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# Tom Beretvas'

# 'DASD Performance and Architecture'

(Visit [www.epstrategies.com](http://www.epstrategies.com) for class schedule and pricing.)

A week of learning and doing!

**This outstanding 3-day seminar has an incredible array of comprehensive, and useful materials on the subject of the DASD I/O performance and architecture.**

Are you concerned with the performance of your storage (DASD) subsystem? Do you have a problem in understanding the complexity of DASD architectures? Do you want to be able to identify DASD performance problems in your system and find appropriate remedies for them?

In this seminar Tom Beretvas will teach you about the latest DASD architectures. You will learn in detail how to look for, and what to look for when fixing DASD performance problems. You will learn the jargon and the know-how involved in storage subsystem architectures and performance. And most importantly, *your* own system's performance data will be analyzed as part of your in class exercises for problems and solutions by you and the others participating in the class.

## *This seminar is for you...*

- if you are a *storage specialist* or *manager* who wants to understand the operation and performance impact of storage subsystems.
- if you are responsible for *capacity planning* and/or *performance management* of DASD subsystems for an MVS environment.
- if you are a *systems programmer*, *systems analyst* or *performance analyst* who desires in-depth knowledge of DASD operation and performance whether just beginning or wishing to deepen your understanding.

## *Seminar Highlights*

After completing this course, each student should be able to:

- Describe and understand DASD and cache operations
- Describe DASD channel and control unit architectures
- Master the art and science of DASD performance.
- Understand and analyze RMF DASD performance reports. (channel, cache, "device" activity reports, etc.)
- Understand what is considered good and bad DASD performance, how to recognize it and how to fix the problems that arise
- Understand response time, its components and the factors influencing them
- Understand the use of some performance analysis tools available in the marketplace (RMF, RMF Spreadsheet Reporter, RMFMagic)
- Acquire practice in the use of the RMF Spreadsheet Reporter performance tool
- Understand DASD performance problems (if any) in *his own* installation based on analyzing your performance data
- Suggest ways to improve/tune DASD performance in *his own* installation on the basis of above analysis..



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## ***Instructor***

Having worked extensively in the MVS performance measurement and tuning area, and with DASD I/O storage subsystems Thomas Beretvas draws from his more than 30 years of experience to both instruct and help you understand DASD storage subsystems. Tom is not only able to provide effective instruction, but he also applies his 30+ years of working with clients to help you to understand and effectively use the practical information taught in class. Past students are always surprised and pleased with the Tom's DASD storage subsystem insights.

This seminar is constantly being updated with the latest DASD storage subsystem related announcements and the latest performance tuning and management techniques.

## ***Prerequisites***

A basic understanding of z/OS and RMF is assumed.

## ***Seminar Dates and Location and Prices***

For dates and locations and prices, please visit [www.epstrategies.com](http://www.epstrategies.com) for details, or call our office at 941-727-1666. Seminars are regularly offered in the USA, Europe, and Australia.

## ***For More Information...***

For more information on this or other seminars, including prices and locations, please contact:

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Please do not hesitate to call if you would like more information or details on this seminar. Tom Beretvas will be happy to talk with you.

## ***In-house seminar***

All seminars are available for in-house instruction. The in-house seminar is hosted by the installation. Past in-house DASD Performance and Architecture seminars have been extremely successful by pulling together a *multi-disciplinary team* of storage administrators, performance analysts, capacity planners and technical managers all focusing, discussing, analyzing and solving the concrete performance problems of the installation. **We ensure that the class revolves around the analysis of YOUR OWN installation's DASD I/O subsystem performance**

## ***Open enrollment seminar***

In an open enrollment seminar participants from each installation work together with other installations (or solo) to analyze their own performance data for problems and solutions. An exceptional benefit obtained by the exchange of performance information, problems and solutions among the several installations. Participation in an open enrollment seminar is advisable when the storage / performance/capacity analysis team in a given installation is too small to warrant hosting an in-house class.



## Seminar Outline

The following is a high level outline for this seminar. Since the seminar is constantly being updated, actual seminar content and flow may vary slightly from this outline.

***Remember, throughout the class you will be actively analyzing your own DASD I/O performance measurements and installation configuration.***

### **Introduction:**

- An Introduction to performance management tasks and processes
- An Introduction to capacity planning tasks and processes

### **Basic DASD Architectures:**

- A review of device characteristics
- Understanding basic DASD structure and geometry and CKD and ECKD architectures.
- The anatomy of an I/O operation
- Understanding cache usage and operations
- A review of two-stage storage processors.

### **Introduction to DASD I/O Performance Analysis:**

- DASD I/O response time and the response time components.
- Estimating DASD response times
- Traffic intensity calculations.

### **Storage Processor performance calculations:**

- Estimating DASD and path utilizations
- Understanding acceptable industry guidelines for healthy DASD I/O response times
- Sizing "storage processors". Increasing cache sizes.

### **Modern Storage Processor Technology:**

- Evolution of the modern storage processor
- RAID concepts
- Remote copy facilities
- The latest advances in storage processors
- Parallel Access Volume, Multiple Allegiance
- The impact of FICON channels

### **Understanding the DASD RMF Reports:**

- A detailed explanation and interpretation of the relevant RMF and CMF DASD I/O measurements
- What is an interesting DASD and associated data reduction techniques
- I/O intensity, queuing intensity and their significance.

### **I/O Tuning Process:**

- When to tune you DASD I/O subsystems
- What to look for while performing a DASD storage subsystem performance analysis and tuning exercise.
- DASD I/O tuning analysis hints
- Using the RMF Spreadsheet Reporter
- Multi-system analysis
- Looking for apparent bottlenecks
- Logical volume and control unit analysis
- Case studies

### **Current z/OS I/O Performance:**

- Statistics are presented and evaluated showing I/O performance from dozens of installations.



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## ***Analysis of Your Own Installation Data***

Our seminars are unique since incorporated into their design are class exercises that provide you with the opportunity to analysis your own installation's data. So our seminars not only provide you with a week of education, but also a week of working on your own data to allow you to perform a performance analysis during the week of instruction. Students not only leave our seminars with a wealth of practical information, but also with a completed analysis.

