Oracle® Tuxedo

Application Runtime Release Notes

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Oracle Tuxedo Application Runtime Release Notes, Release 22c

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Preface

Oracle Tuxedo Application Runtimes 22c Release 1 (22.1.0.0.0) 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.

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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.

1.1 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.

1.2 What's New in This Release

This release includes the following new features and enhancements:

Security Enforcement

All network connections use TLS 1.2 by default. Network listener processes require the command line parameter `CLOPT "-S"` in Tuxedo ART Runtime for CICS 22c(ARTTCPL).When you choose not to use TLS, you must set the environment variable `TM_ALLOW_NOTLS`.

For more information , refer to ARTTCPL/ARTTCPH Configuration.

Major enhancement post Tuxedo ART Runtimes 12.2.2

- Support new CICS Verbs:
  - `DUMP TRANSACTION`
  - `SIGNON PHRASE`
  - `WEB RECEIVE (Server)`
  - `WEB READ HTTPHEADER`
  - `WEB SEND (Server)`
  - `WEB WRITE HTTPHEADER`
  - `WEB STARTBROWSE/READNEXT/ENDBROWSE FORMFIELD`
  - `WEB OPEN`
  - `WEB CLOSE`
  - `WEB CONVERSE`
- Support multi-threading for CPI-C Client
- ART CICS Package Generator (kixpkggen(1))
- artadmin support new sub-commands:
  - `dynamic_trace`
  - `enqstat`
  - `enqlist`
  - `enqdel`
- Support UCTRAN in `transactions.desc`
- DPL support dynamic routing. When environment variable `KIX_DPL_DYNAMIC` is set, and the remote program either is defined to the local system as `DYNAMIC(YES)` or is not be defined to the local system, ARTCICS dynamically routes the DPL request to remote CICS regions which host the program.

1.3 Interoperability

Oracle Tuxedo Application Runtime for CICS maintains full interoperability with:

- Oracle Tuxedo 22c Release 1 (22.1.0)
- Oracle Tuxedo Application Runtime for Batch 22c Release 1 (22.1.0)
- Oracle Tuxedo Application Runtime for IMS 22c Release 1 (22.1.0)
- Oracle Tuxedo Application Rehosting Workbench 12c Release 2 (12.2.2)
- Oracle Tuxedo System and Application Monitor Plus (TSAM Plus) 12c Release 2 (12.2.2)
- Oracle Services Architecture Leveraging Tuxedo (SALT) 22c Release 1 (22.1.0)
- Oracle Tuxedo Mainframe Adapter for TCP 22c Release 1 (22.1.0)
- Oracle Tuxedo Mainframe Adapter for SNA 22c Release 1 (22.1.0)
- Oracle Jolt 22c Release 1 (22.1.0)
- Oracle JCA Adapter 12c Release 1 (12.1.1.0)
- CICS 3270/BMS support is compatible with standards-compliant tn3270 terminal emulators
- CICS WMQ support and transaction triggering is compatible with IBM WebSphere MQ 9.2

1.4 Dependencies

Oracle Tuxedo Application Runtime for CICS 22c Release 1 (22.1.0) installation requires Oracle Tuxedo 22c Release 1 (22.1.0)RP013 or above 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 22c Release 1 (22.1.0).

1.5 Platform Support

Oracle Tuxedo Application Runtime for CICS 22c Release 1 (22.1.0) supported platforms are listed in the Supported Platforms in the *Oracle Tuxedo Application Runtimes Installation Guide*.

1.6 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 7.0, 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.

1.7 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 Implementing CICS Applications.
- 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 ensure `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 Installing the Oracle Tuxedo Application Runtimes*
- *Oracle® Tuxedo Application Runtime for CICS User's Guide*
- *Oracle Tuxedo Application Runtime for CICS Reference Guide*

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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.

2.1 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).

