



# Virtual IMS user group: Newsletter 81

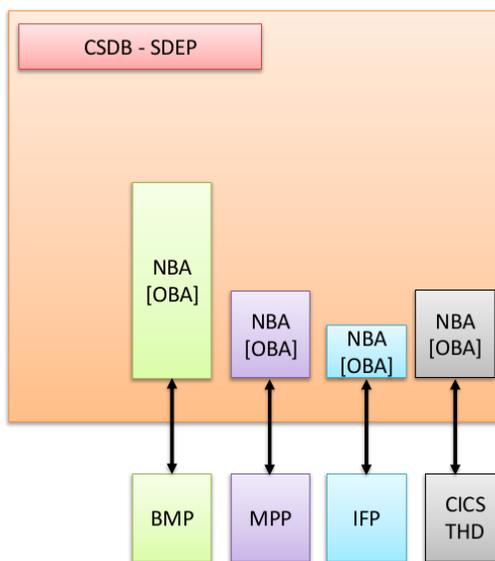
Welcome to the Virtual IMS user group newsletter. The Virtual IMS user group at [itech-ed.com/virtualims](http://itech-ed.com/virtualims) is an independently-operated vendor-neutral site run by and for the IMS user community.

## Virtual IMS user group presentation

The latest webinar from the Virtual IMS user group was entitled, "Overview of Fast Path DEDBs". It was presented by Karen N Tischer, dba IMS Education & Consulting, Instructor/Consultant.

Karen joined IBM in 19-something (she's not telling). She worked as a systems engineer then instructor/course developer for IMS. She left IBM 28 years ago and has been an independent instructor for companies providing both IBM training as well as courseware she and her partners developed. She specializes in IMS Database (Design, Implementation, Performance, and Tuning), IMS DC performance and

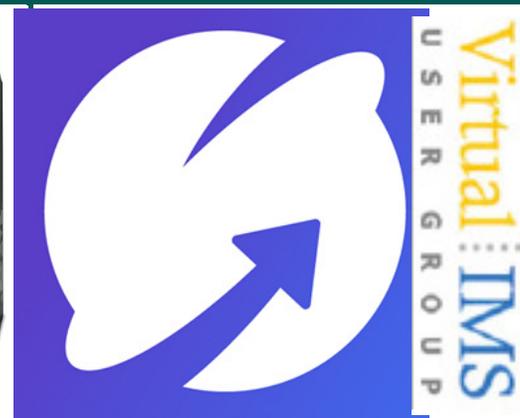
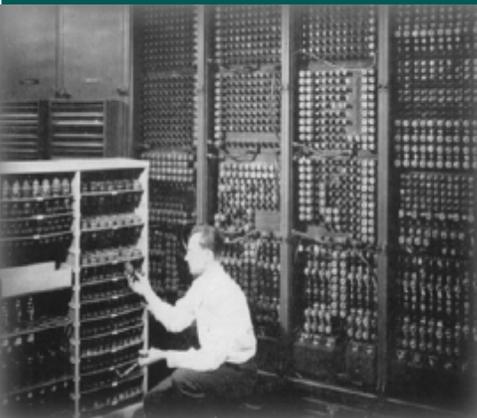
**Figure 1: Buffers**

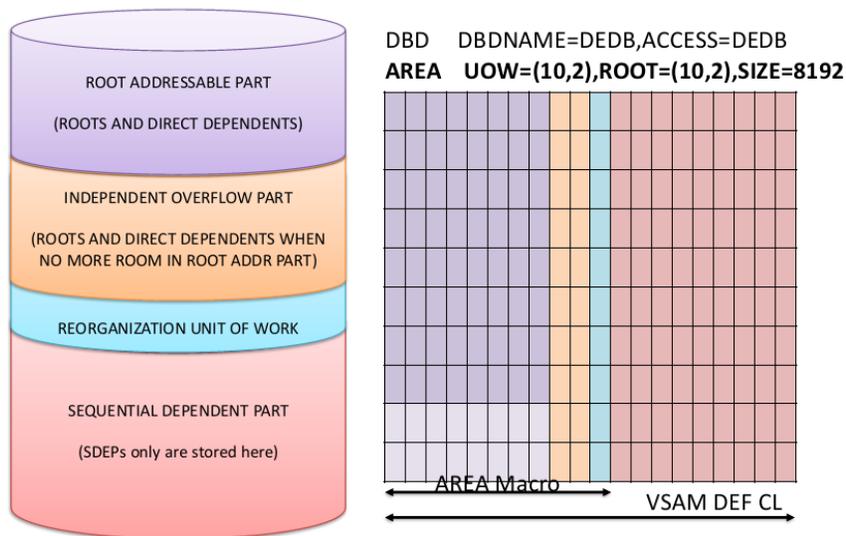


tuning, IMS Data Sharing, IMS DBRC, IMS Backup and Recovery, IMS Operations, IMS Programming (database and data communications), and IMS Fast Path (DEDB, MSDB, and EMH). Her mission is to try to ensure companies have the appropriate skill levels to

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**Figure 2: DEDB AREA must be formatted**

maintain and advance their IMS systems into the future. And she says, “Long live IMS!”.

