

# **WebSphere MQ Clusters Administration and Design Training**

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## **Topics**

- WMQ Clusters - Basic Administration
- Advanced Administration Tasks
- Problem Determination
- WMQ Clusters - Workload Balancing
- Designing WMQ Clusters
- WMQ Clusters and Security

## **What you will learn**

Upon the completion of this course, the student should be able to:

- design and set up WebSphere MQ Clusters
- define and manage Cluster Queues and Channels, Cluster Gateways
- learn problem determination techniques.

## **Audience**

WMQ System administrators who are familiar with the basic WMQ administration tasks but need to learn how to work in WMQ Cluster environment.

## **Prerequisites**

- Previous experience in System Administration
- Basic knowledge of WMQ Administration (WMQ Administration course or equivalent experience)

## **Duration : 4 days**

### **Unit 1 - Introduction and Overview**

- Introduction and Overview – Objective
- WMQ Clusters - What is it?
- MQSeries Clusters - Terminology
- WMQ Clusters Support
- Simple Cluster
- Client/Server View
- Peer to Peer View

- Multiple Repositories
- Workload Balancing
- Workload Re-routing
- WMQ Clusters – Benefits

## **Unit 2 - WMQ Clusters - Basic Administration**

- WMQ Clusters – Basic Administration
- Clusters – System Objects - Cluster definitions - Required Objects
- Clusters – Queue Manager Attributes
- Clusters – System Objects Summary
- WMQ Clusters – Sample Simple Cluster
- Clusters – Sample Definitions
- Clusters – Setup
- Clusters – MQSC Commands
- DISPLAY CLUSQMGR
- SUSPEND QMGR
- RESUME QMGR
- REFRESH CLUSTER
- Other MQSC Cluster Commands
- ALTER QMGR
- DEFINE QUEUE
- DISPLAY QCLUSTER
- DEFINE CHANNEL
- WMQ Clusters – Basic Administration Labs
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## **Unit 3 - WMQ Clusters – Problem Determination**

- WMQ Clusters – Problem Determination
- WMQ Clusters PD – Source of Information
- runmqsc – DIS CLUSQMGR - I
- runmqsc – DIS CLUSQMGR - II
- runmqsc – DIS QCLUSTER - I
- runmqsc – DIS QCLUSTER II
- PD Information – Windows WMQ Explorer
- Display information for existing cluster
- Sample Explorer Display
- PD Information – Error logs Part I
- Sample Information in Error Log File
- PD Information – Error logs Part II
- Sample FFST File
- PD Information – Cluster Repository
- PD Information – Repository Contents
- Display Cluster Repository Information
- Display Cluster Information – MS0G
- Sample dumprepos Output
- Display Cluster Information – amqrfdm

- amqrfdm – Initial Menu
- amqrfdm – Usage
- amqrfdm – Sample Response file
- Sample amqrfdm Output
- amqrfdm – Filters and Selectors - I
- Common Cluster Related Problems
- PD – Channel related problems - Setup Scenario
- Channel in “Retry State”
- CLUSQMGR names starting with “SYSTEM.TEMP...”
- Correct Setup
- PD – Queue related problems
- Queue Alias access problems
- Inconsistent instances of a queue definition
- PD – Queue Manager related problems - Cluster Queue Manager problems
- CLUSQMGR names different than CONNAME
- Duplicate QMGR names in the cluster
- Communication
- PD – IBM Technote
- PD – IBM Technote Sample
- WMQ Clusters – PD Labs

