

FUSION MIDDLEWARE

# ORACLE TUXEDO APPLICATION RUNTIME FOR IMS

PREMIER MAINFRAME REHOSTING PLATFORM

KEY FEATURES

- Runs IBM IMS applications with no change to business logic or programming model
- Provides IMS MPP and BMP environments, and 3270 MFS screen support
- Supports IMS components on multiple machines similar to IMSplex
- Dynamically manages workload in app grid and cloud environments
- Integrates IMS BMP with Application Runtime for Batch
- Leverages Tuxedo optimizations on Exalogic for ultra high performance
- Provides integrated monitoring and service level alerting in TSAM/OEM

KEY BENEFITS

- 50-80% cost reduction vs. the mainframe
- Faster and simpler migration avoiding the risk and cost of a re-write
- Addresses risk of mainframe skills attrition through open, simplified architecture and operations
- Linear scalability and Active/Active HA and DR configurations supported by Tuxedo at a fraction of the mainframe cost
- Open, agile foundation for further modernization using Java, SOA, and other Oracle Fusion Middleware technology
- Future-proofs the applications by providing scalable growth and broad evolution options to meet changing needs
- Helps to address key business needs by shifting more of IT budget from maintenance to innovation

Oracle Tuxedo Application Runtime for IMS runs IBM mainframe applications rehosted to Oracle Tuxedo with no change to business logic. Providing IMS programming model and services, COBOL containers, support for 3270 MFS screens, common IMS utilities, and access to migrated VSAM, DB2, and IMS DB data, as well as remote access to DB2 and IMS DB on the mainframe, the runtime helps online and batch mainframe applications to run unchanged, preserving decades of investment in business logic and data. In conjunction with Tuxedo Application Rehosting Workbench this solution helps to rehost mainframe applications and migrate their data to open systems faster and with low risk, and to run even large scale applications efficiently and reliably on horizontally scalable Oracle Tuxedo – an industry-leading COBOL and C/C++ application server, leading to significant cost savings and greater flexibility. The result – high performance and ultra scalable IMS applications running on open systems at a fraction of the mainframe cost.

Rehost IBM IMS Applications Intact

Oracle Tuxedo Application Runtime for IMS helps organizations to migrate mainframe online and batch applications to open systems without having to re-write them to Java or .Net. It is powered by the premier COBOL and C/C++ application server – Oracle Tuxedo. Running mainframe COBOL applications in IMS containers with support for the DL/I API, 3270 MFS services, standard IMS utilities, and local and remote data access provided by the IMS runtime enables application migration without a re-write – preserving decades of investment in business logic and data, protecting users from any impact, and avoiding the risk and cost of changing business-critical applications.

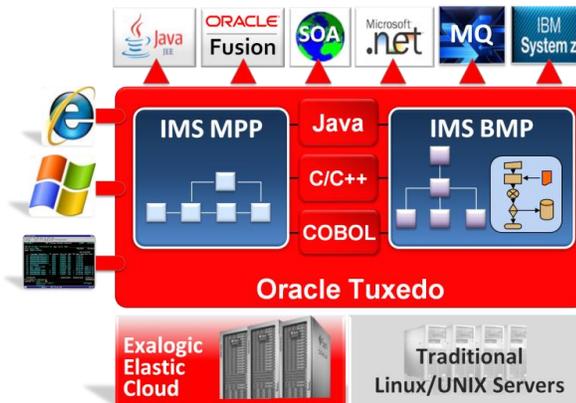


Figure 1. Oracle Tuxedo Application Runtime for IMS

Rehosted IMS applications can run in a Message Processing Program (MPP) region or Batch Message Processing (BMP) region using the programming model and services provided by

Tuxedo delivers a robust platform to run high-volume applications across distributed, heterogeneous computing environments, enabling transactions that stretch from customer-facing, business-critical applications to back-office processes, across any system, anywhere in the world.

Tuxedo Application Runtime for IMS leverages this foundation to run rehosted IBM applications unchanged. It helps IT to regain control by reducing complexity of rigid IT infrastructure, providing choice and flexibility, and addressing mainframe skills attrition with simplified architecture and operations.

the IMS runtime together with dynamic request routing, load-balancing, and distributed resource management provided by Tuxedo infrastructure. Combining the IMS application model with Tuxedo infrastructure capabilities provides the flexibility to run IMS applications unchanged while leveraging Tuxedo's dynamic resource management for high availability, scalability, and elasticity.

### Migrate IMS Applications to Simple, Robust and Scalable Architecture

An online IBM z/OS application may use a wide range of services provided by IMS™. IMS Application Runtime for Tuxedo is built to run these applications unchanged by providing the same IMS programming model and services.

