Oracle Tuxedo Application Runtimes

Release Notes

12*c* Release 2 (12.2.2)

April 2016

ORACLE

Oracle Tuxedo Application Runtimes Release Notes, 12*c* Release 2 (12.2.2)

Contents

Oracle Tuxedo Application Runtime for IMS Release Notes

Oracle Tuxedo Application Runtimes Release Notes

April 2016

Table 1 Revision History

Revision Date	Summary of Change
April, 2016	12c Release 2 (12.2.2)

Oracle Tuxedo Application Runtimes 12c Release 2 (12.2.2) supports quick migration of IBM mainframe CICS applications, IBM mainframe batch jobs, and IBM IMS applications from mainframe to Oracle Tuxedo based solution with low risk.

It includes three licensed products: Oracle Tuxedo Application Runtime for CICS and Batch, Oracle Tuxedo Application Runtime for Batch, and Oracle Tuxedo Application Runtime for IMS.

- Oracle Tuxedo Application Runtime for CICS Release Notes
- Oracle Tuxedo Application Runtime for Batch Release Notes
- Oracle Tuxedo Application Runtime for IMS Release Notes

Oracle Tuxedo Application Runtime for CICS Release Notes

This topic contains the following sections:

About Oracle Tuxedo Application Runtime for CICS

Oracle Tuxedo Application Runtime for CICS supports quick migration of IBM mainframe applications to Oracle Tuxedo with low risk. It provides a combination of APIs and services that allows mainframe CICS components to run unchanged, preserving years of investment in business logic and data. It protects application users from change by supporting standard 3270 terminal emulators. It also provides familiar APIs and functions that developers use in their mainframe applications.

The result is the ability to quickly and with low risk migrate IBM mainframe COBOL and C/C++ applications to open systems running Oracle Tuxedo. This provides substantial cost savings, elastic scalability, and greater flexibility.

Key Features and Components

Oracle Tuxedo Application Runtime for CICS provides a runtime environment for IBM CICS applications.

- Preprocessors for COBOL and C programs that expand EXEC CICS macros and map CICS keywords into runtime interfaces.
- A runtime environment based on Oracle Tuxedo that executes CICS programs and transactions, and provides required functions and services, including interoperability with IBM CICS on z/OS.
- A 3270 terminal server for Oracle Tuxedo that enables tn3270 terminal emulators to interact with CICS programs and transactions migrated to Tuxedo ART in the same way they interact with CICS on an IBM mainframe.
- Access to VSAM files, Oracle Database, DB2, IMS DB, and other data sources.
- A range of built-in integrations for CICS applications, including IBM WMQ, Sockets, CPI-C, APPC/DTP, DPL, SOAP and REST Web Services.
- CICS authentication support via LDAP, Microsoft Active Directory, or IBM RACF on z/OS.
- An ATMI user interface server for Oracle Tuxedo that enables a broad range of UIs connected over ATMI to interact with CICS programs and transactions migrated to Tuxedo ART without changing the application program code.
- Integration with TSAM Plus for real-time monitoring of CICS transactions and terminals with detailed Callpath tracing, alerting, and CICS resource management using TSAM Manager.
- Integration with TSAM Plus plug-in for OEM-based (Oracle Enterprise Manager) monitoring and management with in-depth availability and performance metrics, on-demand cloud provisioning, and elastic cloud scale-out.

What's New in This Release

This release includes the following new features and enhancements:

