Deploying Spatial Applications in Oracle Public Cloud

David Lapp, Product Manager
Oracle Spatial and Graph
Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
Agenda

• Spatial and Graph in Oracle Cloud
• Create cloud service instances
• Deploy data and application to cloud
• Big data scenarios
Oracle geospatial platform

Database and Big Data Platform support, On-premise and in the Cloud

Oracle Big Data Spatial and Graph

Oracle Database Spatial and Graph

Spatial and Graph in Oracle Cloud
Oracle Spatial and Graph

Deployable Services  Geocoding  Routing  Web Services (OGC)

Polygons
Lines
Points
Networks
RDF Graphs
Property Graphs (new in 12.2 on Oracle Cloud)

Spatial & Graph

Oracle

SQL
REST
Java
3D / LIDAR

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Spatial Visualization

Map authoring tool

Web based admin

HTML5 mapping API

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Database Cloud Services for Enterprise

<table>
<thead>
<tr>
<th>Service</th>
<th>Database Development</th>
<th>SMB &amp; Departmental Applications</th>
<th>Enterprise Applications</th>
<th>Highest performance</th>
<th>Customer at Cloud Choices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schema CS</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express CS</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Database CS</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elastic Compute or Bare Metal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exadata CS</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Cloud Machine</td>
</tr>
</tbody>
</table>

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Database Cloud Services for Enterprise

Spatial and Graph

- Schema CS
- Express CS (Coming soon...)
- Database CS (Elastic Compute or Bare Metal)
- Exadata CS (Included)

High Performance and Extreme Performance editions
HTTP access only

High Performance and Extreme Performance editions

Included
Loading Spatial Application to Cloud: Spatial Data

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Typical spatial metadata and index migration considerations apply.
Loading Spatial Application to Cloud: App deployment

Spatial Visualization deployment
Other JEE server deployment
Application deployment

WebLogic Console

Oracle Java Cloud Service
WebLogic Server

Oracle Database Cloud Service
Spatial data

JEE deployments

Spatial Visualization metadata

Other application metadata

 OCI, JDBC client

Map Authoring

Application metadata
Walkthrough
SIGN IN TO
ORACLE CLOUD

Enter your Identity Domain

dbdevcs18

Go
ORACLE CLOUD My Services

Dashboard

0 Important Notifications

- Database
  - Instance 1
- Java
  - Instance 1
- Compute
  - Instances 2
- developer09236
  - Developer
- Database Backup
- Storage
- SOA
Load SSH key
Confirmation
Confirm your responses and create this Oracle Database Cloud Service instance.

Subscription Details
Service Level: Oracle Database Cloud Service
Billing Frequency: Monthly
Software Release: Oracle Database 12c Release 2

Backup and Recovery Details
Backup Destination: Cloud Storage Only
Username: david.lapp@oracle.com
Cloud Storage: https://odbevcs18.storage.oraclecloud.com/v1/Storage-
Container: odbevcs18/mycontainer

Service Details
Service Name: DLAPPDBCS3
Description:
Compute Shape: OC3 - 1 CPU, 7.5 GB RAM
Timezone: (UTC) Coordinated Universal Time (UTC)
Key: rsa-key-20160826.pub

Database Configuration Details
Usable Database Storage: 25
Total Data File Storage: 88.5
DB Name (SID): ORCL
PDB Name: PDB1
DB Listener Port: 1521
Character: AL32UTF8 - Unicode Universal character set UTF-8 form
Set: 32-bit
National Character: AL16UTF16 - Unicode UTF-16 Universal
Set: character set
Include "Demos" PDB: No
Include GoldenGate: No
Database Clustering with RAC: No

Standby Database Configuration Details
Standby Database with Data Guard: No
### Access Rules

You can use access rules to control network access to service components. On this page, you can manage your access rules.

