

IBM Intelligent City Planning and Operations



# IBM Intelligent City Planning and Operations Installation and User Guide

*Version 1.5.1*



IBM Intelligent City Planning and Operations



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*Version 1.5.1*

**Note**

Before using this information and the product it supports, read the information in "Notices" on page 47.

This edition applies to IBM Intelligent City Planning and Operations version 1, release 5, modification 1. This edition applies to all subsequent releases and modifications until otherwise indicated in new editions.

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# Chapter 1. Overview of IBM Intelligent City Planning and Operations

IBM® Intelligent City Planning and Operations enables exploration and discovery of geospatial and temporal relationships among city data records, producing insights into city operations that inform better city-wide decision making and planning.

IBM Intelligent City Planning and Operations is an application of IBM Intelligent Operations Center . Users can search data records, limit searches to time and place, and display the search results on a map. Users can also define analysis operations on the data records to discover clusters of facts and relationships, and display the clusters on the map.

IBM Intelligent City Planning and Operations combines information from multiple data sources, enabling city government to:

- Identify and analyze unlicensed businesses, thus increasing revenue.
- Analyze potential conflicts in permit applications, improving citizen safety and satisfaction, and expediting permit approvals.
- Plan infrastructure maintenance.

IBM Intelligent City Planning and Operations uses data from various information sources, including data from city departments and from other agencies, such as private service providers, and treats the data as facts about the city. These facts can include historical information, incidents, infrastructure, planning and scheduling information, or permits information. IBM Intelligent City Planning and Operations can also use real-time information sources to track and analyze events. Most facts that have space and time parameters can be imported, analyzed, and displayed.

## Facts, layers, and areas

**Facts** Facts can be any data relating to the city, from the location and state of physical infrastructure to incidents, planned events, permits, licenses, and so on. No fixed schema is required, although facts must have a number of key attributes (spatial location, timestamps, and others). The rest of the schema is configured and created at import time, based on the nature of the fact data being imported. For example:

- Name, which is the text label that represents each fact
- Start date and time, end date and time
- Assessment date, which can be start date, end date, or another date
- Spatial data, which can be either a latitude and longitude, or a shape column

**Layers** Layers are collections of facts with the same source and parameters. Fact layers have a number of key properties.

- name
- Description
- Category
- Layer type
- Source details

- Update frequency
- Details table
- Geometry type
- Filter column details
- Symbolic details, such as icon, line color, or fill color

**Areas** Named areas are regions on a map defined by circles or polygons that provide a convenient, reusable way to specify geographic-boundaries for data queries. Named areas often represent and correspond to districts, precincts, neighborhoods, parks, or other municipal regions.

Area-based facts are public data and statistics made available for particular areas, often for a particular span of time. For example, a statistic about a region of the city for a particular year, such as the number of burglaries for a given district in the city for the year 2011, is an area-based fact. This data typically comes from public data sites, such as data.gov.



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## Chapter 2. Installing IBM Intelligent City Planning and Operations

Installing IBM Intelligent City Planning and Operations requires the installation of the product prerequisites and components.

### Before you begin

IBM Intelligent City Planning and Operations requires the following software:

- A fully operational IBM Intelligent Operations Center version 1.5 environment with at least APAR 87, with all servers and nodes operational. You can determine the status of the IBM Intelligent Operations Center environment by logging in to the management servermanagement server as the `ibmadmin` user and running the following command:

```
/opt/IBM/ISP/mgmt/scripts/IOCControl.sh status all topology_password
```

**Important:** If the cyber hygiene post IBM Intelligent Operations Center installation step was run on your environment, re-enable remote root logon before installing IBM Intelligent City Planning and Operations.

- The Executive Dashboard component of the IBM Intelligent Operations Center v1.5.0.2 Interim Feature.
- To enable mapping functionality, a connection to mapping software, such as Environmental Systems Research Institute (Esri) ArcGIS Server 10.
- To enable importing data from a permitting application, a permitting application connector.
- To enable importing data that might identify possibly business license fraud, IBM i2<sup>®</sup> Fraud Intelligence Analysis version 1.0.5 and the IBM i2 Intelligence Analysis Platform connector.

### What to do next

After installing IBM Intelligent City Planning and Operations, you must configure a connection to mapping software, such as Esri. To set **AddressGeocodingURL** and **BaseMapURL**, go to **Configuration > System Properties**.


### Related tasks:


“Configuring a permitting system adapter” on page 26  
To connect to permitting software you must create an adapter.

 [Installing and Configuring IBM Intelligent Operations Center](#)

 [Re-enabling remote root log on](#)

### Related information:

 [IBM Intelligent Operations Center Executive Dashboard Version 1.5.0.2](#)  
This document contains the documentation for the IBM Intelligent Operations Center Executive Dashboard feature of the IBM Intelligent Operations Center.

 [IBM Intelligent Operations Center Version 1.5.0 Interim Feature 2](#)  
This document contains instructions for downloading the IBM Intelligent Operations Center Version 1.5.0 Interim Feature 2, including the Executive Dashboard feature.

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## Running the installation program

After you download the IBM Intelligent City Planning and Operations installation package, run the installation program.

### Before you begin

You must have IBM Intelligent Operations Center and the Executive Dashboard interim feature installed before installing the IBM Intelligent City Planning and Operations package.

You will need the host names and passwords for the servers in your environment, and the IBM Intelligent Operations Center topology password to complete the installation procedure.

If you plan to use the Licensing and Tax Investigation application for business license fraud investigation, you must first install IBM Intelligent City Planning and Operations, then install the Licensing and Tax Investigation application.

### About this task

**Important:** Do not unpack the IBM Intelligent City Planning and Operations installation bundle to any of the IBM Intelligent Operations Center production servers:

- application server
- management server
- event server
- data server

### Procedure

1. Copy the IBM Intelligent City Planning and Operations installation bundle to a server outside the IBM Intelligent Operations Center environment, either the installation server or a Red Hat Linux server with network access to the IBM Intelligent Operations Center servers. Extract the installation bundle to a temporary folder, for example /tmp/ICPO\_Install.

2. Log in to the server on which you extracted the installation bundle as a root user, and access the folder where the installation bundle was extracted.
3. Open the `iop_lite_topo.properties` file in the `/tmp/ICPO_Install/Linux/Disk1/InstData/VM` folder and specify the host names and passwords for the servers in your environment. If you plan to use the Licensing and Tax Investigation application for business license fraud investigation, install the Licensing and Tax Investigation application by setting the **ICPO.DEPLOY** property to **DeployAll**. You can choose to install the Licensing and Tax Investigation application later by setting the **ICPO.DEPLOY** property to **DeployAnalysis**.
4. Open the `install.props` file in the `/tmp/ICPO_Install/Linux/Disk1/InstData/VM` folder and specify the location of the JRE. For example, `JAVAHOME=/opt/ibm/java-x86_64-60/jre`.
5. From the `/tmp/ICPO_Install/Linux/Disk1/InstData/VM` folder, run the `install_icpo.bin` file.
6. When prompted, accept or decline the license agreement. If you decline the license agreement the installation will stop.
7. When prompted, enter the IBM Intelligent Operations Center topology password.
8. When prompted, press Enter to start the installation.