#### **Unit 4 - WMQ Clusters – Advanced Administration**

- WMQ Clusters – Advanced Administration - Objectives
- WMQ Clusters – Advanced Administration
- Sample Definitions
- Add a Cluster Queue
- Add a Cluster Queue - Considerations - 1
- Add a Cluster Queue - Considerations - 2
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- Add a Cluster Queue - Considerations - 3
- Add a Cluster QMGR
- Add a Cluster QMGR - Steps
- Add a Cluster QMGR - QM4 - Sample Set Up
- Remove a Cluster Queue
- Remove a Cluster Queue - Considerations - 1
- Remove a Cluster Queue - Considerations - 2
- Remove a Cluster Qmgr
- Remove a Cluster Qmgr - Considerations - 1
- Add a Full Repository
- Add a Full Repository - Set up steps
- Relocate a Repository
- Relocate a Repository - Set up steps - part 1
- Relocate a Repository - Set up steps - part 2
- Relocate a Repository - Set up steps - part 3
- Relocate a Repository - Manually defined CLUSSDR channels - BEFORE
- Relocate a Repository - Manually defined CLUSSDR channels - AFTER

- Overlapping Clusters
- Overlapping Clusters - Set up steps – part 1
- Overlapping Clusters - Set up steps – part 2
- Overlapping Clusters - Set up steps – part 3
- Overlapping Clusters - Why overlapping clusters?
- Joining Clusters
- Cluster Gateways - A cluster can have a Gateway
- Cluster Gateways
- Cluster Gateways - Implementing gateway FROM a cluster – 1
- Cluster Gateways - Implementing gateway FROM a cluster – 2
- Cluster Gateways - Implementing gateway INTO a cluster - no workload balancing
- Cluster Gateways - Implementing gateway INTO a cluster with workload balancing
- A Complete Rebuild
- Advanced Admin Labs

## **Unit 5 - WMQ Clusters - Workload Balancing**

- WMQ Clusters – Workload Balancing
- Multiple Queue Instances
- MQOPEN Options (MQOO) for workload balancing attributes
- QUEUE workload balancing attributes
- Queue workload balancing attributes - Version 6
- QUEUE MANAGER workload balancing attributes
- Queue Manager workload balancing attributes - Version 6
- Cluster Channel workload balancing attributes
- Cluster Channel workload balancing attributes - Version 6
- Workload balancing attributes - summary
- Sample Workload Exit
- Local Queue Instances (V5)
- Local Queue Instances (V6)
- V5 Default Selection
- V6 Default Selection - WLM Route Selection - part 1
- V6 Default Selection - WLM Route Selection - part 2
- Use of Workload Balancing / Considerations
- Workload Distribution
- Scalability – Adding New Queues / Server
- Contents 4
- Continuous Operations
- Message Affinities
- Message Affinities – Multiple Queue Instances
- WMQ Clusters - Workload Balancing Labs

## **Unit 6 - WMQ Clusters – Designing Cluster Networks**

- WMQ Clusters – Designing Cluster networks
- WMQ Cluster Design – Selecting Full Repositories
- WMQ Cluster Design – Typical Repository View
- WMQ Cluster Design – Selecting Full Repositories - How many Full Repositories for a cluster?

- WMQ Cluster Design – Selecting Full Repositories - Which QMGRs should hold them?
- WMQ Cluster Design – Selecting Full Repositories - What should be the physical location?
- Selecting Full Repositories – Large Clusters
- Reducing Large Cluster Overhead
- Partially Inter-connected Repositories
- Splitting up a large cluster – Before
- Splitting up a large cluster – After (1)
- Splitting up a large cluster – After (2)
- Splitting up a large cluster – Gateway Setup
- Choosing an Initial Full Repository
- High Availability – Standby Configuration
- Standby Configuration - Failover
- HA Clustering + WMQ Clusters
- Comparison of Technologies
- WMQ Clusters – Naming Convention
- Naming Convention – Multiple CLUSRCVR Channels
- WMQ Clusters – Design Labs

## **Unit 7 - WMQ Clusters and Security**

- WMQ Clusters and Security – Objectives
- WMQ Clusters and Security – Considerations and Risks
- Preventing an unauthorized queue manager access to your queue manager
- Preventing an unauthorized queue manager access to your queues
- Which applications on your queue manager can send messages to remote queues
- Prevent your queue manager from joining an unauthorized cluster qmgr
- Force unwanted queue manager out of the cluster
- WMQ Security – Message Channel Exits
- Writing WMQ Message Channel Exits
- WMQ Security – Using SSL
- WMQ Clusters and Security Labs