

VNA-SB-027 | Application Stack X to Application Stack Y | Java Middleware & App Server Modernization | Sierra Granite

Oracle WebLogic, JBoss EAP & IBM WebSphere (Java EE / ADF / Struts) Modernization to ORDS, APEX & OKE

Maintaining clusters of Oracle WebLogic Server, IBM WebSphere, or JBoss EAP just to run aging Oracle ADF, JSF, JSP, or Apache Struts CRUD applications drains patching cycles and processor licenses. We classify your Java portfolio: data-centric CRUD applications (70% of typical WAR/EAR files) are converted into high-speed Oracle APEX 24.2 and ORDS REST services, while complex stateless microservices are modernized to GraalVM / Spring Boot / Helidon on OCI Kubernetes Engine (OKE).

Search Queries & Scope Covered: migrate Oracle ADF to Oracle APEX 24.2 | retire Oracle WebLogic Server licensing cost | Apache Struts and JSF JSP to Oracle APEX migration | IBM WebSphere and JBoss EAP to OCI OKE Kubernetes | replace Java EJB DAO layer with Oracle ORDS REST APIs

SOURCE LEGACY STACK (STACK X)		MODERNIZED TARGET ARCHITECTURE (STACK Y)	
Oracle WebLogic 12c, Oracle ADF, IBM WebSphere, JBoss EAP, Java EE 6/7, JSF, Apache Struts, EJB 2/3		Oracle REST Data Services (ORDS), Oracle APEX 24.2, GraalVM / Helidon / Spring Boot on OCI OKE	
MIDDLEWARE LICENSE SAVINGS	JAVA LINES OF CODE RETIRED	CONTAINER STARTUP TIME	CVE PATCH SURFACE
70% - 100% WebLogic Exit	82% Boilerplate Eliminated	< 0.1s with GraalVM / ORDS	Zero Struts / Log4j Debt

1. Problem Space & Architectural Bottlenecks

- Oracle ADF (Application Development Framework), Apache Struts 1/2, and legacy JSF applications require specialized Java middleware admins and suffer from frequent CVE security advisories.
- Over 75% of legacy enterprise Java `.ear` and `.war` archives consist of repetitive EJB/Hibernate/JPA boilerplate that simply reads and writes rows to an Oracle Database.
- Licensing Oracle WebLogic Suite or IBM WebSphere across multi-node clusters costs hundreds of thousands of dollars annually before a single line of business feature is delivered.

2. Technical Solution & Reference Architecture

- 2.1 Portfolio Triage & AST Inspection: Scan `.ear/.war` archives, `faces-config.xml`, ADF Business Components (`EntityEO/ViewVO`), and Hibernate mappings to separate database CRUD apps from external integration services.
- 2.2 ADF & Struts to Oracle APEX 24.2: Convert ADF Task Flows, ViewObjects, and JSF/JSP screens into native Oracle APEX 24.2 pages, Interactive Grids, and PL/SQL API packages.
- 2.3 Hibernate/DAO to ORDS Auto-REST: Replace chatty JPA/Hibernate N+1 query layers with high-throughput Oracle REST Data Services (ORDS) and Oracle 23ai JSON Relational Duality Views.
- 2.4 Stateless Java to OKE: Containerize remaining Java domain services onto GraalVM Native Image, Helidon, or Spring Boot 3 running on OCI Kubernetes Engine (OKE) with zero control-plane fees.

3. Artifact-by-Artifact Conversion & Modernization Matrix

Legacy Artifact / Baseline Workload	Modernized Oracle / Cloud Target	Engineering Method & Outcome
Oracle ADF Entity Objects (EO) & View Objects (VO)	Oracle 23ai Views + APEX 24.2 Interactive Grids / Forms	Extract VO SQL queries and EO validation rules directly into PL/SQL packages and APEX regions
ADF Bounded Task Flows & JSF Page Fragments (.jsff)	Oracle APEX 24.2 Page Wizards, Modal Dialogs & Branches	Map task flow navigation and session state to declarative APEX page items and processes
Apache Struts Actions / JSPs & Spring MVC Controllers	Oracle APEX Pages or ORDS PL/SQL REST Handlers	Retire vulnerable Struts taglibs; expose clean OpenAPI 3.0 REST endpoints via ORDS
EJB 2.x/3.x Session Beans & Hibernate/JPA DAOs	Oracle 23ai JSON Duality Views + PL/SQL Business APIs	Eliminate object-relational impedance mismatch and network round-trips
WebLogic / WebSphere / JBoss Application Server Clusters	Stateless ORDS + OCI Kubernetes Engine (OKE) / GraalVM	Retire commercial app server core licenses; deploy immutable containers via CI/CD

4. Oracle APEX & Ancillary Engineering Toolchain

- Oracle APEX 24.2 & Oracle REST Data Services (ORDS)
- Oracle 23ai JSON Relational Duality Views (Zero-ORM JSON/SQL)
- OCI Kubernetes Engine (OKE) & GraalVM Enterprise (Included at No Cost on OCI)
- Oracle Helidon / Spring Boot 3 Microservices
- Viscosity AMP & Oracle SQLcl Liquibase CI/CD

Anonymized Production Proof: Replaced an 8-node Oracle WebLogic and Oracle ADF application suite (190 ADF fragments and 420 ViewObjects) with Oracle APEX 24.2 and ORDS, retiring \$310K/year in WebLogic support while cutting page load times from 3.4 seconds to 280 milliseconds.

5. Principal Architect Q&A

Q: Should we migrate Oracle ADF applications to Oracle Visual Builder (VBCS) or Oracle APEX?

A: When your data resides in an Oracle Database, Oracle APEX 24.2 is dramatically faster to build, runs inside the database with zero middle-tier network latency, and carries zero additional per-user or per-CPU licensing cost.

Q: Is GraalVM Enterprise really included at no extra cost on OCI?

A: Yes. Oracle Cloud Infrastructure (OCI) includes GraalVM Enterprise support at no additional charge on OCI compute and OKE nodes, allowing Java microservices to compile to native binaries with sub-second startup and a fraction of the RAM footprint.