IBM MQ z/OS System Administration Training

Duration: **3 Day**

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This newly revised and upgraded three-day course covers the operation, administration and support of IBM MQ systems and applications in a z/OS environment. Segments on RACF-based security and SSL are also included in this course.
The course is taught combining formal classroom tuition with demanding hands-on practical exercises.
 Regularly updated to reflect the new releases of the product, this course covers the administration of IBM MQ up to and including Version 8x.

This course is also available for one-company, on-site presentations and for live presentation over the Internet, via the Virtual Classroom Environment service.

Prerequisites

Attendees must be familiar with IBM MQ at a conceptual and terminological level. This can be achieved by attending the course **Technical Introduction to IBM MQ**, or through prior practical experience. Attendees must also have a working knowledge of TSO/ISPF and JCL and a conceptual-level knowledge of the z/OS computing environment.

What You Will Learn

- investigate how IBM MQ PSIDs, storage classes and buffer pools have been set up in your installation
- define and manage MQ objects such as queues and channels using ISPF panels, MQ script commands and the MQ Explorer
- set up triggered queues
- establish distributed queuing channels both directly to an adjacent Queue Manager and indirectly through one or more intermediate Queue Managers
- inspect and process messages on the Queue Managers dead letter queue
- troubleshoot distributed queuing problems
- implement a basic MQ cluster
- create connections between an MQ client and an MQ Queue Manager using both an environment variable and a client channel connection table
- list the benefits of queue sharing groups
- outline the principles of MQ logging and units of work
- review the security mechanisms available to the z/OS implementation of IBM MQ
- explain how IBM MQ interfaces with RACF
- describe how publish/subscribe differs from traditional point-to-point queuing
- test a simple publish/subscribe implementation
- compare the z/OS implementation of IBM MQ with the distributed implementations of IBM MQ

Training Outline

Basic Messaging Concepts

Islands of information and IBM MQ; What's in a name?; Software layers; IBM MQ features; Wide platform coverage; The MQI - a common application programming interface; Time independent or asynchronous processing; Assured message delivery; Support of different application styles; MQ - some comparisons; Queues; Messages; MQPUT; MQGET; Queue Managers and database managers; A

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significant difference between queues and database tables...; Messages and queues; Shared queues; The Queue Manager; Basic message structure; Asynchronous messaging; Synchronous messaging; Multiple requesters, one responder; Parallel messaging; Re-using MQ application processes as business objects; Meshed business objects; Remote messaging (distributed queuing); MQ clients.

IBM MQ Configuration

Queue Manager definition & configuration; Installation; System libraries; Sample libraries; Program properties; Sub-systems; Sub system name table entries; Dynamic SETSSI; MQ parameter modules; APF authorised libraries; CSQ6SYSP macro; SET SYSTEM; CSQ6LOGP macro; SET LOG; CSQ6ARVP macro; SET ARCHIVE; CSQBDEFV macro; The BSDS; The LOG datasets; The page datasets; The MASTER JCL; The buffer pools; CSQINP1; Storage classes; Required queues; Queue Manager start-up; Queue Manager 'started task' procedure; CSQ4INP1; CSQ4INYS; CSQ4INSG; CSQ4INSX; Other CSQINP2 members; CSQ4DISP; CSQ4INPX (selection only).

Administrative Interfaces

CSQOREXX main panel; Object prompt (first screen); Object prompt (second screen); Object prompt (last screen); MGR display; Queue Manager object; Queue display panel; Queue display; Qlocal display; MQ Explorer; CSQUTIL administration program; Command messages; Practical session 1 - creating a Queue Manager.