<table>
<thead>
<tr>
<th>Status</th>
<th>Rule Name</th>
<th>Source</th>
<th>Destination</th>
<th>Ports</th>
<th>Protocol</th>
<th>Description</th>
<th>Rule Type</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ora_p2_ssh</td>
<td>PUBLIC-INTERNET</td>
<td>DB</td>
<td>22</td>
<td>TCP</td>
<td></td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_p2_http</td>
<td>PUBLIC-INTERNET</td>
<td>DB</td>
<td>80</td>
<td>TCP</td>
<td></td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_p2_httpssl</td>
<td>PUBLIC-INTERNET</td>
<td>DB</td>
<td>443</td>
<td>TCP</td>
<td></td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_p2_httpadmin</td>
<td>PUBLIC-INTERNET</td>
<td>DB</td>
<td>4848</td>
<td>TCP</td>
<td></td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_p2_dbconsole</td>
<td>PUBLIC-INTERNET</td>
<td>DB</td>
<td>1158</td>
<td>TCP</td>
<td></td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_p2_dbexpress</td>
<td>PUBLIC-INTERNET</td>
<td>DB</td>
<td>5500</td>
<td>TCP</td>
<td></td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_p2_dblistener</td>
<td>PUBLIC-INTERNET</td>
<td>DB</td>
<td>1521</td>
<td>TCP</td>
<td></td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sys_infra2db_ssh</td>
<td>PAAS-INFRA</td>
<td>DB</td>
<td>22</td>
<td>TCP</td>
<td>DO NOT MODIFY: Permit</td>
<td>SYSTEM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_trusted_hosts_dbl</td>
<td>127.0.0.1/32</td>
<td>DB</td>
<td>1521</td>
<td>TCP</td>
<td>DO NOT MODIFY: A secure...</td>
<td>SYSTEM</td>
<td></td>
</tr>
</tbody>
</table>
Oracle Database Cloud Service / DLAPPDBCS2

**Overview**

**Summary**

- **Nodes**: 1
- **OCPUs**: 1
- **Memory**: 7.5 GB
- **Storage**: 139 GB

**Version**: 12.2.0.1

**Backup Destination**: Cloud Storage Only

**Cloud Storage Container**: https://dbdevcs18.sstorage.oraclecloud.com/v1/storage-dbdevcs18/dbcs-container

**Database**

- **Edition**: Enterprise Edition - Extreme Performance
- **Location**: EM02_Z17

**Resources**

- **Public IP**: [IP Address]
- **SQL Net Port**: 1521
- **OCPUs**: 1
- **Memory**: 7.5 GB
- **Storage**: 139 GB

**Additional Information**

- **Connect String**: DLAPPDBCS2:1521/PDB1.dbdevcs18.oraclecloud.internal
- **Container Name**: ORCL
- **Timezone**: Coordinated Universal Time
- **Character Set**: AL32UTF8 - Unicode Universal character set UTF-8 form 32-bit
Secure Copy using
- WinSCP
- FileZilla
- pscp
SSH key authentication
SSH key authentication
Oracle Spatial Summit at BIWA 2017
Load SSH key
Oracle Spatial Summit at BIWA 2017

Provision New Oracle Java Cloud Service

Confirm

Cloud Storage Container: https://dbdevcs18.storage.oraclecloud.com/v1/Storage-dbdevcs18/mycontainer2 created.

Confirm your selections and create your service.