## Results

Installation takes approximately sixty minutes to run, and the installation progress bar might not move. You can run a tail on the `install_summary.log` file, for example, `tail -f /tmp/ICPO_Install/Linux/Disk1/InstData/VM/install_summary.log`, to ensure that the installation is running.

On completion of installation, detailed logs are stored in the `/tmp/ICPO_Install/Linux/Disk1/InstData/VM/temp/log` and a summary installation log, `install_summary.log`, is in `/tmp/ICPO_Install/Linux/Disk1/InstData/VM`.

## What to do next

If required, you can run the installation program again, but you must also delete the `Linux/Disk1/InstData/VM/temp/topology/ioc_topo_icpo.xml` file, which is created during installation. For example, if you want to rerun the installation program to deploy the Licensing and Tax Investigation application, delete the `ioc_topo_icpo.xml` file, set the **ICPO.DEPLOY** property in the `iop_lite_topo.properties` file to **DeployAnalysis**, and run the installation program again.

If you deployed the Licensing and Tax Investigation application, install the IBM i2 Intelligence Analysis Platform connector and configure the Licensing and Tax Investigation application.

Load sample data if you want to view IBM Intelligent City Planning and Operations functionality before importing live data.

### Related tasks:

“Loading sample data” on page 7

You can load sample data to view IBM Intelligent City Planning and Operations functionality before loading live data.

“Configuring the Licensing and Tax Investigation application components” on page 27

To enable the Licensing and Tax Investigation application you must install and configure the connector, configure messaging, and import data from the IBM i2 Intelligence Analysis Platform.

## Installation and configuration properties

Set values appropriate to your environment in the `iop_lite_topo.properties` file before installing IBM Intelligent City Planning and Operations.

Table 1. Examples of values in the `iop_lite_topo.properties` file

Property	Sample Value
<b>DB.1.HOST</b>	<code>badb.ibmplatform.com</code>
<b>DB.1.ACCOUNT</b>	<code>root</code>
<b>DB.1.ACCOUNT.PWD</b>	<code>root user password</code>
<b>APP.1.HOST</b>	<code>baapp.ibmplatform.com</code>
<b>APP.1.ACCOUNT</b>	<code>root</code>
<b>APP.1.ACCOUNT.PWD</b>	<code>root user password</code>
<b>EVENT.1.HOST</b>	<code>baevent.ibmplatform.com</code>
<b>EVENT.1.ACCOUNT</b>	<code>root</code>
<b>EVENT.1.ACCOUNT.PWD</b>	<code>root user password</code>
<b>MGMT.1.HOST</b>	<code>bangmt.ibmplatform.com</code>
<b>MGMT.1.ACCOUNT</b>	<code>root</code>
<b>MGMT.1.ACCOUNT.PWD</b>	<code>root user password</code>
<b>WAS.ADMIN.ACCOUNT</b>	<code>waswebadmin</code>
<b>WAS.ADMIN.ACCOUNT.PWD</b>	<code>WAS_ADMIN_PASSWORD</code>
<b>WAS.LTPA.PWD</b>	<code>WAS_LTPA_PASSWORD</code>
<b>PORTAL.ADMIN.UID</b>	<code>wpsadmin</code>
<b>PORTAL.ADMIN.UID.PWD</b>	<code>PORTAL_PASSWORD</code>
<b>TAM.WEBSEAL.ADMIN</b>	<code>sec master</code>
<b>TAM.WEBSEAL.ADMIN.PWD</b>	<code>TAM_WEBSEAL_PASSWORD</code>
<b>WEBSEAL_INSTANCENAME</b>	<code>default</code>
<b>IOP.ADMIN.USER</b>	<code>ibmadmin</code>
<b>IOP.ADMIN.GROUP</b>	<code>ibmadmins</code>

Table 1. Examples of values in the `iop_lite_topo.properties` file (continued)

Property	Sample Value
<b>ICPO.DEPLOY</b>	<p>Default to deploy IBM Intelligent City Planning and Operations only.</p> <p>DeployAll to deploy both IBM Intelligent City Planning and Operations and the License and Tax Investigation application only if you have not previously installed IBM Intelligent City Planning and Operations.</p> <p>DeployAnalysis to deploy the License and Tax Investigation application only after previously installing IBM Intelligent City Planning and Operations. Delete <code>Linux/Disk1/InstData/VM/temp/topology/ioc_topo_icpo.xml</code> before installing with the <code>DeployAnalysis</code> parameter.</p>

---

## Loading sample data

You can load sample data to view IBM Intelligent City Planning and Operations functionality before loading live data.

### About this task

IBM Intelligent City Planning and Operations comes with sample data, but you must load the sample data into the IBM Intelligent Operations Center.

### Procedure

To load sample data:

1. Log in to the IBM Intelligent Operations Center database server as `db2inst1`.
2. Navigate to the `/opt/IBM/COOP/asset_coop_import` folder.
3. Run the following commands:

```
./updateImportDatabase.sh create layers_samples.json
http://application_server/wpsv70/wps/portal wpsadmin wpsadmin_password
./updateImportDatabase.sh updateLayer "Events on IBM Campus"
jdbc:db2://localhost:50000/IOCDB db2inst1 db2inst1_password
./updateImportDatabase.sh updateLayer "Animal Sightings on IBM Campus"
jdbc:db2://localhost:50000/IOCDB db2inst1 db2inst1_password
```

4. Select users and groups to have access to view the sample data layers in maps.

#### Related tasks:

“Running the installation program” on page 4

After you download the IBM Intelligent City Planning and Operations installation package, run the installation program.

“Managing access to resources” on page 24

Manage user and group access to viewing data layers and to managing resources.

---

## Installing in alternate topologies

If Tivoli® Access Manager WebSEAL is installed on a different node from IBM Intelligent Operations Center, you must perform additional installation steps.

## About this task

If your IBM Intelligent Operations Center operating environment includes running Tivoli Access Manager WebSEAL on a different node, the IBM Intelligent City Planning and Operations installation program does not update the junction mapping table (JMT) on the correct node. For example, you might encounter this issue when running a cloud environment.