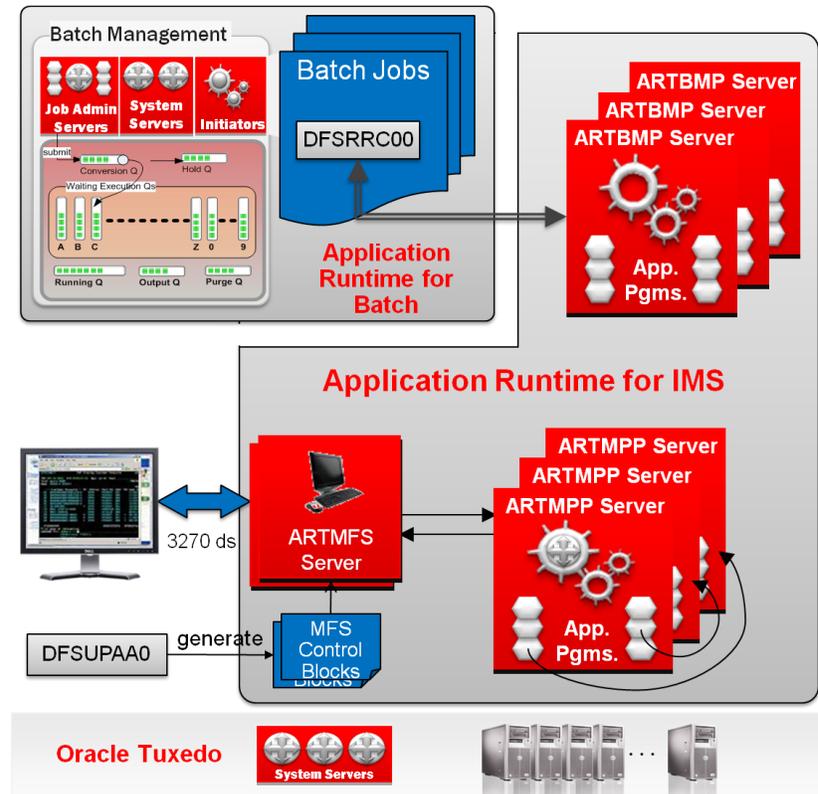


Figure 2. Integrating Online and Batch IMS Workloads

This support provided by ART servers built on native Tuxedo infrastructure includes:

- IMS MPP and BMP containers
- Response/non-response mode, conversational/non-conversational mode transactions
- 3270 terminal server with IMS Message Format Service (MFS) support
- IBM MQ connectivity with mainframe and non-mainframe systems
- APPC and OTMA connectivity with z/OS IMS via Tuxedo Mainframe Adaptors
- Security services using LDAP and RACF integration (via IBM SecureWay LDAP)
- Multiple Systems Coupling (MSC) support on single node or across a cluster
- BMP invocation from Tuxedo Application Runtime for Batch using DFSRR00
- Embedded SQL support either for DB2 access or adapted for Oracle Database
- DL/I Integration API for IMS DB-to-Oracle Database migration options
- Remote data access on the mainframe via DB2 Connect or IMS ODBA.

**RELATED PRODUCTS**

- Oracle Tuxedo
- Oracle Exalogic Elastic Cloud
- Tuxedo Application Rehosting Workbench
- Tuxedo Application Runtime for Batch
- Tuxedo Application Runtime for CICS and Batch
- Tuxedo System and Application Monitor
- Tuxedo Mainframe Adaptors
- Tuxedo Message Queue
- Tuxedo JCA Adaptor
- Services Architecture Leveraging Tuxedo
- Oracle Berkeley DB
- Oracle GoldenGate

The IMS runtime protects applications' functionality and enables it to run on a distributed Oracle Tuxedo cluster. Its message-oriented architecture is easy to configure for distributed operations in an application cloud, which provides dynamic load-balancing, scalability, automatic fail-over, and other benefits of the distributed Tuxedo architecture. IMS transactions run as message-based Tuxedo services and can be deployed in fault-tolerant active/active mode.

In addition to the traditional tn3270 access, rehosted transactions can be accessed using any Tuxedo service integration methods, e.g., Web Services, JCA/WTC, IBM MQ, OSB, Jolt/.Net clients, etc. Developers can maintain rehosted applications in IMS idiom or mix in native Tuxedo APIs. Applications can be extended with new components in a Tuxedo container using COBOL or any of the other Tuxedo-supported languages: C/C++, Java, Python, Ruby, and PHP, as well as with remote JEE and .Net components or packaged applications.

For phased or partial rehosting projects, ongoing mainframe connectivity is provided by Tuxedo Mainframe Adaptors (TMA). Available in TCP and SNA versions, TMA provides full transactional connectivity to mainframe CICS and IMS TM, making rehosted components look like a remote IMS region. For connections to IMS TM the adapters support APPC/LU6.2 and IMS OTMA protocol. For CICS ISC connections the adapters support DPL and DTP/APPD methods.

