

# 1761: See IBM Cloudant Geospatial in Action

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**World of  
Watson  
2016**



# Introduction to IBM Cloudant



# IBM Cloudant Overview



The data layer for web and mobile applications

Simple to use...*but feature-rich*

Scales...*massively*

Available....*always*

# The Cloudant Data Layer



- Best-of-breed NoSQL database and clustering technology
  - Managed 24x7x365 by DevOps experts
  - Global data presence in 35+ data centers
  - Hybrid cloud capable (public/private/open source)

# Cloudant Features

- Operational data store
- NoSQL Document Database
- Simple and well-defined HTTP API
- Fully integrated:
  - Replication and Sync
  - MapReduce for real-time analytics
  - Full-Text Search
  - GeoSpatial
- Multi-tenant and dedicated-tenant clusters
- On-premise Cloudant Local for hybrid cloud deployment
- Monitoring, administration, and development Dashboard
- Powered by Apache CouchDB, Dynamo Clustering, Lucene Search, and much more...

**Build More,  
Grow More,  
Sleep More**

Do more with the only fully-managed  
NoSQL database-as-a-service (DBaaS)

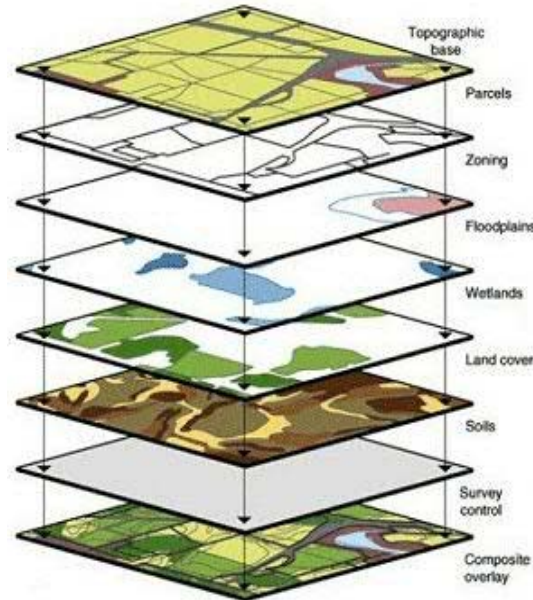
# Introduction to IBM Cloudant Geospatial





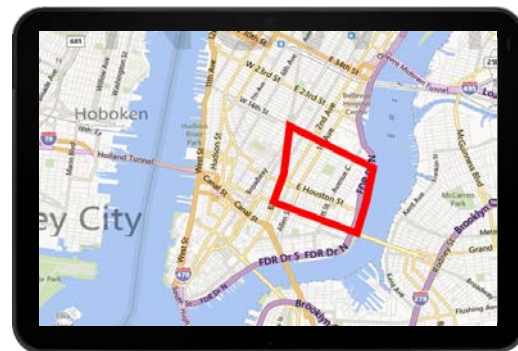
# Cloudant Geospatial

- Combines the advanced geospatial queries of GIS with the flexibility and scalability of Cloudant's database-as-a-service.



# Cloudant Geospatial

- Web and mobile developers enhance their applications with geospatial operations that go beyond simple bounding boxes.





# Cloudant Geospatial

- Integrates with existing GIS applications so they can scale for data size, concurrent users, and multiple locations.



# Cloudant Geo Overview

1. Include a GeoJSON geometry object in your JSON documents.

```
"geolocation": {  
  "coordinates": [  
    -73.985248,  
    40.759093  
  ],  
  "type": "Point"  
}
```