Basic MQ Objects

The Queue Manager object; The QLOCAL object; The QLOCAL object - priority delivery sequence; The QLOCAL object - DEF QL(A1) SHARE | NOSHARE; The QLOCAL object - DEF QL(A1) DEFPSIST(YES | NO); The QLOCAL object - DISTL(YES | NO); The QLOCAL object - example commands & definitions; The QMODEL object; The QMODEL object - usage; The QMODEL object - example commands & definitions; The QALIAS object; The QALIAS object - usage; The QALIAS object - example commands & definitions; The NAMELIST object; The NAMELIST object - usage; The NAMELIST object - example commands & definitions; The AUTHINFO object; Basic sample programs; Using the samples; Practical session 2 - managing MQ objects.

Triggering

Why trigger?; What does the Queue Manager do?; What is required to make it work?; The trigger message QLOCAL object; The trigger monitor process; The Process Object; The application's QLOCAL object; The complete process; Processing the trigger message; Troubleshooting triggering; Triggered sample programs; MQREQ and MQECHO; What the samples do; Practical session 3 - MQ triggering.

Distributed Queuing - in depth

Basic distributed queuing; Basic distributed messaging overview; Remote queues; Channel Initiator (CHIN); CSQ6CHIP macro; CHIN procedure; Adapters; Dispatchers; CHIN internals; Message Channel Agents; Configuring MCAs - channels; Channel types & combinations; Sample channel definition; Starting channels; The listener; Triggering channels using the channel initiator; Channel batchsize, batchint & discint; Dead Letter Queue considerations; Multi-hopping; Multi-hopping using a Queue Manager alias; Practical session 4 - configuring distributed messaging; Channel commands; Exercises.

Introduction to Clustering

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What is an IBM MQ cluster?; What an MQ cluster is not; Cloned application services; Continuous putting; Scalability; Cluster components; Reduced administration; Joining a Queue Manager to a cluster; Definition through use; Disseminating cluster information; Cluster information message contents; Retention of information in repositories; Dynamically created reply to queues.

Implementing an MQ Client

MQClient structure; MQClient installation; MQClient configuration; MQClient - grouping Queue Managers.

Queue Sharing Groups

What is a queue sharing group; Rules and size limitations; Advantages; DB2 Utility (CSQ5PQSG).

MQ Management

Message persistence; Circular logging; Linear logging; Message recovery; Transaction support; Syncpoint control; Transaction co-ordination; MQ recovery co-ordination of XA compliant resource manager; Non-messaged architecture; Message architecture; Compensating transactions; Practical session 7 - data recovery; Watermark events.

IBM MQ Security

Introduction; Security concepts; Authentication and authorisation; SSL (Secure Sockets Layer); SSL handshake: Channel authentication records; Channel access blocking points; Channel authentication examples; Connection authentication; Setting up connection authentication; SSL Queue Manager attributes; SSL channel attributes; Channel exits - security; Channel exits - message, send & receive; Access control; MQSC security commands for access control; Distributed queuing, user Ids, authorisation and MCAUSER; Advanced Message Security (AMS).

IBM MQ and RACF

IBM MQ authorisation overview; MQ resources and their associated RACF profiles; Page 10 IBM MQ and RACF SCYCASE and profile high level qualifiers; The MQADMIN class: profiles to control subsystem security; The MQADMIN class: the RESLEVEL profile; The MQADMIN class: resource level checks; The MQCONN class: controlling connections; Access levels for the MQQUEUE class; Using QALIASes for granular access.

Publish & Subscribe

A classic example; Types of publications; State publications; Event publications; Adding business processes as subscribers; Topic strings and the topic tree; The topic tree and topic objects; The topic tree and authorisation; Defining topics; Displaying topic status; Types of subscription; MQI Extensions; Testing publish/subscribe; Distributed publish/subscribe; Hierarchies and clusters (1); Proxy subscriptions in clusters.

Comparing Distributed & z/OS

Implementations; Installation; Storage (Distributed); Storage (z/OS); Shared Queues (z/OS); Extra Features; Application Programming; Object definition; Object attributes - Queue Manager; Object Attributes - Queues and Channels; Queue Manager operations; Intercommunication and clusters;

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Security; Commands; Monitoring; Problem Determination; Backup; High Availability.