## Procedure

To install in alternate topologies:

1. Add the following lines to the `/opt/pdweb/www-default/lib/jmt.conf` file:

```
/wpsv70 /.asset_coop_ui_portlet/*
/wpsv70 /asset_coop_ui_portlet/*
/wpsv70 /asset_coop_rest/*
/wpsv70 /.COOP/*
/wpsv70 /asset_permitting_ui_portlet/*
/wpsv70 /asset_permitting_rest/*
/wpsv70 /STATWS/*
/wpsv70 /asset_stat_rest/*
/wpsv70 /STATJS/*
/wpsv70 /MayorOperationsWeb/*
/asset_permitting_rest
/wps/myportal/asset_permitting_rest/application_categories/*
```

2. Create a new junction called `/asset_permitting_rest` and load the junction mapping table to the default Tivoli Access Manager WebSEAL by running the following commands:

```
pdadmin -a sec_master -p password
server list (displays list of servers)
server task default-webseald-WebSEAL_FQDN create -t tcp -x -b
  ignore -h Port_Application_FQDN -p 10039 -A -F /opt/pdweb/etc/portal.ltpa
  -Z LTPA Token Password /asset_permitting_rest
acl attach /asset_permitting_rest wpsv70_ACL
server task default-webseald- WebSEAL_FQDN jmt load
server replicate
exit
```

For example:

```
pdadmin sec_master> server task default-webseald-access.ibmoclive.com create
-t tcp -x -b ignore -h app.ibmoclive.com -p 10039 -A
-F /opt/pdweb/etc/portal.ltpa -Z passwd /asset_permitting_rest
Created junction at /asset_permitting_rest
```

```
pdadmin sec_master> acl attach /asset_permitting_rest wpsv70_ACL
```

```
pdadmin sec_master> server task default-webseald-access.ibmoclive.com jmt load
DPWWM1462I JMT Table successfully loaded
```

```
pdadmin sec_master> server replicate
```

```
pdadmin sec_master> exit
```

3. Restart Tivoli Access Manager WebSEAL by running the following commands:

```
[root@access lib]# pdweb restart
```

If successful, the console will report:

```
Stopping the: webseald-default
Starting the: webseald-default
```

---

## Troubleshooting installation problems

When you experience problems during installation, you might need to perform troubleshooting tasks to determine the corrective action to take.

### Installation fails at portal restart

Installation fails because the Portal server fails to stop correctly, and then tries to restart and connect to a port that it is already using.

#### Symptoms

If installation fails during the portal restart, a log entry similar to the following is displayed:

```
#####  
# Restart Portal Server  
  
#####  
ADMU0116I: Tool information is being logged in file  
/opt/IBM/WebSphere/wp_profile1/logs/WebSphere_Portal/stopServer.log  
ADMU0128I: Starting tool with the wp_profile1 profile  
ADMU3100I: Reading configuration for server: WebSphere_Portal  
ADMU3201I: Server stop request issued. Waiting for stop status.  
ADMU3111E: Server stop requested but failed to complete.  
ADMU0111E: Program exiting with error:  
com.ibm.websphere.management.exception.AdminException:  
ADMU3060E:Timed out waiting for server shutdown.  
ADMU1211I: To obtain a full trace of the failure, use the -trace option.  
ADMU0211I: Error details may be seen in the  
file:  
/opt/IBM/WebSphere/wp_profile1/logs/WebSphere_Portal/stopServer.log  
ADMU0116I: Tool information is being logged in  
file  
/opt/IBM/WebSphere/wp_profile1/logs/WebSphere_Portal/startServer.log  
ADMU0128I: Starting tool with the wp_profile1 profile  
ADMU3100I: Reading configuration for server: WebSphere_Portal  
ADMU3028I: Conflict detected on port 10025. Likely causes:  
a) An instance of the server WebSphere_Portal is already running  
b) some other process is using port 10025  
ADMU3027E: An instance of the server may already be running:  
WebSphere_Portal  
  
ADMU0111E: Program exiting with error:  
com.ibm.websphere.management.exception.AdminException:  
ADMU3027E: An instance of the server may already be running:  
WebSphere_Portal  
  
ADMU1211I: To obtain a full trace of the failure, use the -trace option.
```

#### Causes

The portal server fails to stop correctly, and then tries to restart and connect to a port that is already in use.

#### Resolving the problem

To resolve this installation failure, manually stop and start the portal server using the IOCControl script:

1. Log on to the Management server-host-name
2. Switch to the ibmadmin user, by running:  

```
su ibmadmin
```
3. Go to the following directory:  

```
cd /opt/IBM/ISP/mgmt/scripts/
```

4. Run the following control script to stop the portal server:  
`./IOCControl.sh stop wpe <password>`
5. Run the following control script to start the portal server-host-name:  
`./IOCControl.sh start wpe <password>`
6. To continue, restart the installation.

## Installation fails while running the change owner command

Installation of IBM Intelligent City Planning and Operations might fail during a change of ownership operation.

### Symptoms

Installation stops and the following error is logged:

```
Fail to execute operating system command: chown - R ibmadim:ibmadmins  
/opt/IBM/WebSphere/AppServer/profiles/*
```

### Causes

WebSphere® Application Server might clean up temporary files after the **chown** command made a list of files requiring change of ownership. If a file expected by the **chown** command was deleted by WebSphere Application Server, the installation fails.

### Resolving the problem

Run the installation program again.

## Error message CIYA0200E or installTopology\_ioc\_topo\_icpo\_DATE TIME STAMP.log error

After an apparently clean installation you might see an error message from the WebSphere Portal console or an error in an installation log file.

### Symptoms

Error message CIYA0200E is displayed, or the following error is logged to the `installTopology_ioc_topo_icpo_DATE TIME STAMP.log` file:

```
SEVERE: [jcc][t4][2043][11550][4.14.88] Exception java.net.ConnectException:  
Error opening socket to server localhost/127.0.0.1 on port 50,000 with message:  
Connection refused. ERRORCODE=-4499, SQLSTATE=08001 Throwable occurred:  
com.ibm.db2.jcc.am.DisconnectNonTransientConnectionException:  
[jcc][t4][2043][11550][4.14.88] Exception java.net.ConnectException: Error opening  
socket to server localhost/127.0.0.1 on port 50,000 with message:  
Connection refused. ERRORCODE=-4499, SQLSTATE=08001
```

### Causes

Disk space might be low on the database server, or a database connection is faulty.

### Resolving the problem

1. Ensure that the database server has adequate disk space.
2. Verify that connections to the COOPT, ICPODS, jdbc.ioc and jdbc.mddb data sources in the PortalCluster scope are operational by running the WebSphere Portal data source connection test.

If connection verification fails, stop and restart the database server and ensure that all databases are operational after the restart.



## Invalid deployment scenario warning

During installation, you might receive an INVALID Deployment Scenario warning.

### Symptoms

During installation, whether or not you set the ICPO.DEPLOY parameter a warning is displayed that states:

```
"INVALID Deployment Scenario : Please re-enter a supported value (Default, DeployAnalysis, DeployAll). Installation terminating..."
```

Installation stops.

### Resolving the problem

Change the setting for the ICPO.DEPLOY parameter, save the file, then set the parameter back to its original setting. Then run the installation program again.

Or, delete the Linux directory and extract the installation bundle again. You must then specify the properties in the `iop_lite_topo.properties` file again, and start the installation program again.



---

## Chapter 3. Configuring IBM Intelligent City Planning and Operations

To enable analyzing and optimizing city operations with IBM Intelligent City Planning and Operations you must configure connections to the required databases and import data from appropriate sources.

### Before you begin

You must arrange with a geographic information service (GIS) provider to enable base map and geocoding services, typically Esri ArcGIS Server 10, and configure the URLs provided by the service in system properties.

### Procedure

1. Configure system properties by clicking **Configuration > System Properties**, and specifying a value for each setting.

**Note:** You must specify values for **AddressCodingURL** and **BaseMapURL**. Get these URLs from the administrator of your GIS system.

