Blended Learning module
Performance Management

fit for mainframe

z/OS Performance Management for

- **Capacity Planners**
- **Performance Analysts**
- **System Programmers**

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Table of Content

1 General Remarks

The modules are divided in mandatory content and optional content. The mandatory content is relevant to examinations, that means, that the corresponding knowledge must be present in tests, examinations and for practical exercises.

The optional content can be worked on voluntary. Of course, we have highly experienced experts for answering questions und for helping with practical exercises.

The learning effort will be 8-10 hours a week on average. Considering a four-month module that will be approximately 130 hours for the module “Performance Management”.

These includes:

- Kick-off and closing workshop approx. 10 hours
- virtual classrooms approx. 20 hours
- e-learning approx. 60 hours
- exercises and labs approx. 40 hours

Labs are conducted on an IBM z Mainframe and the most current operating system.

2 International reknown Experts

We integrate international experts as teachers. Examples are Fabio Massimo Ottaviani from EPV Italy and Peter Enrico from epstrategies, USA (that’s why this module maybe partly presented in English).

3 Content

In the following the module parts are described in detail.

3.1 Kick-off Workshop

Our kick-off workshops serve as the basis for a successful cooperation during the training period. The workshop will take place at a location, where we have an infrastructure needed to become familiar with and learn to use the e-learning tools that are used during the course. As experience has shown, these tools subsequently will be handled even in “remote mode” efficiently and without much need for further acclimatisation.

Duration **6 hours**

Workshop Objectives

This online workshop aims at three things:

- Participants and key-lecturers get to know each other.
- Participants get to know the most important e-learning tools, especially the virtual classroom and the operating system used.
- Participants get an initial overview of the module content.

Content

Introduction
Introducing participants
Introduction to the topic

Learning Efficiency
Learning and neurobiology research
Efficient learning

E-Learning & Blended Learning
Significance of e-learning
Advantages of Blended Learning
Integration of Web 2.0
Overview e-learning tools

Moodle Learning Platform
Learning platform overview
Structure of learning platform

Virtual Classroom
VC-Session objectives
How VC differs from traditional classrooms
Using the virtual classroom

Client/Server Architectures
What is a Client / Server?
Application Architectures
The role of MQ in Client/Server

Access to the Mainframe
EMA infrastructure
Accessing the IBM Computer

3.2 Performance Management Introduction

Objectives

The students know about the different disciplines in the area of performance management of enterprise systems, especially the IBM Mainframe. The concept of capacity planning will be discussed and how capacity planning relates to workload processing.

Outline

Capacity Planning
Capacity Planning Definition & Concepts
Continuous availability & Capacity Planning
Balancing Resources
Capacity Planning Tools

Performance Management
Performance Analysis Introduction
Service Level Agreements (SLAs)

Performance Metrics
CPU and I/O Performance Metrics
Response Time and Throughput
Anatomy of Transactions
Internal Troughput Rate (ITR)
Large System Performance Reference (LSPR)
Formulas and Laws in Performance Mgmt.
SRM Constants

Monitoring Overview
Event Tracing vs. Sampling
System Management Facility (SMF)
Resource Measurement Facility (RMF)
Other Tools

3.3 Workload Manager (WLM) Introduction

Objectives
The students know about the working concepts of the WLM. They are able to implement a basic configuration in compliance with the needs of their own installation.

Outline

WLM Basics
Why WLM?
What **are** Workloads?
Workload Mgmt. vs. Resource Mgmt.
WLM Components
How WLM works
WLM Functions

WLM Configuration
WLM Datasets
ISPF Dialog

Implementation and Workload Classification
Service Policy
Service Classes
Classification Rules
Response Time Goals
Velocity
Discretionary
Performance Index (PI)
WLM Commands

Setting Goals
Using Service Classes
Defining Service Goals
Workload Considerations
USS and WLM

Enterprise Workload Manager
Basics
ARM instrumented Middleware
EWLM Control Center

3.4 Monitoring

Objectives
The students know about the different monitoring tools available from IBM and other vendors. They are able to select the appropriate tools that fit their needs.

Outline

Monitoring
Basics of Monitoring
Event Tracing vs. Sampling

Tracing
Traces in z/OS
Generalized Trace Facility (GTF)

System Management Facility
SMF Basics
SMF Records
SMF Configuration
Dataset Recording vs. Logger Recording
Customizing SMF
SMF Dump Utility (IFASMFDP)
Dumping selective SMF Records

Resource Measurement Facility
RMF Basics
RMF Monitor I, II and III
RMF Parmlib Members
RMF System Commands

Other Tools
Tools from other Vendors

3.5 Using RMF

Objectives

The students know how to use the different RMF monitors and how to interpret displays and listings to optimize performance in their own environment.

Outline

Monitoring with RMF
RMF Monitor I, II and III
RMF Monitor III Contention Analysis
RMF Post Processor
RMF Spreadsheet Reporter

RMF Setup & Configuration
Setting up RMF
RMF Parmlib Members
RMF System Commands
Starting and Controlling Monitor Sessions

RMF Report Analysis
Interactive Analysis with Monitor III
Selected Monitor III Displays
Snapshot Reporting with Monitor II
Post Processing Reporting
Selected Post Processing Reports

3.6 Workload Manager Advanced Topics

Objectives
The students know how to use the advanced features of WLM.

Outline

Resource Capping
Resource Groups
Capping Mechanisms
Guaranteeing a minimum Service

WLM in a Sysplex Environment
Parallel Sysplex measurement
Coupling Faility and structure measurement
HiperDispatch

Internal Resource Director (IRD
Functions
LPAR CPU Management
Channel Subsystem Priority Queueing

Server Address Space Management
DB2 for Stored Procedures
IWEB

WLM Managed Initiators
Parmlib Definition for JES2 and JES3
Adjust Service Class Goals

Other Topics
Enclave Management
Resource Affinity Scheduling
Parallel Access Volume (PAV)
zIIPs, zAAPs and CPs

3.7 Closing Workshop

This is the finishing workshop for this module.

Dauer **2 Hours**

Datum **TBA**

Ort **Virtual**

Objectives

Wrap up the issues of Performance Management in a complex mainframe environment.

Outline

Performance Management Review
Capacity Planning
Performance Analysis

Workload Manager (WLM)
WLM wrap up

Monitoring
Monitoring with RMF and SMF
Monitoring with other tools

Q & A
Questions / answers / discussion

Closing Remarks
Feedback