

Virtual Disks

Why Should I Care?

Dan Janda

The Swami of VSAM

**The Swami of
VSE/VSAM**



Dan Janda

VSE, VSAM and CICS

Performance Consultant

RR 2 Box 49E

Hamlin Road

Montrose, PA 18801-9624

(570) 934-2862

theswami@epix.net

<http://business.epix.net/~theswami>

World Alliance of VM, VSE and Lin

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What is a Virtual Disk?



- VSE/ESA and VM/ESA systems both provide address and data space accesses
- Data Spaces are ranges of storage intended for data, not executable program space
- Data Spaces can be established by one user and used by many
- Special access techniques (e.g. Access Register usage) are required to use data spaces
- Access (other than the small additional requirement of Access Register setup) is at instruction and memory speed -- microsecond-level access times
- Virtual Disks are implemented to provide a standard interface to data spaces (by emulating a disk).

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How is a Virtual Disk like any other disk?



- After establishing a VDISK (Billy will discuss this in detail)...
- The data space can be accessed just as though it is a real (FBA) disk device
- VSAM
 - ◆ User catalog
 - ◆ VSAM space
 - ◆ Clusters/files
- System functions
 - ◆ Libraries
 - ◆ Label Area
 - ◆ Lock File

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How is a Virtual Disk different from any other disk?



- VDISKs are not permanent storage facilities
- System shutdown/IPL will destroy VDISK content
 - VDISKs are not suitable for data that must be durable across system shutdown or failure
 - VSE VDISKs can be shared across partitions within a VSE image, but not across VSE images
 - VM VDISKs can be shared across virtual machines, but not across VM images

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Ideal Virtual Disk Uses



- **VSE VDISK is ideal for System Label Area**
 - **System Label Area is reloaded with each VSE IPL**
 - ◆ **No requirement for durability here**
 - **System Label Area is often the busiest single disk file**
 - ◆ **SLA is locked during processing of labels**
 - ▶ **DLBL/EXTENT JCL**
 - ▶ **OPEN**
 - ▶ **On real disk was search intensive**
 - ▶ **Access code localized in system code**

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Ideal Virtual Disk Uses



- **VM VDISK is ideal for System Lock File**
 - **System Lock File can be reloaded when VM is IPLed**
 - ◆ **No requirement for durability here**
 - **Lock File is a busy disk file - access time critical**
 - ◆ **Lock File volume is protected by hardware Reserve and Release commands**
 - ▶ **Access primarily during Open and Close processing, but only for shared disks**
 - ◆ **Not suitable for VDISK if multiple VM images or if LPARs or other VSE images also share disks**

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Poor Virtual Disk Uses in VM/VSE environments



- **VSE Page Data Set**
 - Define enough virtual machine storage for a guest so it does not need to page
- **POWER Queue File**
 - Better in POWER partition GETVIS
- **System Files (SYSIN, SYSPCH, SYSLST) for Dynamic Partitions**
 - Dynamic Partitions do not allow System Files on disk, even virtual disk
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Things sometimes better than Virtual Disks



- **Real Disks**
 - If disk must be shared across LPARs or physical processors
 - If data must be durable across system shutdown
- **Application (or CICS) Data Tables**
 - VDISK access requires all CPU overhead (CCWs, etc. are created and interpreted), just no I/O delay
 - For batch jobs, coding of native data space access requires assembler skill and system knowledge

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Contacting the Presenter



- **For more information...**

- **You can contact the Swami by e-mail**

`theswami@epix.net`

- **He's building a web site about VSE/VSAM issues**

`http://business.epix.net/~theswami`

- **Downloadable ".PDF" files of the handout for this presentation can be found by following the links on that web page.**
- **His knowledge and experience can help you, too!**

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