2. Create a staging database.
3. Import data.
4. Control access to resources by user, group, or resource.
5. To create named areas to define boundaries such as school districts, police precincts, and so on, click **Configuration > Named Areas**. You can associate a named area with an analysis view.
6. Create analysis views. You can select the data to analyze, the named area of interest, time values, and the type of analysis view.
7. To export data, click **Configuration > Export Data**.

**Related tasks:**

“Importing data” on page 15

To enable search and view data from all of your data sources, you must import data into the IBM Intelligent City Planning and Operations database and enable the data for search.

“Importing shape files” on page 17

You can import shape files as data.

**Related information:**

IBM Intelligent Operations Center Executive Dashboard Interim Feature

This document contains the documentation for the IBM Intelligent Operations Center Executive Dashboard feature of the IBM Intelligent Operations Center.

## System properties

Set the system properties to conform to your environment and needs.

Table 2. System properties

Property	Description	Characteristics
<b>STATUr1</b>	Location of the Spatial Temporal Analysis Toolkit (STAT) services, a set of services to run spatial and related queries.	Do not edit the value for <b>STATUr1</b> .
<b>AddressGeocodingURL</b>	Location of the server that provides geocoding services.	Obtain the URL from your GIS administrator or the service provider.  You must restart the <code>asset_stat_rest_ear</code> application on all applicable servers for a change to take effect.
<b>MaxRowsToFetch</b>	Maximum number of rows to fetch from a single data source per query.	The default value is 25. <b>MaxRowsToFetch</b> is the maximum number of rows that will be fetched for any layer on a single query. If you want more or fewer results returned, modify this value.  You must restart the <code>asset_stat_rest_ear</code> application on all applicable servers for a change to take effect.
<b>TotalRowsToDisplay</b>	Maximum number of rows for all data sources that can be displayed on the map.	Set the value of <b>TotalRowsToDisplay</b> to greater than the value of <b>MaxRowsToFetch</b> . For example, if <b>MaxRowsToFetch</b> is set to 50, and 10 data layers are selected, set <b>TotalRowsToDisplay</b> to 500.
<b>MapCenterLat</b>	Default latitude for the center of the map when first displayed.	At installation, <b>MapCenterLat</b> is set for the sample data set. Modify <b>MapCenterLat</b> to match your location.

Table 2. System properties (continued)

Property	Description	Characteristics
<b>MapCenterLong</b>	Default longitude for the center of the map when first displayed.	At installation, <b>MapCenterLong</b> is set for the sample data set. Modify <b>MapCenterLong</b> to match your location.
<b>CityName</b>	Default city name.	At installation, <b>CityName</b> is set for the sample data set. Modify <b>CityName</b> to match your location.
<b>StateName</b>	Default state name.	At installation, <b>StateName</b> is set for the sample data set. Modify <b>StateName</b> to match your location.
<b>BaseMapURL</b>	URL for base map provider	Obtain the URL from your GIS administrator or the service provider.
<b>BaseMapType</b>	OpenLayers layer type for the map	Obtain layer type from your GIS administrator or the service provider.
<b>BaseMapName</b>	Name for base map	Obtain the name from your GIS administrator or the service provider.
<b>BaseMapDefaultZoom</b>	Default zoom level for map when first displayed.	The default is value is 19, which works well for Esri. Set to 12 for OpenStreetMaps.

## Importing data

To enable search and view data from all of your data sources, you must import data into the IBM Intelligent City Planning and Operations database and enable the data for search.

### Before you begin

You must have installed IBM Intelligent City Planning and Operations and completed initial configuration.

### About this task

For data to be viewed on the map and to be searchable, the data must be defined and structured as a layer by using the import wizard.

When you install IBM Intelligent City Planning and Operations a cron job imports sample data from the database that you specified in the `iop_lite_topo.properties` file. You must import the data that you want to search and view on the map, depending on your city's resources and requirements.

### Procedure

To import data:

1. Import shape file data into the staging database. Work with your GIS administrator to determine the shape files to import.
2. Import non shape-file data into the staging database.
3. Define layer and data source structure into which data will be imported.

4. Import block data.
5. Optional: Update data from one or all sources.
6. Optional: Delete data, a data source, or a data layer.

**Related tasks:**

Chapter 3, “Configuring IBM Intelligent City Planning and Operations,” on page 13  
To enable analyzing and optimizing city operations with IBM Intelligent City Planning and Operations you must configure connections to the required databases and import data from appropriate sources.

## Staging database

You must create the staging database that IBM Intelligent City Planning and Operations uses to prepare data for import into the IBM Intelligent City Planning and Operations database.

The staging database provides flexibility in defining the sources of the data that IBM Intelligent City Planning and Operations can use. You can create more than one staging database if you need to keep some data separate, such as for different municipal departments. The staging database can be either DB2<sup>®</sup>, with or without DB2 Spatial Extender, or Microsoft SQL Server.

You can import data by using a database import command, such as **db2se import\_shape**, or data can be written to the staging database by an external process, such as a message queue.

When you create a staging database, ensure that the database includes the following columns in addition to the required business data:

### Shape

Tables in the staging database must include a shape representation, or the rows cannot be imported. The shape representation can be a DB2 spatial object (for example, ST\_Point or ST\_MultiPolygon), or the shape representation can be separate columns of latitude and longitude. To be included in searches, the shape representation must match the expected geospatial reference system to be used in searches.

### Unique ID

Tables in the staging database must include a unique identifier for each row. The unique identifier is not required to be a primary key to the database. Including a unique identifier prevents multiple rows from being created for the same data.

### Last update

Tables in the staging database can include a column that identifies the last update for the row. Last update can be a row creation date, a row modification date, or some other date or time

The data import wizard enables mapping source table columns to required columns, and selecting other columns to include in the data import. A cron job is created during installation and updated by the data import wizard to periodically poll the tables in the configured staging database to select rows for import. You configure a staging database by defining it as a source for a data layer by using the data import wizard.

**Related tasks:**

“Defining data layer and data source structure” on page 19

Before you can import layer data, you must define the data source structure.

“Importing shape files”

You can import shape files as data.

**Related reference:**

“Spatial data format” on page 18

Geographic data must conform to the specified geographic coordinate system.

**Related information:**

“Data import fails - cannot parse date” on page 33

Importing data can fail if date columns are not mapped to existing fields or date and time formats are not correct.

## Importing shape files

You can import shape files as data.

### About this task

If a shape file will provide data to a layer, import the shape file to the staging database. If the shape file will be referenced by data in a layer, import the shape file to the IBM Intelligent City Planning and Operations database.

### Procedure

To import shape files:

Run the database command to import shape file data. For example on DB2, run the following command:

```
db2se import_shape dbname -filename shapefilename -srsName srs
-tableSchema schema -tableName tableName -spatialColumn column
-userid userid -pw password
```

*srs*

The value for *srs* must be WGS84\_SRS\_1003.

*shapefilename*

The value for *shapefilename* must be the absolute path name to the shape file on the same system as the database.

*dbname*

If the shape file will provide data to a layer, the value for *dbname* must be the staging database.