<table>
<thead>
<tr>
<th>Subscription Details</th>
<th>Database Details</th>
<th>Load Balancer</th>
<th>Backup and Recovery Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billing Frequency: Monthly</td>
<td>PDB Name: PDB1</td>
<td></td>
<td>Cloud Storage Username: <a href="mailto:david.lapp@oracle.com">david.lapp@oracle.com</a></td>
</tr>
<tr>
<td>Release: Oracle WebLogic Server 12c, 12.2.1.2.0</td>
<td>Administrator Username: sys</td>
<td></td>
<td>Cloud Storage Username: <a href="mailto:david.lapp@oracle.com">david.lapp@oracle.com</a></td>
</tr>
<tr>
<td>Edition: Enterprise Edition</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Name: DLAPP-JCS3</td>
<td></td>
</tr>
<tr>
<td>Cluster Size: 1</td>
<td></td>
</tr>
<tr>
<td>Domain Partitions: 0</td>
<td></td>
</tr>
<tr>
<td>Compute Shape: OC3 - 1 CPU, 7.5 GB RAM</td>
<td></td>
</tr>
<tr>
<td>Key: rsa-key-20160826.pub</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WebLogic Access</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Administrator Username: weblogic</td>
<td></td>
</tr>
<tr>
<td>Enable Administration Console: No</td>
<td></td>
</tr>
<tr>
<td>Deploy Sample Application: No</td>
<td></td>
</tr>
</tbody>
</table>
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<th>Rule Type</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>sys_ms2db_dblisten</td>
<td>WLS_MANAGED...</td>
<td>dbaas.DLAPPDBCS2</td>
<td>1521</td>
<td>TCP</td>
<td>DO NOT MODIFY Permit lis...</td>
<td>SYSTEM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sys_ms2db_ssh</td>
<td>WLS_MANAGED...</td>
<td>dbaas.DLAPPDBCS2</td>
<td>22</td>
<td>TCP</td>
<td>DO NOT MODIFY Permit m...</td>
<td>SYSTEM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>port_7001</td>
<td>PUBLIC-INTERNET</td>
<td>WLS_MANAGED SERVER</td>
<td>7001</td>
<td>TCP</td>
<td>Permit public to ssh to adm...</td>
<td>USER</td>
<td></td>
</tr>
<tr>
<td></td>
<td>port_9073</td>
<td>PUBLIC-INTERNET</td>
<td>WLS_MANAGED SERVER</td>
<td>9073</td>
<td>TCP</td>
<td></td>
<td>USER</td>
<td></td>
</tr>
<tr>
<td></td>
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<td>PUBLIC-INTERNET</td>
<td>WLS_ADMIN_SERVER</td>
<td>22</td>
<td>TCP</td>
<td>Permit public to ssh to adm...</td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_o2admin_https</td>
<td>PUBLIC-INTERNET</td>
<td>WLS_ADMIN_SERVER</td>
<td>7002</td>
<td>TCP</td>
<td>Permit public to https to adm...</td>
<td>DEFAULT</td>
<td></td>
</tr>
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<td></td>
<td>sys_infra2admin_ssh</td>
<td>PAAS-INFRA</td>
<td>WLS_ADMIN_SERVER</td>
<td>22</td>
<td>TCP</td>
<td>DO NOT MODIFY. Permit P...</td>
<td>SYSTEM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_o2ms_chttp</td>
<td>PUBLIC-INTERNET</td>
<td>WLS_MANAGED SERVER</td>
<td>80</td>
<td>TCP</td>
<td>Permit http connection to m...</td>
<td>DEFAULT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ora_o2ms_chttps</td>
<td>PUBLIC-INTERNET</td>
<td>WLS_MANAGED SERVER</td>
<td>443</td>
<td>TCP</td>
<td>Permit https connection to m...</td>
<td>DEFAULT</td>
<td></td>
</tr>
</tbody>
</table>
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Overview
N/A
Average response time
1
Number of Nodes

Administration
0
Patches available
Jan 27, 2017 2:50:23 AM UTC
Most recent backup failed
N/A
Last successful backup

WebLogic
Version:
Cloud Storage Container: N/A
Level: N/A

Resources
Administration Server Domain: DLAPPJCS_domain
Managed Server: DLAPPJCS_server_1
Public IP: N/A

Associated Services
Service Name: DLAPPJCS2
Service Type: Oracle Database Cloud Service
Role: Infrastructure Database
### Oracle Spatial Summit at BIWA 2017

The screenshot shows the Oracle WebLogic administration console interface for managing a domain named `DLAPPICS_domain`. The console interface includes a summary of deployments, a table listing various deployments with details such as name, state, health, type, targets, scope, and deployment order. The console also displays the health status of running servers and system status logs. The interface is used to configure and monitor enterprise applications, domain partitions, and other components of the Oracle WebLogic server.
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Settings for all fire safety

General Connection Pool Oracle ONS Transaction Security Diagnostics Identity Options

Save

The connection pool within a JDBC data source contains a group of JDBC connections that applications reserve, use, and then return to the pool. The connection pool and the connections within it are created when the connection pool is initialized, usually when starting up WebLogic Server or when deploying the data source to a new target.

Use this page to define the configuration for this data source’s connection pool.

URL: jdbc:oracle:thin:@10.1.2.3:1521/PDB1;default_schema=s18_oracle

The URL of the database to connect to. The format of the URL varies by JDBC driver.