2. Index the geometry object using "st\_index"

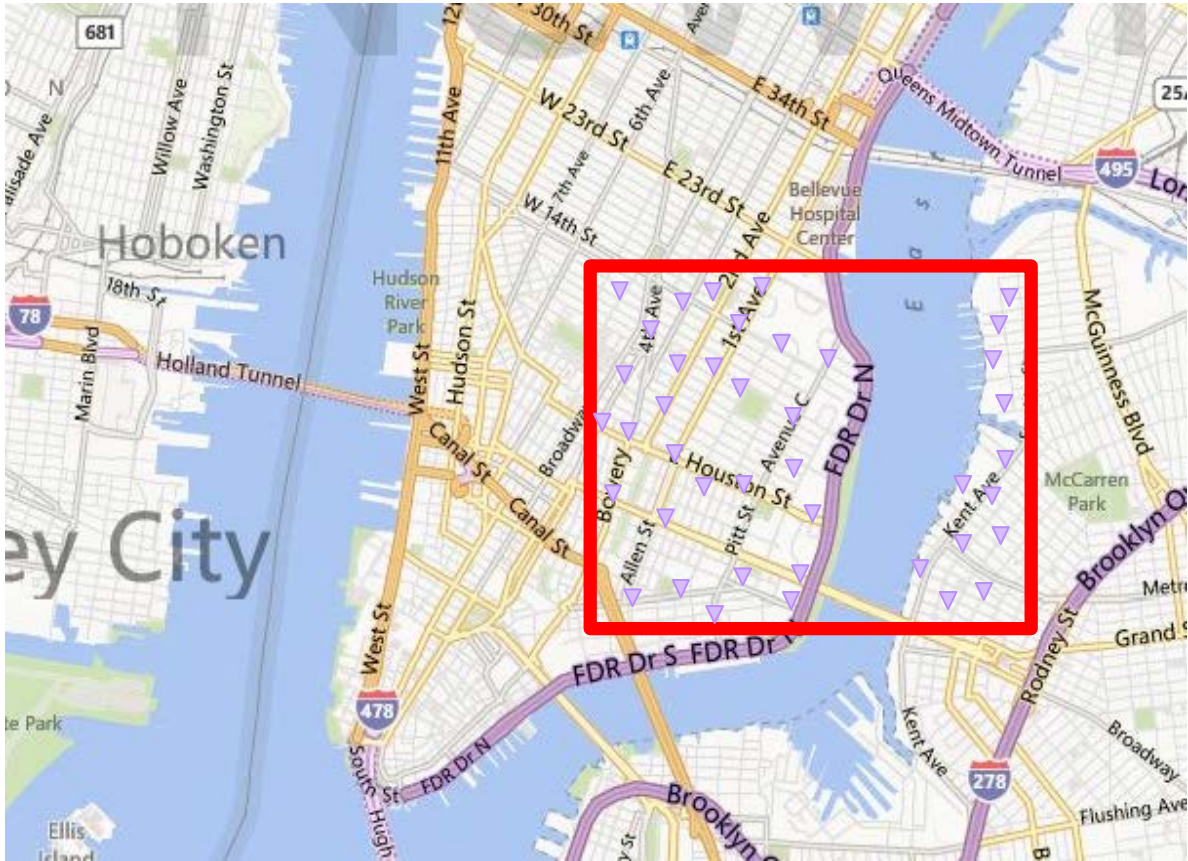
```
{  
  "_id": "_design/geodd",  
  "views": {},  
  "language": "javascript",  
  "st_indexes": {  
    "geoidx": {  
      "index": "function(doc){ if (doc.geometry && doc.geometry.coordinates) { st_index(doc.geometry); }}"  
    }  
  }  
}
```

3. Query with various geometries and geometric relationships.

```
relation=contains&g=POLYGON ((-71.0537124 42.3681995 0,-71.054399 42.3675178 0,-  
71.0522962 42.3667409 0,-71.051631 42.3659324 0,-71.051631 42.3621431 0,-  
71.0502148 42.3618577 0,-71.0505152 42.3660275 0,-71.0511589 42.3670263 0,-  
71.0537124 42.3681995 0))
```