If the shape file will be referenced by data in a layer, the value for *dbname* must be the IBM Intelligent City Planning and Operations database.

**Related concepts:**

“Staging database” on page 16

You must create the staging database that IBM Intelligent City Planning and Operations uses to prepare data for import into the IBM Intelligent City Planning and Operations database.

**Related tasks:**

Chapter 3, “Configuring IBM Intelligent City Planning and Operations,” on page 13  
To enable analyzing and optimizing city operations with IBM Intelligent City Planning and Operations you must configure connections to the required databases and import data from appropriate sources.

**Related reference:**

“Spatial data format”

Geographic data must conform to the specified geographic coordinate system.

**Spatial data format**

Geographic data must conform to the specified geographic coordinate system.

Data that includes geographic or location information can use either latitude and longitude values, or shape files. Spatial data must use the World Geodetic System GCS\_WGS\_1984 geographic coordinate system, referenced through the WGS84\_SRS\_1003 (ID 1003) spatial reference system. If the data to be imported does not use this coordinate system, then convert or reproject the data before you import the data.

**Related concepts:**

“Staging database” on page 16

You must create the staging database that IBM Intelligent City Planning and Operations uses to prepare data for import into the IBM Intelligent City Planning and Operations database.

**Related tasks:**

“Importing shape files” on page 17

You can import shape files as data.

**Related information:**

“Data layer with different coordinate system is not displayed on the map” on page 34

If a data layer that uses a different coordinate system from other layers is imported, that data is not displayed on the map.

“A query on a data layer does not return any data” on page 36

**Importing non shape-file data**

You can import and display data that is not contained in shape files.

**About this task**

You can import non shape-file data by using a database import command, such as **db2 import**, or you can have data written to the staging database by an external process, such as a message queue.

**Importing block data**

To perform searches that specify a given number of blocks from a specified location, you must import data about blocks.



## Before you begin

Block data is imported as a shape file, which must contain the following columns:

### OBJECTID

A unique identifier for each shape.

### SHAPE

A shape defined as a DB2GSE.ST\_Polygon.

**AREA** As a double data type. Optional.

## About this task

The **BlockGenerator** utility imports block data from a shape file and processes the data into a form suitable for queries. During this processing, the columns `OID`, `ADJACENT_OID`, and `NUMOFNEIGHBORS` are added to the table. If these columns already exist in the table, then the **BlockGenerator** utility will fail.

## Procedure

To import block data:

1. Navigate to the database node in the `/opt/IBM/COOP/asset_coop_import` folder.
2. Run the **BlockGenerator** command. For example:

```
java -cp $CLASSPATH com.ibm.asset.coop.dataimport.BlockGenerator dbUrl  
dbUserId dbPassword tableName shapeFilePath
```

*tableName*

Contains the schema, for example `CSD.BLOCKDATA`.

*shapeFilePath*

The local, absolute path to the shape file.

### CLASSPATH

CLASSPATH is defined as `./asset_coop_import.jar:./lib/commons-codec-1.3.jar:./lib/commons-logging-1.1.1.jar:./lib/httpclient-4.0.jar:./lib/httpcore-4.0.1.jar:./lib/JSON4J_Apache.jar:/datahome/db2inst1/sqllib/java/db2jcc4.jar` .

## Results

Output from the **BlockGenerator** utility is written to the console and to a log file in the `/tmp` directory named `BlockGenerator_0.log`. Previous versions are named `BlockGenerator_1.log`, `BlockGenerator_2.log`, and so on.

### Related information:

“Query with blocks fails” on page 37

A query that includes blocks as a parameter fails.

## Defining data layer and data source structure

Before you can import layer data, you must define the data source structure.

## About this task

To define a data layer and prepare an import definition, you must know how the data to be imported is organized. Gather the following information:

- Staging database location, credentials, and table name
- Filters required for selection of data from the table

- Columns that contain the spatial information, either two columns with latitude and longitude coordinates, or a single column that contains a DB2 Spatial Extender shape object
- Type of shape that is provided: point, multipoint, line, or multipolygon
- Columns that contain the date and time information, such as start date
- Column that contains the last update date and time of the table
- Column that provides a unique identifier for each row of the table
- Columns that you want to display in the search results
- Columns that can be used as search filters
- Columns that can be used for generating pie charts
- Images for point or multipoint displays, or colors for line or multipolygon displays
- Whether an analysis view dimension should be created
- The users or groups to grant initial access

## Procedure

To define data layer and data source structure:

1. Click **Configuration > Import Data > Start Import Wizard**. The Data Import Wizard opens.
2. Enter the required information when prompted.

## Results

After you define the data layer and data source structure, the specified data will be imported the next time the data import cron job runs, based on the polling interval you specified.

### Related concepts:

“Staging database” on page 16

You must create the staging database that IBM Intelligent City Planning and Operations uses to prepare data for import into the IBM Intelligent City Planning and Operations database.

### Related information:

“Filter or chart options are not displayed or are confusing” on page 36

Faulty layer definitions can prevent users from selecting filters or layers.

## Data Import Wizard requirements and limitations

The Data Import Wizard prepares an import definition to bring data into the staging database.

### Define a new layer and source connections

#### Name

The layer name must be unique to IBM Intelligent City Planning and Operations.

#### Category

Select **Area** to include the layer in Areas.

Select any other category to include the layer in Layers.

#### Polling interval (minutes)

To import this data layer only once, specify 0 minutes.

To import this data layer at regular intervals, specify a non-zero value. Then select one or more columns on page 3 (Select additional fields and field roles) of the import wizard to be the primary key to prevent duplicate records from being created.

## Map source columns to target fields

### StartDate

### StartTime

### EndDate

### EndTime

### LastUpdate

Date and time fields do not apply to shapes without dates and times.

**LastUpdate** is used by subsequent data import processes to reduce the number of records to process.

### Name

### AssessmentDate

Specify a name and assessment date if the data can be used for analysis views.

Shapes cannot be used for analysis views, so shapes do not require a name and assessment date.

## Select additional fields and field roles

### Date Format

### Time Format

Strings that specify the date and time formats.

The date and time formats are based on the Java™ SimpleDateFormat formatting characters, as defined in the Java documentation. See <http://docs.oracle.com/javase/6/docs/api/index.html?java/text/SimpleDateFormat.html>

### Key

Select one or more columns to be keys (unique identifiers) for the records.

### Filter

Select **User entry** to require the user to specify a value for this field as search criteria.

### Detail

Select one or more columns to display as detail on the map.

### Chart

Select one or more columns to use in creating a pie chart, if it makes sense to present this data as a chart.

### Display Name

Specify a display name for any columns that will be seen by users, such as columns selected as filter, detail, or chart.

## Define display properties and user roles

### Use as a dimension in analysis

Select **Use as a dimension in analysis** to make this layer available for analysis in analysis views.

### Point

**MultiPoint**

Specify an image to be displayed on the map for point or multipoint geometry types.

**Line**

Specify a color for line geometry types.

**MultiPolygon**

Specify a fill color for multipolygon geometry types.

