



## VMAX3 Performance Workshop

**Duration: 2 Days**    **Course Code: VMAXPW**    **Delivery Method: Virtual Learning**

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### Overview:

This course introduces participants to the methodology for analyzing performance of Symmetrix VMAX 1/2 arrays. Participants will learn to analyze Symmetrix VMAX performance using ControlCenter Performance Manager and Symmetrix Performance Analyzer tools. Metrics that are relevant for analysis of each of the components in a Symmetrix VMAX 1/2 array are presented. Participants will learn to identify bottlenecks for performance and provide recommendations to remedy the problem. Hands-on lab exercises using performance archives reinforce the concepts and methodology presented in the lecture.

### Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

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### Target Audience:

This course is intended for anyone responsible for operating, maintaining, and optimizing the performance of a Symmetrix storage environment.

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### Objectives:

- Upon successful completion of this course, participants should be able to:
    - Use key metrics to identify performance bottlenecks and components over utilization
  - Relate knowledge of the Symmetrix architecture and I/O handling processes to their performance benefits
    - Make performance-oriented recommendations when allocating new storage or migrating applications
  - Identify the performance impact different types of workloads have on Symmetrix VMAX 1/2 architectural components
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### Prerequisites:

To understand the content and successfully complete this course, a student must have a suitable knowledgebase/skill set. The student must have an understanding of basic Symmetrix DMX and VMAX 1/2 architecture and the use of ControlCenter Performance Manager. Some experience with Symmetrix Performance Analyzer will be helpful.

A list of specific prerequisite courses can be found in EMC Education Services Learning Management System.

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## Content:

The content of this course are designed to support the course objectives. The following focus areas are included in this course: ?

Module 1: Performance Management Overview

Module 2: Tools for Analyzing Performance

- Lesson 1: Unisphere for VMAX Performance Overview
- Lesson 2: Loading Data in Performance Viewer
- Lesson 3: Navigating Performance Viewer

Module 3: Performance Analysis

- Lesson 1: Workload Profiles and Characterization
- Lesson 2: Performance Analysis Roadmap
- Lesson 3: Little's Law and its Impact on Response Time

Module 4: Analyzing Performance of the Symmetrix Front-end Adapters

Module 5: Analyzing Symmetrix Cache Performance

- Lesson 1: Symmetrix Cache Architecture
- Lesson 2: Cache Hit and Miss I/O Operations
- Lesson 3: System and Device Write Pending Limits
- Lesson 4: Dynamic Cache Partitions
- Lesson 5: Alignment of I/Os with Cache Slots
- Lesson 6: XtremSW Cache
- Lesson 7: Roadmap and Analysis

Module 6: Analyzing Performance of Symmetrix VMAX Backend Adapters

- Lesson 1: Symmetrix Backend Architecture
- Lesson 2: Analyzing Symmetrix Backend Utilization
- Lesson 3: Analyzing I/O Imbalance
- Lesson 4: Symmetrix Backend Optimization Algorithms
- Lesson 5: Impact of RAID Protection on Backend Performance

Module 7: Performance Considerations for Business Continuity Operations

- Lesson 1: TimeFinder Performance Considerations
- Lesson 2: SRDF Performance Considerations

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## Further Information:

For More information, or to book your course, please call us on Head Office 01189 123456 / Northern Office 0113 242 5931

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