- CICS Pre-Processor
  - Support of abbreviations in CICS verbs and parameters and tolerance for errors
  - Enhanced CICS commands/options coverage in COBOL programs
    - ASSIGN FCI/TERMCODE/OPID
    - DUMP TRANSACTION
    - ENQ MAXLIFETIME
    - INQUIRE STORAGE
    - LINK TRANSID
    - LOAD/RELEASE PROGRAM
    - PUSH/POP CONDITION
    - RECEIVE ASIS
    - SEND MAP SET
    - SET PROGRAM NEWCOPY/PHASEIN
    - SET TDQUEUE OPEN/CLOSE
    - SIGNON/SIGNOFF
    - SOAPFAULT CREATE
    - VERIFY PASSWORD
    - WAIT TERMINAL
    - WRITE JOURNALNAME/JOURNALNUM
  - Enhanced CICS commands/options coverage in C/C++ programs:
    - ABEND
    - ASKTIME ABSTIME
    - ASSIGN APPLID USERID LANGINUSE
    - FORMATTIME
    - GET CONTAINER
    - LINK DATALENGTH TRANSID SYNCONRETRUN SYSID
    - PUT CONTAINER
    - RETRIEVE SET
    - SYNCPOINT/SYNCPOINT ROLLBACK
- CICS Runtime Infrastructure

  - Configuring ARTSRM in multiple machines in Tuxedo MP cluster
  - Support of TSQ pool, improved HA of TSQ in MP cluster, and support for non-printable characters in TSQ names
  - Extended length userid/password (up to 20 characters) support in CESN
  - Customizing 'Good Morning' screen
  - Application List menu / ALST transaction and multiple session management for tn3270 users (similar to multi-application support provided by CA TPX or IBM CL/SuperSession)
  - CICS program auto-install configuration support
  - Keepalive support between ARTTCPL/H and tn3270 client
  - Timeout support for tn3270
  - Support for passing command line options to customized callback functions in ART CICS servers
  - Non-XA mode support in ART application servers for programs that are managing their own DB connections
  - WMQ and database reconnect support for all ART application servers
  - Tagging version stamps in CICS programs and UDB bind files
- CICS Program Supportability
  - Configurable reverse attach debugging (based on transid, program, sysid, termid, and userid), which helps to set up debug sessions for specific users or components
  - Integration with COBOL-IT profiling, which helps to obtain detailed statistics on the run-time performance of a CICS application
- CICS Program Integrations
  - TCP/IP and EZASocket support in CICS programs
  - Automated mapping between COMMAREA copybook and SOAP/JSON formats using Tuxedo RECORD buffer type for CICS Web Services (inbound/outbound) support
  - CPI-C support in CICS programs with CPI-C libraries for Windows and JEE clients connecting over Tuxedo Windows Client and WTC respectively
  - APPC support in CICS progeams with APPC/DTP Java classes for JEE applications connecting over WTC

  - CICS MQ wrappers for built-in MQ connection management
  - CICS external file handler ARTEXTFH
  - Support for submitting both KSH and JCL online through SPOOL and TDQ intra trigger
- Data Access Enhancements
  - Variable length VSAM file support
  - Support for accessing IMS Database on z/OS or IMS data migrated to an RDBMS via a DLI-2-SQL access layer

Interoperability

Oracle Tuxedo Application Runtime for CICS maintains full interoperability with:

- Oracle Tuxedo 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Runtime for Batch 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Runtime for IMS 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Rehosting Workbench 12c Release 2 (12.1.3 and 12.2.2)
- Oracle Tuxedo System and Application Monitor Plus (TSAM Plus) 12c Release 2 (12.2.2)
- Oracle Services Architecture Leveraging Tuxedo (SALT) 12c Release 2 (12.2.2)
- Oracle Jolt 12*c* Release 2 (12.2.2)
- Oracle JCA Adapter 12c Release 1 (12.1.1)
- CICS CPI-C and APPC support for Java is compatible with Oracle WebLogic 10.3
- CICS CPI-C support for Windows is compatible with VS2015 or higher
- CICS 3270/BMS support is compatible with standards-compliant tn3270 terminal emulators
- CICS WMQ support and transaction triggering is compatible with IBM WebSphere MQ 7.x
- IBM CICS 3.x, 4.x, 5.x

Dependencies

Oracle Tuxedo Application Runtime for CICS 12c Release 2 (12.2.2) installation requires Oracle Tuxedo 12c Release 2 (12.2.2) installation.