**Layer access**

Select users and groups to have access to view this layer in maps. You can also change access by clicking **Configuration > Resource Access**.

**Related information:**

“Data import fails - cannot parse date” on page 33

Importing data can fail if date columns are not mapped to existing fields or date and time formats are not correct.

“Filter or chart options are not displayed or are confusing” on page 36

Faulty layer definitions can prevent users from selecting filters or layers.

**Fact-based data layers**

Data queries in IBM Intelligent City Planning and Operations are based on data layers, which gather related facts.

A layer is set of facts or data items that share a characteristic such that you might want to view the facts together on the map. Each fact has spatial attributes that locate the fact on the map, and can have temporal attributes such as start date and time. Facts can be events, such as emergency calls, or businesses, or can be fixed assets or infrastructure, such as hotels or train stations. The facts in each layer come from a database view that includes the common attributes that make a layer and attributes specific to each fact.

**Area-based data layers**

Area-based data layers have certain limitations from fact-based data layers.

- Area-based facts are added to the Areas layer category, and appear on the **Areas** menu.
- Searches on area-based facts cannot be saved.
- Searches on area-based facts cannot include **where** or **when** conditions.
- Area-based facts are typically multi-polygon shapes, which cannot be included in analysis views.

## Updating data

You can update data in the IBM Intelligent City Planning and Operations database manually.

**About this task**

The cron job that is created at installation updates data in the IBM Intelligent City Planning and Operations database periodically, as specified for each data source in the data import wizard. You can also update the data manually, or delete data or a layer. The `updateImportDatabase.sh` script is installed to the data node in the `/opt/IBM/COOP/asset_coop_import` folder. Depending on your needs, and how often data changes, you can modify the cron job to run more or less frequently.

## Procedure

- To update data from all sources, run the `updateImportDatabase.sh` script with the **updateall** parameter. For example:  

```
./updateImportDatabase.sh updateall dbUrl userID password
```
- To update data from a specific source, run the `updateImportDatabase.sh` script with the **updatelayer** parameter, and specify the layer to update.  

```
./updateImportDatabase.sh updatelayer layerName dbUrl userID password
```

### Related reference:

“updateImportDatabase parameters” on page 24  
Specify the layer name, database, and portal to be updated.

### Related information:

“A query on a data layer does not return any data” on page 36

## Deleting data or a layer

You can delete data for a layer, the data source for a layer, or a layer.

### About this task

If a data layer is no longer required, you can delete the data from the database. Delete the data before you delete the data source and data layer.

The data source definition still exists after deleting the data, so you can still import data if required. If no longer required, you can delete the data source definition. You must delete the data source definition before deleting the data layer.

Deleting the data does not remove the layer from the user interface. Before you delete a layer, remove access for all users and set the polling interval for the data source to 0 to prevent further updates.

Deleting the data, data source, and data layer require specific information from the database that is deleted by successive deletions. Running these deletion actions out of order can prevent subsequent cleanup.

## Procedure

1. To delete data, run the `updateImportDatabase.sh` script with the **deletedata** parameter.  

```
./updateImportDatabase.sh deletedata layerName dbUrl  
dbUserid dbPassword
```
2. To delete a data source, run the `updateImportDatabase.sh` script with the **deleteSource** parameter.  

```
./updateImportDatabase.sh deleteSource layerName dbUrl  
dbUserid dbPassword
```
3. To delete a layer, run the `updateImportDatabase.sh` script with the **deletelayer** parameter.  

```
./updateImportDatabase.sh deletelayer layerName portalUrl  
portalUserid portalPassword
```

**Related tasks:**

“Customizing IBM Intelligent City Planning and Operations” on page 27  
You can add or delete named area types or categories.

**Related information:**

“A data layer is not displayed on the query panel” on page 35  
User or group access might prevent a user from viewing a layer.

**updateImportDatabase parameters**

Specify the layer name, database, and portal to be updated.

*layerName*

The *layerName* is the name of a layer previously defined. If the *layerName* contains spaces, then the name must be enclosed in double quotation marks.

*dbUrl*

The location of the IBM Intelligent City Planning and Operations database.

If the *dbUrl* is of the form `jdbc:db2://host:port/database`, then *dbUserID* and *dbPassword* are required. If the *dbUrl* is of the form `jdbc:db2:database`, then the user identity can be used to access the database.

*dbUserid**dbPassword*

User ID and password to access the IBM Intelligent City Planning and Operations database.

If the *dbUrl* is of the form `jdbc:db2://host:port/database`, then *dbUserID* and *dbPassword* is required. If the *dbUrl* is of the form `jdbc:db2:database`, then the user identity can be used to access the database.

*portalUrl*

The URL for the portal from which the layer is served.

If the portal is behind Tivoli Access Manager WebSEAL, then the value must be specified in the form `https://hostname/wpsv70/wps/portal`.

*portalUserid**portalPassword*

User ID and password to access the specified portal.

**Related tasks:**

“Updating data” on page 22

You can update data in the IBM Intelligent City Planning and Operations database manually.

---

## Managing access to resources

Manage user and group access to viewing data layers and to managing resources.

**About this task**

IBM Intelligent City Planning and Operations maintains the list of resources, and of the users and groups that have access to those resources.

Five resources are defined by default:

**Configuration**

Controls access to the System Properties panel.

**Import**

Controls access to the Import Data panel

### **User Administration**

Controls access to the Resource Access panel.

### **Permitting**

Controls access to the permitting application, if installed and configured

### **Layer Administration**

Controls access to the administrative functions for managing layers.

As layers are created, a resource item is defined for each layer. If a user or group has access to a layer, the layer will be visible to that user or group in the layers or areas panels.

The user ID wpsadmin has access to all of the resources by default, and therefore can grant or deny access to other users and groups.

## **Procedure**

To manage user roles and security:

1. Click **Configuration > Resource Access**.
2. Select:
  - **By user** to select one user and grant access to one or more resources to that user.
  - **By group** to select one group and grant access to one or more resources to that group.
  - **By resource** to select one resource and grant access to one or more users or groups to that resource.
3. Click **Save**.
4. Optional: To revert to default values and lose all changes, click **Reset**.

## **Results**

Changes made on the Resource Access panel take effect immediately on the server, but do not change for users until the browser is refreshed.

### **Related information:**

“A data layer is not displayed on the query panel” on page 35  
User or group access might prevent a user from viewing a layer.

---

## **Creating analysis views**

Create analysis views to reveal relations and correlations among data.

### **About this task**

You can learn more about analysis views, also known as hotspots, from the IBM Intelligent Operations Center Executive Dashboard feature documentation.

### **Procedure**

1. Click **Configuration > Analysis Views**.
2. Specify a name and description.
3. Specify a display order and time frame.
4. Select one or more categories as dimensions for the analysis.
5. Select parameters for the analysis view cluster:

- **Cluster by distance** to compare and collect facts about
    - any of the specified categories
    - within the specified time period
    - within the specified distance
  - **Cluster by distance and correlate dimensions in different categories** to compare and collect facts
    - in different categories
    - within the specified time period
    - within the specified distance
  - **Cluster by distance and correlate dimensions with time** to compare and collect facts
    - in different categories
    - within the specified time period
    - within the specified distance between facts
    - within the specified time interval between facts
6. Select maximum distance and time interval.
  7. Select a named area to apply the analysis to.
  8. Click **Add**.

