

# ORACLE TopLink 12c (12.1.3)

*Unleash your data using **TopLink Data Services** with JSON-REST for Relational and NoSQL databases.*

Oracle TopLink simplifies exposing data over REST when developing HTML5 and mobile applications. JSON binding, JAX-RS integration (REST), and NoSQL persistence address many of the data access challenges facing today's developers.

## KEY FEATURES

- Simplifies development and maintenance of Java persistence
- Relational and NoSQL database support
- Binding persistence with XML and JSON
- JAX-WS and RESTful Database Web Services
- Optimize application performance and scalability

## RESTful Services

TopLink Data Services makes it easy to expose data over REST. Thin Server Architecture based clients such as HTML5 with JavaScript or mobile clients can retrieve and manipulate data while leveraging all of the performance, scalability, flexibility of TopLink within Oracle WebLogic Server..

Key features:

- Resource model representation of persistent data as JSON or XML with configurable bindings.
- Discoverable REST service structure URIs so that client developers do not need to understand TopLink Data Services or the Java EE infrastructure it is hosted on.
- Live data supports asynchronous delivery of changes made in the application cluster or in the backing Oracle Database to client applications.
- Declarative definition and customization of services without having to develop additional server side components.

The RESTful data services are in addition to the previously available SOAP (JAX-WS) based web services. These database web services provide excellent support for service generation from relational schema including PL/SQL packages.

## Database

Oracle TopLink is best known for its long history of Object-Relational persistence features. TopLink is a pioneer in database persistence with standard and extended support for:

**RELATIONAL** Standards compliant Java Persistence API (JPA) support is provided along with many advanced features focused on mapping flexibility, performance, and scalability giving developers the features they need to address their complex application requirements. Some of the advanced features include:

- Sophisticated out-of-the-box single node and clustered caching with integrated support for data grid caching solutions
- Flexibility with dynamic and extensible domain models allowing runtime customization
- Multi-tenancy support with several flexible tenant isolation strategies
- Data partitioning to share storage across tables, schemas, and databases
- Performance tuning and diagnostics capabilities

**NoSQL** persistence allows developers to map their entities to NoSQL data structures and supports translation of queries and transaction operations into native database operations. This approach to NoSQL persistence enables easy migration between persistence storage technologies or combining them together to allow application to easily leverage both relational and NoSQL databases to meet all of their storage

requirements.

**HOT CACHE** Entity caching can greatly reduce database traffic and memory consumption of an application but also requires developers to handle the possibility of stale data in the cache. TopLink includes several features that can easily be enabled to reduce stale caching and increase the benefits of caching. Using Cache Coordination a clustered application can share knowledge of changes across a messaging bus and Oracle Database users can choose to have the database notify TopLink of changes made to persisted data so that cached entities can be kept up to date.

**FLEXIBLE** TopLink's database mappings allow developers to construct application services that allow great flexibility in adapting to custom deployments. This includes extensible persistent models where new properties, relationships and types can be added dynamically without requiring costly development cycles. Applications can also have different tenant isolation configurations facilitating Software-as-a-Service (SaaS) enabled applications to be more easily developed and managed.

## JSON and XML

Binding support includes an implementation of Java Architecture for XML Binding (JAXB) that provides both standards compliant configuration and advanced binding features for improved flexibility. This support has also been extended to provide a flexible and efficient JSON binding solution leveraging the same infrastructure and configuration. Defining bindings using either annotations or an XML mapping file making it possible to simultaneously bind the same object model to multiple representations. This unique feature makes the construction and evolution of web services practical and efficient.

## Oracle TopLink in WebLogic

Oracle TopLink is the strategic persistence solution integrated into Oracle WebLogic to simplify development and runtime management of an application's persist data.

- Default JPA implementation shipped within WebLogic with integrated transaction management, logging and JMX MBean deployment
- Default JAXB implementation within WebLogic
- Enterprise Manager support for monitoring and analyzing persistence performance

## TopLink Grid: Scaling with Coherence

TopLink Grid integrates with Oracle Coherence to enable customers to scale out their applications with a data grid backed by database storage. Coherence applications can use TopLink's optimized database persistence cache store or TopLink JPA applications can scale out with Coherence providing a distributed shared entity cache.

TopLink Grid also supports the execution of read queries against the grid. Coherence's distributed data partitioning strategy enables the parallel execution of many queries across the grid without requiring access to the underlying database. This can result in a reduction in the load on a shared database.

Developers using JPA will find it very simple and natural to configure their entities for Coherence caching. With a single annotation or minimal XML configuration each entity type can be customized with different levels of caching, querying, and storage in the Grid. Support for class-by-class cache configuration enables the most efficient use of both the data grid and the underlying database.

## Built on EclipseLink

Oracle TopLink's core persistence components are provided by the open source EclipseLink project. This provides TopLink with a community driven solution that provides comprehensive persistence capabilities with industry leading support for Java SE, EE, and OSGi persistence standards along with many advanced features.



## Rich Developer Tooling Support

Oracle TopLink is a runtime library used within your application and its hosted container. TopLink includes several utilities to assist developers, however the best environment for TopLink development is with Maven and integrated environments offering standards-based development with EclipseLink extensions.

**Maven** TopLink offers Maven support for installing, developing, and deploying standalone Java SE and WebLogic Java EE applications.

**Oracle JDeveloper and ADF** (Application Development Framework) offer developers a rich and integrated set of development tools for developing application components and services for the Oracle platform. Both JDeveloper and ADF enable developers to leverage standard persistence features as well as EclipseLink's advanced capabilities.

**NetBeans** IDE provides all the tools needed to create professional desktop, enterprise, web, and mobile applications with the Java platform. The Java EE development support includes JPA based wizards and configurations, along with other EclipseLink specific support.

**Oracle Enterprise Pack for Eclipse** (OEPE) offers developers a rich set of tools built on the Eclipse Java EE IDE with additional plugins to enhance development with Oracle's WebLogic Server, GlassFish Server Open Source Edition, Coherence and other key Java and Java EE technologies. This includes EclipseLink JPA, JAXB, and DBWS tooling that offers excellent standards based support in addition to support for advanced EclipseLink features.

## Summary

Oracle TopLink is a comprehensive and flexible persistence solution enabling RESTful data services for relational and NoSQL databases. TopLink offers standards based solutions with rich flexibility, performance, and scalability features that address the most complex persistence requirements. TopLink is well integrated within the Oracle Fusion Middleware stack making it the persistence solution of choice for developers targeting deployment to Oracle Fusion Middleware, Oracle Cloud, or the Oracle Database.

- Oracle WebLogic
- Oracle Coherence
- Oracle Database

## Contact Us

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



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