Use of some CICS features requires Oracle Database 11.2.0 or higher, or DB2 LUW v9.7 or higher. These features include:

- Recoverable TSQs
- TSQ Pool
- ARTSRM HA configuration in Tuxedo MP cluster

Access to IMS Database from CICS programs requires Oracle Tuxedo Application Runtime for IMS 12c Release 2 (12.2.2).

Platform Support

Oracle Tuxedo Application Runtime for CICS 12c Release 2 (12.2.2) supported platforms are listed in the Supported Platforms in the Oracle Tuxedo Application Runtimes Installation Guide.

Upgrade Considerations

When you upgrade Oracle Tuxedo Application Runtime for CICS from 12c Release 1 (12.1.1) or older release, you must rerun the CICS Preprocessor for the CICS COBOL programs and re-compile them. For upgrades from Oracle Tuxedo Application Runtime for CICS 12c Release 2 (12.1.3), you do not need to rerun the CICS Preprocessor; however, the programs might need to be re-compiled with versions of COBOL compilers certified for this release (see certification matrix link in Supported Platforms) depending on the binary compatibility of the COBOL compilers.

If upgrading from release 11.1.1.2 or earlier, you must ensure the `ARTADM` server is configured in the Oracle Tuxedo `UBBCONFIG` file for CICS Runtime.

If using COBOL-IT, you must specify the `-fthread-safe` option when compiling CICS programs.

When using Micro Focus Visual COBOL 2.2:

- On AIX/Solaris OS platforms, make the following soft links in `$COBDIR/lib`:

```
ln -s libcobrts64.so.3 libcobrts64.so.2
```

```
ln -s libcobrts64_t.so.3 libcobrts64_t.so.2
ln -s libcobmisc64.so.3 libcobmisc64.so.2
ln -s libcobmisc64_t.so.3 libcobmisc64_t.so.2
ln -s libcobcrtn64.so.3 libcobcrtn64.so.2
```

- We recommend you set COBOL runtime tunable parameter `subsystem_cancel_mode=1`, which specifies logical cancel for `CBL_SUBSYSTEM` cancels. See *Micro Focus documentation* for more information.

Behavior Changes

- The second FML base in `$KIXDIR/include/msgflds32` is changed from `30002700` to `30001100`.
- The `ARTSRM` server is required for many enhancements introduced in 12c Release 2 (12.2.2). You must ensure it is configured in the Oracle Tuxedo `UBBCONFIG` file for CICS runtime if you use any of the following enhancements:
  - TASK management
  - Named COUNTER support
  - system INQUIRE verbs.
  - For more information, see ARTSRM Configuration in Oracle Tuxedo Application Runtime for CICS Reference Guide.

Limitations and Known Issues

Oracle Tuxedo Application Runtime for CICS limitations and known issues are as follows:

- BMS file name cannot be used as `MAPSET` name in `CICS SEND MAP` and `RECEIVE MAP` commands.
- All the `RBA` and `Generic` options for CICS commands are not supported in file-to-file scenarios when using COBOL-IT.
- When `ISC_ENABLE=YES` is set, ART CICS cannot validate `LUNAME` across multi-CICS regions.
- There are some restrictions when users implement and run CICS applications in C language. For more information, see CICS Runtime C Program Support.

- When using a COBOL-IT compiler, you must configure variable `COB_ENABLE_XA` before booting up `ARTSTRN`.
- When using a COBOL-IT compiler, you must make sure `PROGRAM-ID` is the same as the COBOL program name. Different COBOL programs must define different `PROGRAM-ID`.
- APPC session negotiation is not supported.
- Profile resource definition is not supported. Default profile `DFHCICSA` is assumed; there is no timeout mechanism for this profile.
- Applications communicating via DTP must run within the same Oracle Tuxedo domain.
- Communication between ART CICS and Mainframe CICS via TMA SNA inherits the following limitations from TMA:
  - LUTYPE6.1 protocol is not supported.
  - Only the following APPC conversational programming model scenarios are supported:

