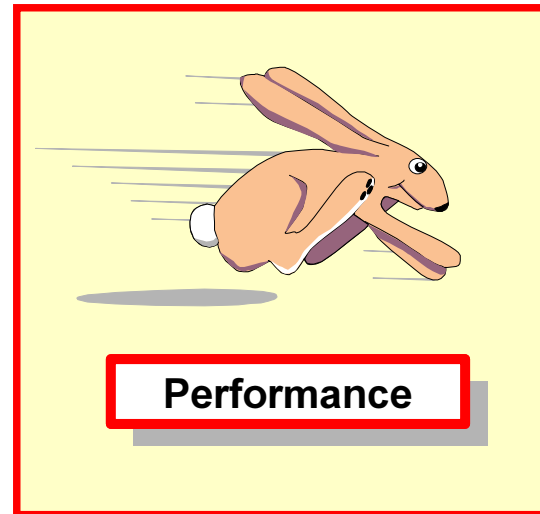
▲ Benefits

- More complete performance information
- More manageable reports
- Less impact by monitor tracing

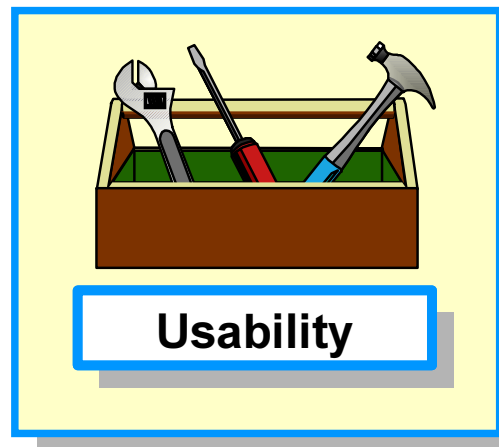
IMS Version 7



- DBRC
- ACBGEN
- Online Change
- ...



- DBRC RECONs
- ACBGEN
- IMS Monitor
- IMS PA
- ...



- Install/IVP
- System Parameters
- DBRC
- ACBGEN
- Online Change
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- ...