2.2 What's New in This Release

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

- z/OS compatible `DSNTIAUL`
- z/OS compatible `DSNUTILB`
- `ISPF` enhancements:
  - Dynamic Control, Status, and CPU in `jesinitiator` panel

  - List job queues
  - Performance improvement for initiator panel
- `artjesadmin` support change job class dynamically
- New command support
  - `m_OSHELL`
  - `m_OCOPY`
  - `m_SFtp`

2.3 Interoperability

Oracle Tuxedo Application Runtime for Batch 22c Release 1 (22.1.0) maintains full interoperability with:

- Oracle Tuxedo 12c Release 2 (22.1.0)
- Oracle Tuxedo Application Runtime for CICS 22c Release 1 (22.1.0)
- Oracle Tuxedo Application Runtime for IMS 22c Release 1 (22.1.0)
- 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) 22c Release 1 (22.1.0)
- Oracle Jolt 22c Release 1 (22.1.0)
- Oracle JCA Adapter 12c Release 1 (12.1.1.0)
- Batch runtime ARTISPF extensions are compatible with Uni-SPF 1.76

2.4 Dependencies

Oracle Tuxedo Application Runtime for Batch 22c Release 1 (22.1.0) installation requires Oracle Tuxedo 22c Release 1 (22.1.0) + RP013 or later 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 22c Release 1 (22.1.0).

2.5 Platform Support

Oracle Tuxedo Application Runtime for Batch 22c Release 1 (22.1.0) supported platforms are listed in the Supported Platforms in the *Oracle Tuxedo Application Runtimes Installation Guide*.

2.6 Limitations and Known Issues

Oracle Tuxedo Application Runtime for Batch 22c Release 1 (22.1.0) 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 Installing the Oracle Tuxedo Application Runtimes*
- *Oracle® Tuxedo Application Runtime for Batch User's Guide*
- *Oracle Tuxedo Application Runtime for Batch Reference Guide*

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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.

3.1 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. z An IMS ODBA proxy for remote access to IMS/DB data on the mainframe.
- Access to GSAM databases migrated to local files.

3.2 What's New in This Release

Oracle Tuxedo Application Runtime for IMS 22c Release 1 (22.1.0) is certified to run on Oracle Tuxedo 22c Release 1 (22.1.0) and work with Oracle Tuxedo Application Rehosting Workbench 12c Release 2 (12.2.2) and Oracle Tuxedo Application Runtime for Batch 22c Release 1 (22.1.0).

Oracle Tuxedo Application Runtime for IMS 22c Release 1 (22.1.0) includes the following new features and enhancements:

Security Enforcement

All network connections use TLS 1.2 by default, and IMSCONN and ARTICTL network listener processes must use `CLOPT "-S"` with the command line. When you choose not to use TLS, you must set the environment variable `TM_ALLOW_NOTLS`.

For more information , refer to IMSCONN ARTICTL.

Major enhancement post Tuxedo ART Runtimes for IMS post 12.2.2

- Support `EXEC DLI` in BMP program
- New server support: `IMSCONN` - used to join IMS Connect client to Tuxedo ART for IMSCONN.
- New utility `odbactl`, an open system tool used to stop ODBA proxy on z/OS, check status of ODBA proxy on z/OS, show existing connections, and check if PSB is properly defined.

3.3 Interoperability

Oracle Tuxedo ART for IMS maintains full interoperability with:

- Oracle Tuxedo 22c Release 1 (22.1.0)
- Oracle Tuxedo Application Runtime for Batch 22c Release 1 (22.1.0)
- Oracle Tuxedo Application Runtime for CICS 22c Release 1 (22.1.0)
- 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) 22c Release 1 (22.1.0)
- 3270/MFS support is compatible with standards-compliant tn3270 terminal emulators
- MQ-IMS Bridge support is compatible with IBM WebSphere MQ 9.2

3.4 Dependencies

Oracle Tuxedo ART for IMS 22c Release 1 (22.1.0) installation requires Oracle Tuxedo 22c Release 1 (22.1.0) RP013 or later installation.

3.5 Platform Support

Oracle Tuxedo Application Runtime for IMS 22c Release 1 (22.1.0) supported platforms are listed in the Supported Platforms in the *Oracle Tuxedo Application Runtimes Installation Guide*.

3.6 Limitations and Known Issues

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

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 Installing the Oracle Tuxedo Application Runtimes*
- *Oracle® Tuxedo Application Runtime for IMS User's Guide*
- *Oracle Tuxedo Application Runtime for IMS Reference Guide*