    1. ART CICS DTP client Request/Response to Mainframe CICS DTP server (server gets control)

    2. Mainframe CICS DTP client Request/Response to ART CICS DTP server (client relinquishes control)

    3. Transactional ART CICS DTP client Request/Response to Mainframe CICS DTP server (server gets control)

    4. Transactional Mainframe CICS DTP client Request/Response to ART CICS DTP Server (client relinquishes control)

    For more information, see Oracle Tuxedo Mainframe Adapter for SNA Reference Guide.
  - Sending the data with state in one transmission using the `SEND` command is not supported.
  - For scenarios 3 and 4, the `SEND CONFIRM/ISSUE CONFIRMATION` commands must be added to the server and client code respectively in a transactional conversation.
  - Implementations of `SYNCPOINT` in internal ART CICS and TMA-based ART CICS are different; these two types of sync-level conversation cannot occur in the same transaction.
  - TMA conversation server is terminated using `tpreturn()`; however, in scenario 2 and 4, TMA-based ART CICS can only map `SEND LAST` (or `FREE`), in sync level 0 and

`SEND CONFIRM` in sync level 2 to `tpreturn()`. As a result, all subsequent operations are not executed.

  - Sync level 1 operation is not supported in Oracle TMA conversation. `SEND CONFIRM/ISSUE CONFIRMATION` is not supported except in scenarios 3 and 4.
  - Oracle TMA copybook from Mainframe (via ART Workbench), must be aligned before it can be used in ART CICS applications.

- Every node in the same ART for CICS application (no matter how many domains it is deployed on) must run on homogeneous platforms (for example, CICS Runtime supports this scenario: one node runs on Oracle Linux 6.3 platform while the other node runs on Oracle Linux 6.5 platform. However, CICS Runtime does not support this scenario: one node runs on Oracle Linux platform while the other node runs on Oracle Solaris platform). For all ART for CICS supported platforms, see Supported Platforms in Oracle Tuxedo Application Runtimes Installation Guide.

See Also

- Oracle Tuxedo Application Runtimes Installation Guide
- Oracle Tuxedo Application Runtime for CICS User Guide
- Oracle Tuxedo Application Runtime for CICS Reference Guide

Oracle Tuxedo Application Runtime for Batch Release Notes

This topic contains the following sections:

About Oracle Tuxedo Application Runtime for Batch

Oracle Tuxedo Application Runtime for Batch supports quick migration of IBM mainframe batch jobs to Oracle Tuxedo with low risk. It provides substantial cost savings and greater flexibility.

Oracle Tuxedo Application Runtime for Batch provides a combination of utilities and services that allow Batch mainframe applications to run unchanged, preserving years of investment in business logic and data. It provides IBM-compatible JCL support and familiar mainframe utilities for running existing applications and extending them with new capabilities.

Key Features and Components

Oracle Tuxedo Application Runtime for Batch provides runtime environment for IBM z/OS-compatible batch jobs. It includes the following components:

- Tuxedo Job Enqueueing Service (TuxJES), that emulates mainframe JES2/JES3 batch queues, initiators, and provides batch control functions for jobs submitted in native JCL or converted scripts.
- Native JCL and script-based batch execution engines used by initiators to run submitted jobs with all the standard JCL functions and common utilities, with ability to execute rehosted or native COBOL and C/C++ programs, Java programs, REXX and native shell scripts, and any binaries or other OS executables.
- Batch operations, monitoring, and management facilities that include `ISPF` extensions for ART Batch operation, support real-time monitoring and alerting in TSAM Plus Manager, and integrate with extensive batch operations and management functions provided by TSAM Plus plug-in for Oracle Enterprise Manager (including in-depth availability and performance metrics, on-demand cloud provisioning, and elastic cloud scale-out).

