ORACLE SPATIAL AND GRAPH

Oracle provides the industry’s leading spatial database management platform. Oracle Spatial and Graph option includes advanced features for spatial data management and analysis as well as for physical, network and social graph applications. The geospatial data features support complex Geographic Information Systems (GIS) applications, enterprise applications and location-based services applications. The graph features include a network data model (NDM) graph to model and analyze link-node graphs to represent physical and logical networks used in industries such as transportation and utilities. RDF Semantic Graph models and analyzes data represented as triples for social networks and linked data applications.

Location-Enable Your Enterprise Applications and Workflows

Most business information has a location component, such as customer addresses, sales territories and physical assets. Businesses can take advantage of their geographic information by incorporating location analysis and intelligence into their information systems. This allows organizations to make better decisions, respond to customers more effectively, and reduce operational costs – increasing ROI and creating competitive advantage.

Oracle Database includes native location capabilities, fully integrated in the kernel. It is a foundation for deploying enterprise-wide spatial information systems and location-enabled business applications. Developers can extend existing Oracle-based tools and applications, since they can easily incorporate location information directly in their applications, workflows, and services.

Advanced Features for Spatial Analysis and Graph Applications

Spatial Features

The geospatial data features of Oracle Spatial and Graph option support complex geographic information systems (GIS) applications, enterprise applications and location services applications. Oracle Spatial and Graph option extends the spatial query and analysis features included in every edition of Oracle Database with the Oracle Locator feature, and provides a robust foundation for applications that require advanced spatial analysis and processing in the Oracle Database. It supports all major spatial data types and models, addressing challenging business-critical requirements from various industries, including transportation, utilities, energy, public sector, defense and commercial location intelligence. The advanced spatial features include:

- Vector Performance Acceleration (new in Oracle Database 12c): Turbo-charged spatial performance – up to 50-100 times faster execution of operations and functions such as spatial joins, touch, contains, overlaps
- Geocoding and routing engines; spatial analysis and mining functions
- GeoRaster features to store and process georeferenced raster data, such as satellite imagery and gridded data; now supports raster algebra and virtual mosaics (new in Oracle Database 12c)
- 3D, point cloud and LIDAR data management and analysis
- Topology data model and linear referencing for land management applications

- Option to Oracle Database Enterprise Edition
- Vector Performance Acceleration – up to 50 times faster execution of spatial operations such as joins, touch, contains, and more
- Virtual Mosaic and image processing with GeoRaster support for imagery and raster data, including Java API
- 3D data model – native support for 3D geometries, surfaces and point clouds (LiDAR data)
- Geocoding and routing engines; spatial analysis and mining functions
- Topology data model; linear referencing system
- Network Data Model Graph– a storage model to represent graphs and networks in link and node tables
- RDF Semantic Graph Features – to represent graphs as triples in compressed, partitioned tables
- Support for W3C standards for semantic data, ontologies and inferencing – RDF, SKOS, RDFS, OWL, SPARQL
- Ontology-assisted relational querying
KEY BENEFITS
• Easily location-enable standard enterprise applications, processes, and workflows
• Store, manage, and analyze all major geospatial data types and models natively in Oracle Database
• Supported by all leading geospatial vendors
• Bring scalability, security and manageability of Oracle Database to enterprise spatial and graph applications
• Extreme performance for mission-critical enterprise spatial and graph datasets from Oracle Engineered Systems
• Advanced support for RDF semantic graphs for social interaction analysis

RELATED PRODUCTS
• Oracle Database 12c
• Oracle Fusion Middleware MapViewer
• Oracle Business Intelligence Enterprise Edition (OBIEE)
• Oracle Advanced Analytics

Network Data Model Graph Features
The Network Data Model graph explicitly stores and maintains a persistent data model with network connectivity and provides network analysis capability such as shortest path, nearest neighbors, within cost and reachability. It loads partitioned networks into memory on demand, overcoming the limitations of in-memory analysis. Partitioning massive networks into manageable sub-networks simplifies the network analysis.

Network Data Model Graph features include:
• Ability to model and analyze link-node graphs to represent physical and logical networks used in transportation, utilities, energy and communications.
• Java APIs to perform analysis in memory
• Storage and connectivity of the graph with link and node-level attributes
• Support for directed and undirected graphs with or without costs
• Feature modeling and analysis (new in Oracle Database 12c) – applications can interface with network data at the real world feature level (e.g. transformer, power line)

RDF Semantic Graph Features
RDF Semantic Graph has native support for World Wide Web Consortium standards. It has open, scalable, and secure features for storing RDF/OWL ontologies and data; native inference with OWL 2, SKOS and user-defined rules; and querying RDF/OWL data with SPARQL 1.1, Java APIs, and SPARQL graph patterns in SQL. The RDF Semantic Graph features include:
• Scalability for petabytes of RDF data with triple-level Oracle Label Security
• Analytics using SPARQL 1.1 path expressions, in-memory graph analytics, and Oracle Advanced Analytics Data Miner and Oracle R Enterprise
• Semantic indexing for documents based on popular natural language tools
• RDF views to apply semantic analysis to relational data (new in Oracle Database 12c)
• OGC GeoSPARQL (new in Oracle Database 12c) for representing and querying spatial data

The World’s Leading IT Platform for Spatial and Graph Data
Oracle Spatial and Graph is a native part of Oracle Database – and of the world’s leading information technology platform. Spatial and graph data benefit from Oracle’s leading performance, scalability and security capabilities, including advances in Oracle Database 12c, and can exploit the extreme processing power and bandwidth of Oracle Exadata Database Machine. Spatial and graph features are part of Oracle tools and enterprise applications and are supported by leading geospatial vendors. Partners can easily incorporate these capabilities in their solutions, and customers can location-enable applications built on the Oracle stack.

The largest enterprises worldwide – mapping agencies, transportation, utilities, telcos, insurance, energy, financial services and more – rely on Oracle Spatial and Graph.

Contact Us
For more information about Oracle Spatial and Graph, visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

Oracle is committed to developing practices and products that help protect the environment

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Hardware and Software, Engineered to Work Together