---

## Configuring a permitting system adapter

To connect to permitting software you must create an adapter.

### Before you begin

You must have government permitting software installed and running, and have administrator access to the associated database.

### About this task

IBM Intelligent City Planning and Operations includes a sample adapter to permitting software, `SamplePermittingService.java`, in *installation\_directory/topology/ioc\_topo/icpo/Samples/SamplePermittingAdapter.zip*.

As installed, IBM Intelligent City Planning and Operations can use the sample permitting adapter to return data from the sample permit applications. The sample adapter does not connect to any permitting system and does not save changes to the sample permit applications. The sample adapter is only an example of how you can create a permitting adapter.

### Procedure

To configure a permitting system adapter:

1. Extract `SamplePermittingAdapter.zip`.
2. Import the Eclipse project from `SamplePermittingAdapter.zip`.
3. Modify the build path of the imported Eclipse project to include the Java libraries from *installation\_directory/topology/ioc\_topo/icpo/Samples/lib*. Remove all other projects and libraries from the build path except the projects and libraries in the specified directory.
4. Create a new Java project that includes a class that implements the `IPermittingService` interface.



5. Export the project as a Java JAR file to the /opt/IBM/iss/common/lib folder on the IBM Intelligent Operations Center APP node.
6. Modify the row in the PO.APPLICATION\_CATEGORY table in the IOCDB database so that the IMPL\_CLASS\_NAME field contains the fully qualified class name of the new adapter.

---

## Customizing IBM Intelligent City Planning and Operations

You can add or delete named area types or categories.

### Procedure

To add or delete a named area type:

Add a row to the CITY\_HUB.NAMED\_AREA\_TYPE table of the IBM Intelligent Operations Center database. For example, to add a named area type of **Retail Center**, run the following statement:

```
INSERT INTO CITY_HUB.NAMED_AREA_TYPE (NAME, DESCRIPTION) VALUES ('Retail Center' ,  
'Area with shopping and restaurants');
```

To delete the same named area type, run the following statement:

```
DELETE FROM CITY_HUB.NAMED_AREA_TYPE WHERE NAME='Retail Center';
```

### Related tasks:

“Deleting data or a layer” on page 23

You can delete data for a layer, the data source for a layer, or a layer.

## Modifying categories (layer types)

### Before you begin

You must delete all layers of a layer type before you can delete the layer type from the database.

### Procedure

To add or delete a category:

Add a row to the COOPT.LAYER\_TYPES table of the IBM Intelligent Operations Center database. For example, to add a category called **Dining and Shopping**, run the following statement:

```
insert into COOPT.LAYER_TYPES (TYPE_NAME) values ('Dining and Shopping')
```

To delete the same category, run the following statement:

```
delete from COOPT.LAYER_TYPES where TYPE_NAME = 'Dining and Shopping'
```

---

## Configuring the Licensing and Tax Investigation application components

To enable the Licensing and Tax Investigation application you must install and configure the connector, configure messaging, and import data from the IBM i2 Intelligence Analysis Platform.

## Before you begin

You must have already installed IBM Intelligent City Planning and Operations and the Licensing and Tax Investigation application by running the IBM Intelligent City Planning and Operations installation program.

Enabling the License and Tax Investigation application requires that you customize your IBM Intelligent City Planning and Operations system based on your specific requirements and data intelligence. To make the necessary customizations, the IBM services team must be certified to develop with the IBM i2 Intelligence Analysis Platform SDK and have access to the SDK.

## Procedure

1. Install the IBM i2 Intelligence Analysis Platform connector.
2. Configure messaging for the Licensing and Tax Fraud application.
3. Send fraud alerts from IBM i2 Analyst's Notebook.
4. Import data from the IBM i2 Intelligence Analysis Platform staging table.
5. View fraud alerts.

### Related tasks:

“Running the installation program” on page 4

After you download the IBM Intelligent City Planning and Operations installation package, run the installation program.

## Installing the IBM i2 Intelligence Analysis Platform connector

To enable importing data to use with the Licensing and Tax Investigation application, install the IBM i2 Intelligence Analysis Platform connector.

## Before you begin

Installing the connector requires modifying IBM i2 Intelligence Analysis Platform by using the IBM i2 Intelligence Analysis Platform SDK. You must have IBM i2 Intelligence Analysis Platform version 3.0.3 installed, and the IBM i2 Intelligence Analysis Platform version 3.0.3 installation package must be available on the local file system. You must have the latest IBM i2 Intelligence Analysis Platform SDK installed on your local system.

## About this task

The `i2 StatelessHandlerExample` function sends messages from IBM i2 Intelligence Analysis Platform to the IBM Intelligent City Planning and Operations database. The IBM i2 Intelligence Analysis Platform connector must be installed in the IBM i2 Intelligence Analysis Platform "read side."

## Procedure

To install the IBM i2 Intelligence Analysis Platform connector:

1. Generate the `WriteEar.ear` and `ReadEar.ear` files in your development environment.
  - a. Extract the `ibm_StatelessHandlerExample.zip` file.
  - b. Replace the `StatelessHandlerExample.java` and `SysOutReceiver.java` Java source files of the `StatelessHandlerExample` project in your Eclipse IDE

with the files in *ICPO\_installation*\topology\ioc\_topo\_icpo\Samples\ibm\_StatelessHandlerExample\StatelessHandlerExample\src\com\i2group\apollo\example\dataout folder.