What's New in This Release

This release includes the following new features and enhancements for Batch Runtime:

- Tuxedo Job Entry System (TuxJES)
  - Consolidated batch metadata and spool info in Oracle Database
  - Built-in job control authorization support to supplement external security managers
  - Syslog: batch system activity log with rotation support
  - Enhanced exception handling and advanced tracing of the batch system

- Job Execution Environment
  - Batch utility for CICS file and transaction control
  - Enhanced support for VSAM KSDS with alternate keys
  - Configurable reverse attach debugging based on user, job name, program
  - Optimized performance for Shell based job framework
  - Improved performance for VSAM files mapped to relational database table
  - Enhanced DISP=MOD support based on COBOL file open mode
  - Removed dependency on Perl Bytecode and specific Perl version
  - REXX script configuration for mainframe compatibility

Interoperability

Oracle Tuxedo Application Runtime for Batch 12c Release 2 (12.2.2) maintains full interoperability with:

- Oracle Tuxedo 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Runtime for CICS 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Runtime for IMS 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Rehosting Workbench 12c Release 2 (12.1.3 and 12.2.2)
- Oracle Tuxedo System and Application Monitor Plus (TSAM Plus) 12c Release 2 (12.2.2)
- Oracle Services Architecture Leveraging Tuxedo (SALT) 12c Release 2 (12.2.2)
- Oracle Jolt 12c Release 2 (12.2.2)
- Oracle JCA Adapter 12c Release 1 (12.1.1)
- Batch runtime ARTISPF extensions are compatible with Uni-SPF 1.76

Dependencies

Oracle Tuxedo Application Runtime for Batch 12*c* Release 2 (12.2.2) installation requires Oracle Tuxedo 12*c* Release 2 (12.2.2) preinstalled.

Use of some optional Batch features requires Oracle Database 11.2.0 or higher, or DB2 LUW v9.7 or higher. These features include:

- DB store for GDG metadata
- DB store for batch job metadata

The use of `ISPF` extensions (`ARTISPF`) requires uni-SPF and uni-REXX from The Workstation Group, Ltd. (http://www.wrkgrp.com/index.html) with extended license.

Execution of IMS batch jobs requires Oracle Tuxedo Application Runtime for IMS 12c Release 2 (12.2.2).

Platform Support

Oracle Tuxedo Application Runtime for Batch 12*c* Release 2 (12.2.2) supported platforms are listed in the Supported Platforms in the *Oracle Tuxedo Application Runtimes Installation Guide*.

Limitations and Known Issues

Oracle Tuxedo Application Runtime for Batch 12*c* Release 2 (12.2.2) has the following limitations:

- `IEBGENER GENERATE` with `MEMBER` is not supported.
- System date (e.g., `DATE1`) comparison is not supported in `SORT` operation.
- Using `DISP=SHR` to add a new member in a PDS is not supported.

See Also

- Oracle Tuxedo Application Runtimes Installation Guide
- Oracle Tuxedo Application Runtime for Batch User Guide
- Oracle Tuxedo Application Runtime for Batch Reference Guide

Oracle Tuxedo Application Runtime for IMS Release Notes

This chapter contains the following topics:

About Oracle Tuxedo Application Runtime for IMS

Oracle Tuxedo Application Runtime for IMS (Tuxedo ART for IMS) supports quick migration of IBM IMS applications from mainframe to Oracle Tuxedo with low risk. It provides a combination of APIs, tools, and services that allows both online and batch IMS applications to run unchanged, preserving years of investment in IMS business logic and data. It protects application users from change by supporting standard 3270 terminal emulators. It also supports familiar APIs and functions that developers use in their mainframe applications. The result is the ability to quickly and with low risk migrate legacy COBOL and C/C++ mainframe applications to open systems running Oracle Tuxedo. This provides substantial cost savings, elastic scalability, and greater flexibility.