Karen started by telling the user group that Fast Path Data Entry Data Bases (DEDBs) came into existence long before HALDBs and provided users with features such as partitioning a database into independently managed AREAs, providing a large database, high availability, online reorganization and recovery, and fast data collection, among other features.

First designed for the banking industry, DEDB features appealed to other industries and grew in capabilities and functions to support those industries. Today you can find DEDBs in industries such as financial

institutions, package shipping/tracking, airline scheduling/reservations, manufacturing, and telephone companies, among others.

Karen then looked at the characteristics of a DEDB. She said that they were HDAM-like; their roots randomize to RAP. They could be partitioned into up to 9999 AREAs (with APAR PH12671). The number was 2048. The AREA data sets are VSAM ESDSs, with a maximum size of 4GB, and managed by Media Manager. They must be preformatted, and no data set extensions are allowed. They support large databases (9999 \* 4GB = 39,996GB). Utilities run ONLINE at the AREA level, and commands operate at the AREA level. There are

no logical relationships, and they have some unique features.

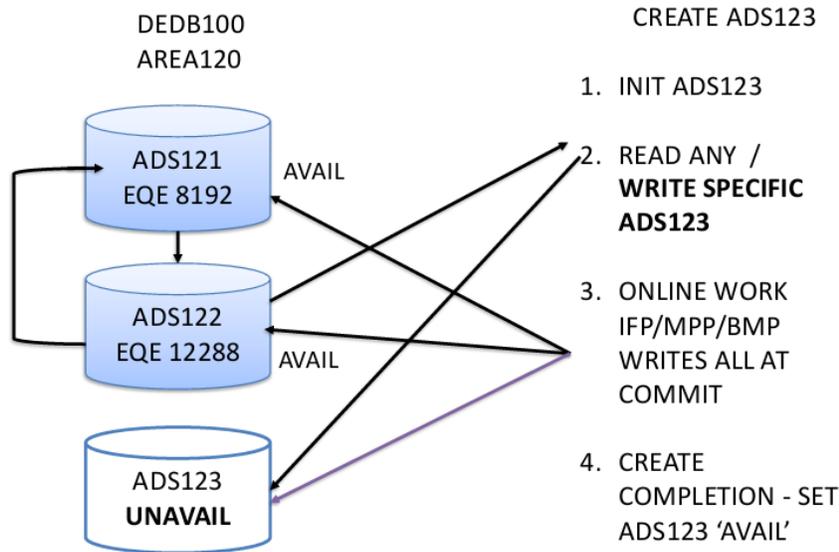
Karen then started exploring these unique features by looking at buffers (see Figure 1).

There are multiple buffer pools in 64-bit storage that are dynamically allocated by appropriate size based on CISIZES, and are self-adjusting based on demand. Each scheduled PSB (thread/region) acquires its ‘own’ buffers, which are not shared with others. There is Normal Buffer Allocation (NBA) (FPBUF) and Overflow Buffer Allocation (OBA) (FPBOF). There’s no buffer look-aside, and there are special buffers for collecting SDEPS, which are written only when full.

In terms of locking, locks are on CI, based on PROCOPT in PCB. PI or IRLM are used only for deadlock detection.

When it comes to logging, updates are logically logged at COMMIT time. It builds AFTER images only, and moves them into the OLDS buffer. No backout is needed nor possible. The database is not physically updated during a commit process but after physical logging.

Physical logging happens when the OLDS buffer is full. BMP passes modified buffers to OTHREAD. Locks are still



**Figure 3: MADS CREATE utility: online recovery**

held, but are now owned by OTHREAD. BMP acquires a new set of buffers and processes the next UOR.

The DEDB AREA must be formatted as shown in Figure 2. Karen then explained in some detail how data is stored in an AREA's Unit of Work (UOW).

Karen said that in the old days, disk drives were not as reliable as they are today, so it was common practice to copy data onto more than one drive. Data could be taken from any DASD and be updated in a buffer. Those updates would be committed back to the DASD they originally came from. If there was a write error (EQE) on

one of the drives. Then the CI could be read in future from any other drive, but not the one with an error. As Figure 3 shows, the failing drive would be flagged as unavailable. This an example of Multiple Area Data Sets (MADS).