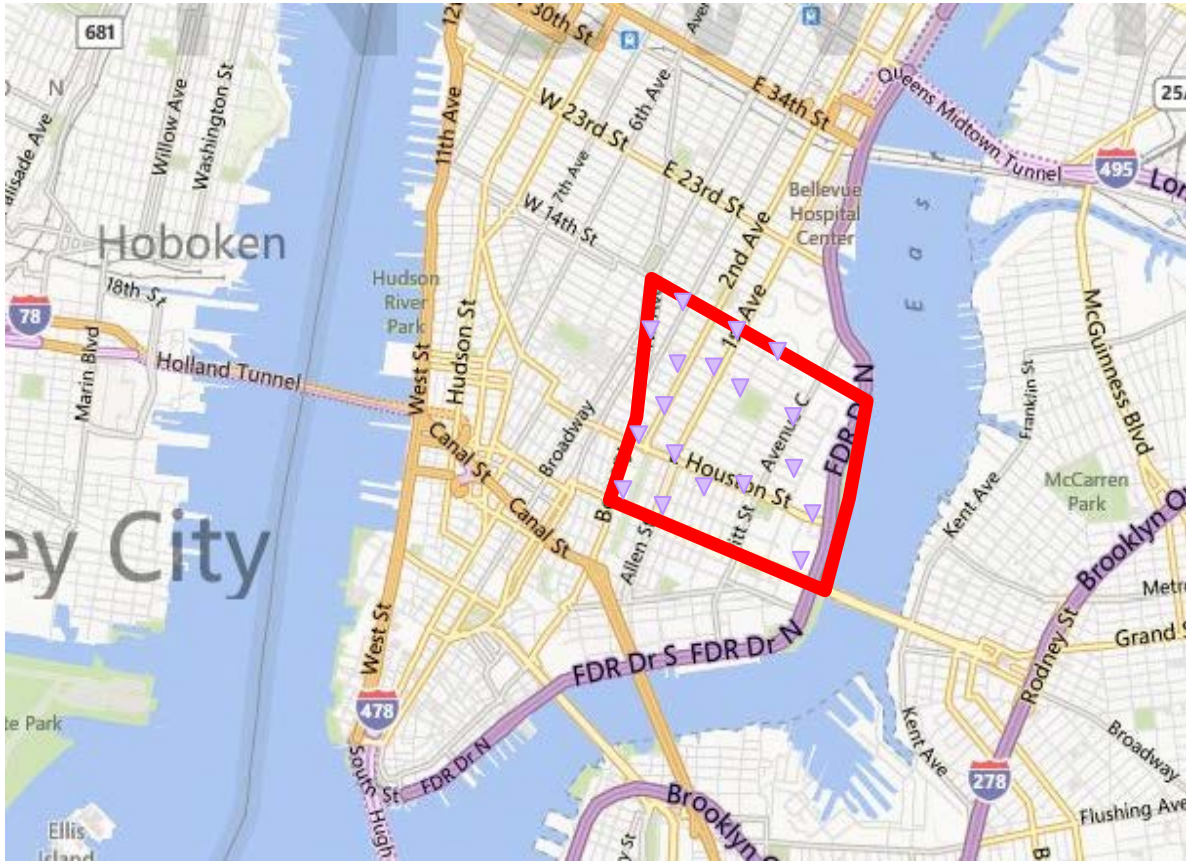


# Going Beyond Bounding Boxes

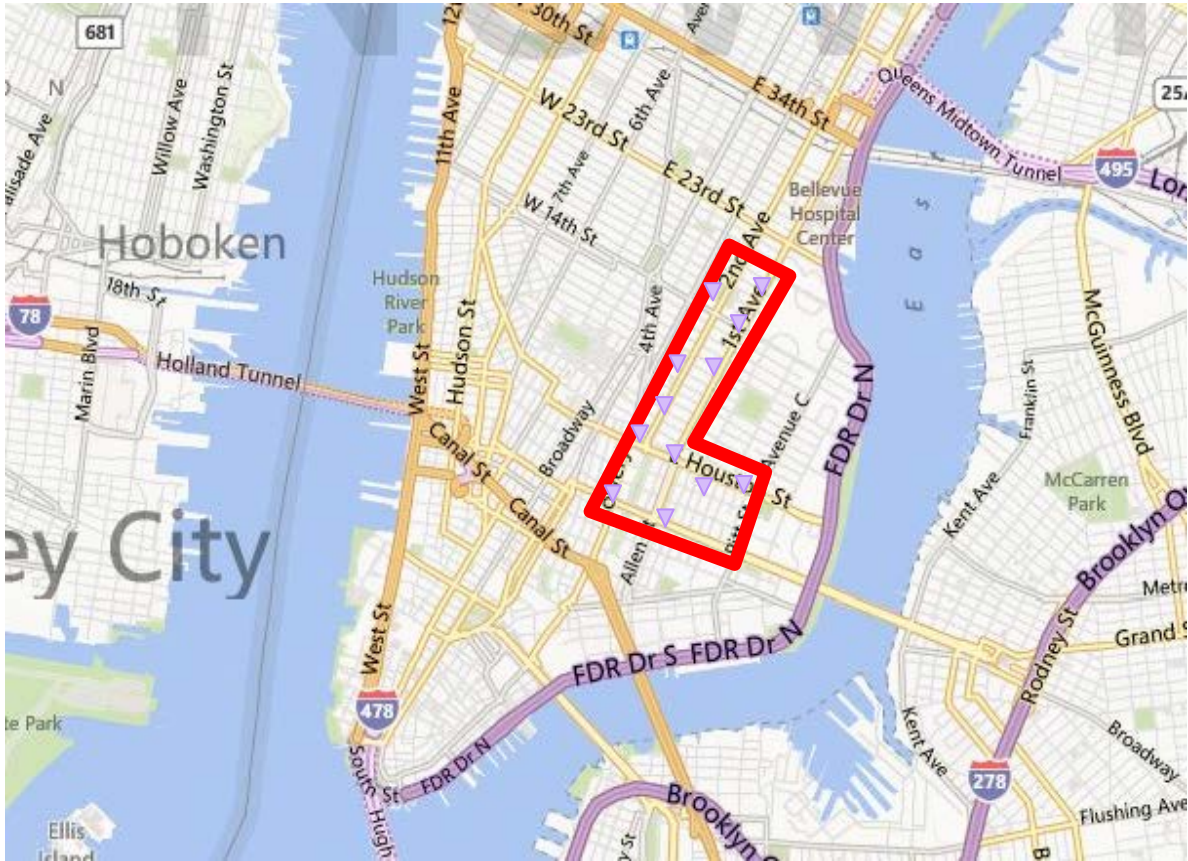




# Multipoint Polygons



# User-Defined Multipoint Polygons



# GeoJSON Formatted Data

```
{ "_id": "79f14b64c57461584b152123e38a58ca",  
  "rev": "1-d9518df5c255e4bfa06516802faa2a16",
```

```
  "geometry": {  
    "coordinates": [-71.05987446,  
                    42.28339928  
    ],  
    "type": "Point"  
  },
```

```
  "properties": {  
    "compnos": "142035012",  
    "domestic": true,  
    "fromdate": 1412208240000,  
    "main_crimecode": "Argue",  
    "naturecode": "DISTRB",  
    "reptdistrict": "C11",  
    "shooting": false,  
    "source": "Boston"  
  },
```

```
  "type": "Feature"}  
}
```

"coordinates": [  
 x-axis,  
 y-axis,  
 z-axis,  
 temporal  
]




# GeoJSON Formatted Data

StackExchange

sign up log in tour help

Q search



# Geographic Information Systems

Questions

Tags

Users

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Unanswered


Ask Question

Geographic Information Systems Stack Exchange is a question and answer site for cartographers, geographers and GIS professionals. It's 100% free, no registration required.