Key Features and Components

Oracle Tuxedo Application Runtime for IMS provides:

- Support for DL/I functions that can be called by COBOL and C programs migrated from mainframe.
- Session management based on Oracle Tuxedo to handle concurrent connections from tn3270 terminal emulators with support for IMS Message Format Service (MFS.)
- An MPP execution environment to process transactions received from 3270 terminals, MQ-IMS bridge or via ATMI-IMS gateway by calling migrated COBOL/C programs.
- A BMP execution environment to run messages queued from MPP or IMS batch programs submitted via batch jobs in ART for Batch.
- A plug-in interface for partner-provided DLI-to-SQL bridge solutions that enable DLI calls from migrated COBOL/C programs to access IMS DB data migrated to relational database, Oracle or DB2.
- An IMS ODBA proxy for remote access to IMS/DB data on the mainframe.
- Access to GSAM databases migrated to local files.

What's New in This Release

Oracle Tuxedo Application Runtime for IMS 12c Release 2 (12.2.2) is certified to run on Oracle Tuxedo 12c Release 2 (12.2.2) and work with Oracle Tuxedo Application Rehosting Workbench 12c Release 2 (12.2.2) and Oracle Tuxedo Application Runtime for Batch 12c Release 2 (12.2.2).

Oracle Tuxedo Application Runtime for IMS 12c Release 2 (12.2.2) includes the following new features and enhancements:

- Tool for automatic conversion of IMS PSBs and DBDs to ARTIMS format (imsgenconf)
- Dynamic configuration reload and trace level control (imsadmin)
- Performance analysis tool (imsperf)
- Configurable reverse attach debugging (based on transid, program, and userid)
- SYSIN/SYSOUT redirection for ACCEPT/DISPLAY statement using ARTEXTFH file handler
- Idle timeout support for tn3270 sessions

- Restartable BMP server that reloads after each program
- Reconnect management for database or WMQ RMs when connection fails
- Performance optimization settings for managing Micro Focus COBOL subsystem
- Automatic COBOL dump generation when program abends
- User controllable Tuxedo timeout for DFSRRC00, including unlimited setting
- Ability to call IMS sub-transaction on z/OSthrough ALTPCB

Interoperability

Oracle Tuxedo ART for IMS maintains full interoperability with:

- Oracle Tuxedo 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Runtime for Batch 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Runtime for CICS 12c Release 2 (12.2.2)
- Oracle Tuxedo Application Rehosting Workbench 12c Release 2 (12.1.3 and 12.2.2)
- Oracle Tuxedo System and Application Monitor Plus (TSAM Plus) 12c Release 2 (12.2.2)
- Oracle Services Architecture Leveraging Tuxedo (SALT) 12c Release 2 (12.2.2)
- 3270/MFS support is compatible with standards-compliant tn3270 terminal emulators
- MQ-IMS Bridge support is compatible with IBM WebSphere MQ 7.x

Dependencies

Oracle Tuxedo ART for IMS 12c Release 2 (12.2.2) installation requires Oracle Tuxedo 12c Release 2 (12.2.2) installation.

Platform Support

Oracle Tuxedo Application Runtime for IMS 12c Release 2 (12.2.2) supported platforms are listed in the *Oracle Tuxedo Application Runtimes Installation Guide*.

Limitations and Known Issues

Please note the following limitations in Oracle Tuxedo Application Runtime for IMS:

1. Only one input message from a terminal is allowed in a single transaction.
2. Cannot switch to a terminal other than the originator.
3. Only Message formatting option 1 is supported.
4. Cannot deploy IMS Region in Tuxedo MP cluster using heterogeneous machines.
5. Does support IMS default system MOD - DFSMO2 which is used when MOD does not specify both in the application program and the MID "nxt" field. ARTIMS displays the output message as plain text in the terminal, users first need to clear the terminal.
6. Due to byte ordering differences between "big endian" and "little endian" architectures, when using 'Dynamic Attribute Modification' in COBOL programs you cannot specify a decimal integer for attribute bytes. It is s suggested to specify a hexadecimal value one byte at a time in attribute bytes.

See Also

- Oracle Tuxedo Application Runtimes Installation Guide
- Oracle Tuxedo Application Runtime for IMS Users Guide
- Oracle Tuxedo Application Runtime for IMS and Reference Guide