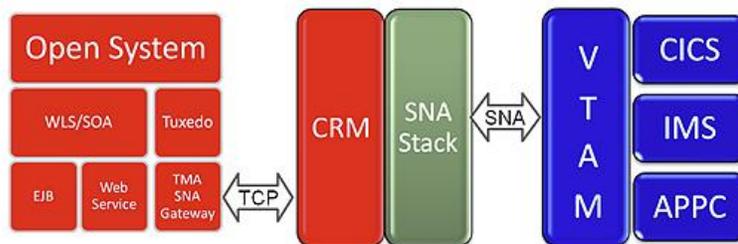


Figure 3. Mainframe Connectivity Using Tuxedo Mainframe Adaptors

Rehosted batch applications run under the control of the Batch runtime, which provides robust job management capabilities similar to IBM JES and delivers production features of JCL and standard batch utilities.

### Data Access Options for Migrated IMS Applications

On the mainframe IMS TM applications typically use IMS DB or DB2. Both remote access on the mainframe and data migration options are supported with the IMS runtime. For DB2 migration to Oracle Database or DB2 UDB, Tuxedo Applications Rehosting Workbench provides an automated schema mapping and generates unload/reload tools for bulk data migration. When migrating from DB2 to Oracle, the Workbench can also automatically adapt embedded SQL (EXEC SQL) in COBOL programs from DB2 dialect to Oracle, re-map SQLCODE values, and make appropriate adjustments to data types and timestamp representation.

IMS DB can also be migrated to relational schema using a number of partner solutions. The data access DL/I calls remain unchanged – the migration solutions generate logical data access modules that can plug into IMS runtime and mediate DL/I-to-SQL access. This allows applications to avoid changes to business logic and data access calls, while migrating IMS data to Oracle Database or DB2 UDB.

The IMS runtime also supports remote access to mainframe databases when some data needs to remain on the mainframe for shared access by other applications. For remote DB2 access the IMS runtime uses IBM DB2 Connect. For IMS DB remote access is handled through IMS

ODBA gateway provided by Tuxedo's IMS runtime. The ODBA gateway includes both a Tuxedo component and a mainframe components that work together to support remote DL/I access to IMS DB on the mainframe.

In addition to the databases, batch programs running in a BMP container can also access VSAM files. The Workbench facilitates migration of VSAM files to VSAM filesystem provided by the COBOL runtime, and, optionally, by Oracle Berkeley DB.

### Mainframe Robustness and Scalability at a Fraction of the Cost

Oracle Tuxedo Application Runtime for IMS can be used to run large scale mainframe applications more efficiently on horizontally scalable open systems servers. It can also leverage engineered systems and enterprise clouds with simplified provisioning, virtualization, dynamic scale-out, accounting/chargeback, and integrated monitoring and management – at a fraction of mainframe cost. Powered by the most scalable, ultra reliable and high-performance Tuxedo foundation, the IMS runtime leverage its core capabilities:

- Fault-tolerant application cloud infrastructure on open systems with autonomous health monitoring, automatic recovery, fail-over, and fail-back
- Dynamic load balancing, priority management, and resource management with Exalobic performance optimizations and cloud-ready features
- Service-oriented architecture with multi-language, interoperable containers for COBOL, C/C++, Java, Python, Ruby, and PHP
- XA-compliant distributed transactions (i.e., 2-PC or SYNC Level 2).

This enables rehosted online applications to be deployed in a multi-region IMS environment across multiple nodes, similarly to mainframe IMSplex configurations, as well as scale a single region across multiple nodes. In a Tuxedo MP cluster the resources of a single IMS region can be distributed and replicated across a cluster for elastic scalability and high availability, delivering mainframe-grade resilience and virtually eliminating any risk of an outage. Additionally, support for rolling upgrades in a multi-node cluster can eliminate the need for any planned downtime at the application level.

The key value of the runtime approach is to simplify and accelerate migration by minimizing application change, while providing an open, extensible, SOA-ready framework. Combining support for the applications' programming model and its dependencies with the robustness, performance, and scalability of Oracle Tuxedo enables migration of the largest mainframe applications safely and cost-effectively. By taking advantage of the modern distributed infrastructure, customers can support growing volumes of online transactions more effectively, optimize the batch execution, and shorten the batch window. When deployed on Exalobic Elastic Cloud, rehosted mainframe applications can benefit from cloud attributes – simplified provisioning, virtualization and application isolation, elastic scale-out, and integrated monitoring and management.

### Contact Us

For more information about [insert product name], visit [oracle.com](http://oracle.com) or call +1.800.ORACLE1 to speak to an Oracle representative.



Copyright © 2012, Oracle and/or its affiliates. All rights reserved.

This document is provided for information purposes only and the contents hereof are subject to change without notice. This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group. 0612

**Hardware and Software, Engineered to Work Together**