The reason for having the Virtual Storage Option (VSO) (see Figure 4) is to reduce READ I/O by keeping data in memory (moved into NBA/OBA for APP). It also reduces WRITE I/O because the output is logged, DS | STR updated, the lock is released, and there can be batch output from DS | STR to ADS. It also decreases LOCK contention, and is an

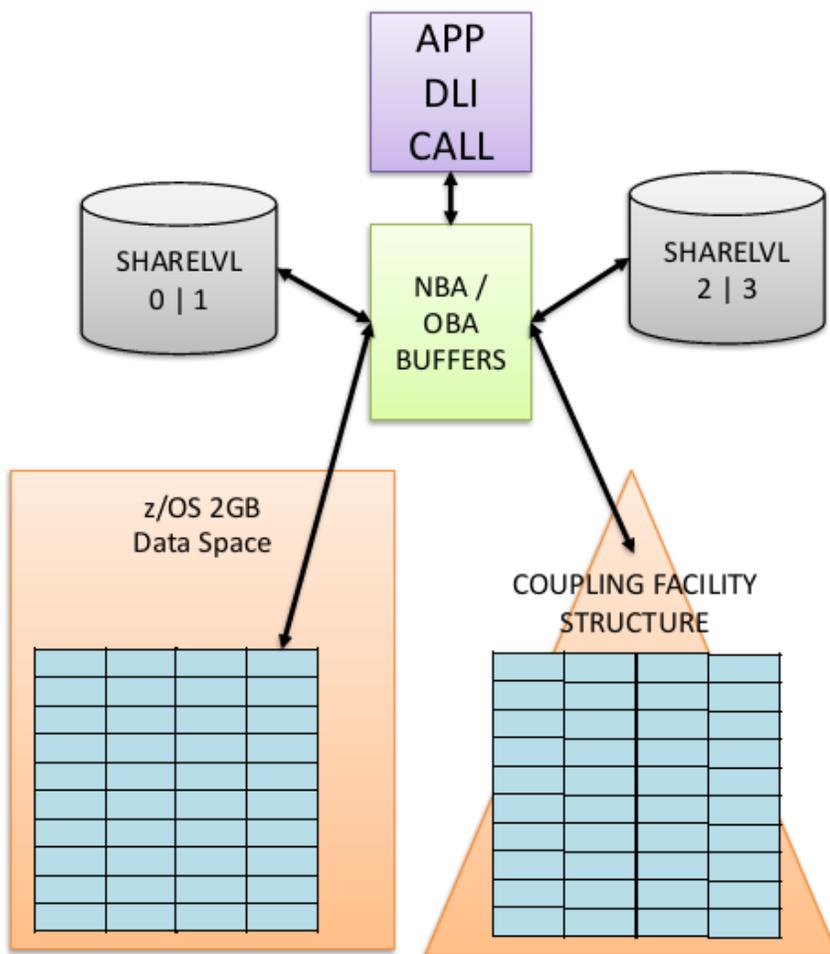
alternative to MSDB. There are restrictions. It must be registered with DBRC. It uses 2GB z/OS Data Spaces, specify SHARELVL (0 | 1). It uses the Coupling Facility Structure, by specifying SHARELVL (2 | 3).

DEDB online utilities execute in dependent regions (FPU), which increases data availability. One utility at a time can be run against an AREA. The Fast Path database buffer pool. Utilities include:

- DBFUMSC0: Sequential Dependent SCAN
- DBFUMDL0: Sequential Dependent DELETE
- DBFUMMH0: MADS Area Data Set Compare
- DBFUMRI0: Area Data Set Create
- DBFUHDR0: High Speed DEDB Direct Reorganization
- ALTER: Dynamically change DEDB specifications.

Karen also discussed DEDB's hierarchic structure, randomizing, sequential dependents, subset pointers, and high-speed sequential processing.

A copy of Karen Tischer's presentation is available for download from the



**Figure 4: Virtual Storage Option (VSO)**

Virtual IMS user group  
Web site at [itech-ed.com/virtualims/presentations/IMSDEDBOct21.pdf](https://itech-ed.com/virtualims/presentations/IMSDEDBOct21.pdf).

You can see and hear the whole user group meeting at <https://youtu.be/ID9rReSY9ms>.

### Meeting dates

The following meeting dates have been arranged for the Virtual IMS user group:

- On 7 December, Haley Fung, IBM Offering Manager for IMS, will be discussing “Ansible and IMS: Automate IMS with Red Hat Ansible Certified

Content for IBM Z”.

- The following meeting will be on 8 February 2022, when Dusty Rivers, Director, z Systems at Adaptigent, will be presenting.

### IMS articles and blogs

*Want to significantly reduce Application Trace Facility CPU usage?* by Vitali Mints in the IMS part of the IBM Z and LinuxONE Community (30 September 2021). You can find the article at <https://community.ibm.com/community/user/ibmz-and-linuxone/blogs/vitali-mints/2021/09/30/want-to-significantly-reduce-application-trace-fac>.

### IMS news

IBM has announced IMS Central, a new one-stop shop website for IBM® Information Management System (IMS) innovations, education, and customer engagement. It’s an easy-to-use hub with links and information on IMS. More information can be found at <https://imsdev.github.io/index.html>.

### About the Virtual IMS user group

The Virtual IMS user group was established as a way for individuals using IBM’s IMS hierarchical database

and transaction processing systems to exchange information, learn new techniques, and advance their skills with the product

The Web site is at <https://itech-ed.com/virtualims>. Anyone with an interest in IMS is

welcome to join the Virtual IMS user group and share in the knowledge exchange.

To share ideas, and for further information, contact [trevor@itech-ed.com](mailto:trevor@itech-ed.com).

The Virtual IMS user group is free to its members.