Take the 2-minute tour

## How to measure the accuracy of latitude and longitude?

  
105


  
100

I am very new to GPS stuff. Suppose I have latitude and longitude as 19.0649070739746 and 73.1308670043945 respectively. In this case both coordinates are 13 decimal places long, but sometimes I also get coordinates which are 6 decimal places long. Does fewer decimal points affect accuracy? What does every digit after the decimal place signify?


lat-lon accuracy precision

share improve this question

edited May 12 '14 at 22:44

 user664833  
109 4

asked Apr 18 '11 at 7:16

 Saurabh  
639 3 8 8

Asked 4 Years Ago

Viewed 87729 Times

Active 1 Month Ago

148 People Chatting

GIS  
7 hours ago - Andre Silva

# GeoJSON Formatted Data

## Point

```
{ "type": "Feature",  
  "geometry": { "type": "Point", "coordinates":  
[102.0, 0.5] },  
  "properties": { "prop0": "value0" }  
}
```

## Line

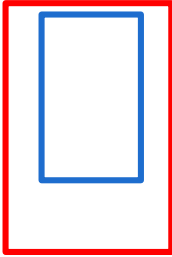
```
{ "type": "Feature",  
  "geometry": {  
    "type": "LineString",  
    "coordinates": [  
      [102.0, 0.0], [103.0, 1.0], [104.0, 0.0],  
[105.0, 1.0]  
    ]  
  },  
  "properties": {  
    "prop0": "value0",  
    "prop1": 0.0  
  }  
}
```

## Polygon

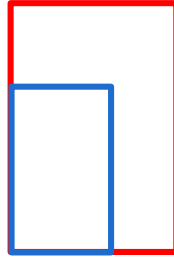
```
{ "type": "Feature",  
  "geometry": {  
    "type": "Polygon",  
    "coordinates": [  
      [ [100.0, 0.0], [101.0, 0.0], [101.0,  
1.0],  
        [100.0, 1.0], [100.0, 0.0] ]  
    ],  
  },  
  "properties": {  
    "prop0": "value0",  
    "prop1": { "this": "that" }  
  }  
}
```

# Geo Query – Relations

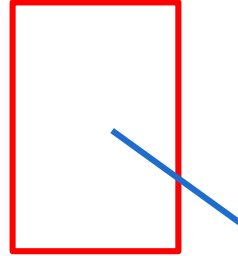
Contains  
Contains properly



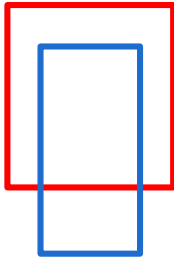
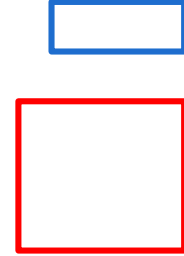
Covers  
Covered by



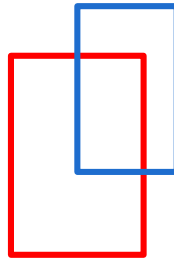
Crosses



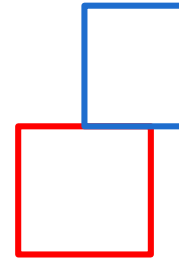
Disjoint



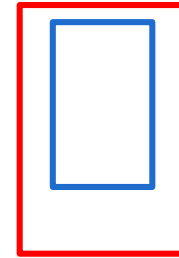
Intersects



Overlaps



Touches



Within

# Surveys/uGifting

We're all ears! How was your IBM World of Watson 2016 experience?

Let us know how we did! Complete your session surveys daily, as well as the overall conference survey, available on the IBM Events mobile app beginning Wednesday at 8:00am.

Each session survey earns you WoWBUCK\$ bringing you closer to winning an Apple TV, sponsored by Cvent. 1000 points gets you into the drawing.\*

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Thank You

Start the lab at [ibm.biz/wow-cloudant-lab](http://ibm.biz/wow-cloudant-lab)

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