Driver Class Name: oracle.jdbc.OracleDriver

The full package name of JDBC driver class used to create the physical database connections in the connection pool. (Note that this driver class must be in the class path of any server to which it is deployed).

Properties:

user=nl_fire_safety

The list of properties passed to the JDBC driver that are used to create physical database connections. For example: server=observer.1. List each property-value pair on a separate line.

System Properties:

Encrypted Properties:

Password: **************

The password attribute passed to the JDBC driver when creating physical database connections.

Confirm Password: **************

The number of physical connections to create when creating the connection pool in the data source. If unable to create this number of connections, creation of the data source will fail.

Initial Capacity:

1
Your MapViewer server is now running and you can start viewing your Oracle Spatial managed data. MapViewer is a component of Oracle's Fusion Middleware. It provides powerful geospatial data visualization services.

**Getting Started**

Here are a few things that can get you started.

- Use MapBuilder to import some spatial data into an Oracle database that you have access to.
- Create a data source so that MapViewer can connect to the database. Please log into the Admin page to do so.
- Start developing your first MapViewer applications.

**What is Oracle Maps**

Oracle Maps is a new feature of MapViewer. It consists of a free scrolling AJAX-based web mapping interface, a flexible and open JavaScript API, a map tile server and a Feature of Interest (FOI) server. Starting with MapViewer version 11.1.7 we also added a new HTML5 JavaScript mapping API.

**Demos and tutorials**

Please note that all demos and tutorials previously bundled with MapViewer have been removed from the product itself. They will be available for download from the OTN MapViewer page.
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Data sources

<table>
<thead>
<tr>
<th>Name</th>
<th>User</th>
<th>Type</th>
<th>JDBC url</th>
<th>TNS name</th>
<th>Mappers</th>
<th>Maximum connections</th>
<th>Editable</th>
<th>JDBC Theme based FOI all</th>
</tr>
</thead>
<tbody>
<tr>
<td>ml_firesafety</td>
<td>DB</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>0</td>
<td>false</td>
<td>true</td>
</tr>
<tr>
<td>OracleMaps</td>
<td>CATALOG</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>0</td>
<td>false</td>
<td>false</td>
</tr>
</tbody>
</table>

Refresh  Purge cache metadata
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Response Delta is the difference between total response time (call handling, dispatch, travel time) and government regulated thresholds. Thresholds vary by factors including property type.

Background map: Oracle Maps

Response Delta: Addresses
Minimum Delta: 0 min
Property Type: All

Layers:
- Municipalities
- Fire Stations

Krimpenerwaard
Case Study: LocationBox by Infotech

See the session:
“LocationBox in Oracle Public Cloud”
Wed 10:03am, Room 103
Resources


Need for Spatial in Big Data Environments

• Insurance Industry Use Case

- Actuarial and Demographic data
- Accident data
- Call data
- Customer data
- Enrich with Postal Code
- Categorize by Region

Underwriting/Risk Analysis
Oracle Big Data Spatial and Graph
Spatial Features for Big Data Environments

Data Harmonization

Categorization and filtering

Preparation, validation and cleansing

Visualization

Spatial querying and analysis

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Oracle Big Data Cloud Service

Key Features
- Dedicated Compute Shapes with Direct Attached Storage
- Hadoop, Spark delivered as an automated Cloud Service
  - Cloudera Enterprise – Data Hub Edition 5.x
  - Oracle Big Data Connectors
  - **Oracle Big Data Spatial and Graph**
  - Oracle Data Integrator Enterprise Edition
- Platform for new Big Data Services
  - Big Data Discovery
  - Big Data SQL (Coming Soon)

Benefits
- Consistently high performance
- Secure by Default
- Comprehensive Software Stack
Application Deployment

Geospatial data in native format

Semi-/Un-structured content

Oracle Storage Cloud Service

Big Data Cloud Service
Big Data Spatial and Graph
Big Data Spatial and Graph
Sessions on spatial features:

Workshop: Apply Location Intelligence and Spatial Analysis to Big Data with Java
Tues 3:34-5:20, Room 202

Presentation: Bring Location Intelligence To Big Data Applications on Spark, Hadoop, and NoSQL
Thus 2:30, Room 103