- c. Import the `mqresources.properties` file from the *ICPO\_installation*\topology\ioc\_topo\_icpo\Samples\ibm\_StatelessHandlerExample\StatelessHandlerExample\src folder to `StatelessHandlerExample\src` in your Eclipse IDE.
  - d. Edit the `mqresources.properties` file with the following values:
    - The **mq\_hostname** property is the host name on which you installed WebSphere MQ for IBM Intelligent Operations Center. The default value is `localhost`
    - The **mq\_queuemanager** property is the queue manager name. The default value is `ICPOQM`.
    - The **mq\_queuemanager\_port** property is the ICPOQM queue manager listener port. The default value is `1415`.
  - e. Import the JAR files from the *WAS\_INSTALL\_PATH*\installedConnectors\wmq.jmsra.rar folder. *WAS\_INSTALL\_PATH* refers to your WebSphere Application Server installation directory. `StatelessHandlerExample.java` and `SysOutReceiver.java` require the specified JAR files.
  - f. Copy *ICPO\_installation*\topology\ioc\_topo\_icpo\Samples\ibm\_StatelessHandlerExample\StatelessHandlerExample\newschema\ApolloCoreSchema.xml and *ICPO\_installation*\topology\ioc\_topo\_icpo\Samples\ibm\_StatelessHandlerExample\StatelessHandlerExample\newschema\ChartingSchemes.xml into the `C:\SDK\WriteSideWar\ApolloWebContent\WEB-INF\classes` directory.
  - g. Copy *ICPO\_installation*\topology\ioc\_topo\_icpo\Samples\ibm\_StatelessHandlerExample\StatelessHandlerExample\newschema\ChartingSchemes.xml into `C:\SDK\StatelessHandlerExampleWar\ApolloWebContent\WEB-INF\classes` directory.
  - h. Edit the `ApolloServerSettings.properties` file in the `C:\SDK\WriteSideWar\apollo-src` folder to change **SchemaResource** to `ApolloCoreSchema.xml` and **ChartingSchemesResource** to `ChartingSchemes.xml`.
  - i. Open a command prompt and navigate to the `C:\SDK\StatelessHandlerExample` directory.
  - j. Run the following command: `ant init-eclipse`.
  - k. Select all projects in your Eclipse IDE and press F5 to refresh them.
  - l. Export the `ReadEar.ear` and `WriteEar.ear` files.
2. On the IBM i2 Intelligence Analysis Platform "write side," stop the `ApolloGarEar.ear` application.
  3. Drop the Document and WriteSto databases.
  4. Uninstall the `ApolloGarEar.ear` application on the "write side."
  5. Recreate the "write side" databases as described in the *IBM i2 Intelligence Analysis Platform Deployment Guide*, Chapter 6.
  6. Copy the `WriteEar.ear` file that you generated in step 1 into `Configuration/Write-Side` and rename it to `iap-release-3.0.3-write.ear`. Run the `install-write-side-application` script.
  7. Run the `install-write-side-application` script.
  8. Navigate to the `WriteEar` application installation directory and set the help location according to *IBM i2 Intelligence Analysis Platform Deployment Guide*, chapter 11.

9. On the "read side," stop the ApolloGarEar.ear application.
10. Drop the ItemRetr database.
11. Uninstall the ApolloGarEar.ear application from the "read side."
12. Recreate the Read Side databases as described in *IBM i2 Intelligence Analysis Platform Deployment Guide*.
13. Copy the ReadEar.ear file generated in step 1 into Configuration/Read-Side and rename it to iap-release-3.0.3-read.ear.
14. Run the install-read-side-application script.
15. Start the WriteEar.ear and ReadEar.ear applications.

**Related tasks:**

“Configuring messaging for the Licensing and Tax Investigation application”

To enable importing data that might be relevant to a business license fraud investigation from IBM i2 Intelligence Analysis Platform, configure messaging for the Licensing and Tax Investigation application.

“Sending fraud alerts from IBM i2 Analyst’s Notebook” on page 32

An analyst can identify potentially fraudulent business activity and send alerts to IBM Intelligent City Planning and Operations.

## Configuring messaging for the Licensing and Tax Investigation application

To enable importing data that might be relevant to a business license fraud investigation from IBM i2 Intelligence Analysis Platform, configure messaging for the Licensing and Tax Investigation application.

### Before you begin

You must have installed the Licensing and Tax Investigation application and IBM Intelligent City Planning and Operations. During installation, a staging database named ICPODB was created with a table named i2stagingtable. A WebSphere MQ queue manager named ICPOQM with a local queue on the ICPOQM queue manager named ICPO\_CAP\_MESSAGE\_QUEUE was also created. To carry alerts from IBM i2 Intelligence Analysis Platform, configure a messaging queue.

### Procedure

To configure messaging for Licensing and Tax Investigation application:

1. Create WebSphere Application Server resources on the IBM Intelligent Operations Center Event Server (also known as IBM Intelligent Operations Center queue manager host). You must create:
  - A connection factory
  - A queue
  - Activation specifications
  - A data source

Create all of the specified resources at the following scope:

- Cell = Cell1
- Node = PortalNode1
- Server = WebSphere\_Portal

- a. Create a connection factory with the following specifications:

For the JMS resource provider, select **WebSphere MQ messaging provider**.

For configure basic attributes, specify the name and as ICPO\_CAP\_MESSAGE\_QUEUE\_CF and JNDI name as jms/ICPO\_CAP\_MESSAGE\_QUEUE\_CF.

For select connection method, select **Enter all the required information into this wizard**

For the queue manager details, specify ICPOQM.

For connection details,

- For **Transport**, select **Bindings, then client**.
- Select **Enter host and port information in the form of separate hostname and port values**, then for **Hostname** specify IOC Queue manager Host and for **Port** specify 1415.
- For the **Server connection channel**, specify SYSTEM.DEF.SVRCONN.

Test the connection.

b. Create a queue with the following specifications:

- For the **JMS resource provider** specify WebSphere MQ messaging provider.
- For **Name**, specify ICPO\_CAP\_MESSAGE\_QUEUE.
- For **JNDI name**, specify jms/ICPO\_CAP\_MESSAGE\_QUEUE.
- For **Queue name**, specify ICPO\_CAP\_MESSAGE\_QUEUE.
- For **Queue manager or Queue sharing group name**, specify ICPOQM.

c. Create activation specifications with the following specifications:

- For JMS resource provider, select **WebSphere MQ messaging provider**.
- For **Name**, specify ICPO\_CAP\_MESSAGE\_QUEUE\_AS.
- For **JNDI name**, specify jms/ICPO\_CAP\_MESSAGE\_QUEUE\_AS.
- For **Destination JNDI name**, specify jms/ICPO\_CAP\_MESSAGE\_QUEUE.
- For **Destination type**, select **Queue**.
- For **Queue manager or Queue sharing group name**, specify ICPOQM
- For **Transport**, select **Bindings, then client**.
- Select **Enter host and port information in the form of separate hostname and port values**, then for **Hostname** specify IOC Queue manager Host and for **Port** specify 1415.
- For **Server connection channel**, specify SYSTEM.DEF.SVRCONN .

Test the connection.

2. To enable auto start of the ICPOAnalysisEar.ear application at reboot:

- a. Go to the target specific application status page for your application by clicking **Applications > Application Types > WebSphere enterprise applications > ICPOAnalysisEar > Target specific application status**.
- b. Select the target server for the application.
- c. Click **Enable Auto Start**.
- d. Save your changes to the administrative configuration.

**Related tasks:**

“Installing the IBM i2 Intelligence Analysis Platform connector” on page 28  
To enable importing data to use with the Licensing and Tax Investigation application, install the IBM i2 Intelligence Analysis Platform connector.

“Sending fraud alerts from IBM i2 Analyst's Notebook”

An analyst can identify potentially fraudulent business activity and send alerts to IBM Intelligent City Planning and Operations.

## **Sending fraud alerts from IBM i2 Analyst's Notebook**

An analyst can identify potentially fraudulent business activity and send alerts to IBM Intelligent City Planning and Operations.

### **Procedure**

To send fraud alerts from IBM i2 Analyst's Notebook:

1. Create a chart with entities and links that identify potential business license fraud.
2. Save the chart contents to a data set.
3. Set the **Submit Alerts** property of the data set to **Yes**.

### **Results**

Alerts that you submit to the IBM i2 Intelligence Analysis Platform database can be imported into the IBM Intelligent City Planning and Operations staging database.

### **What to do next**

Configure data import from the IBM i2 Intelligence Analysis Platform database by specifying the database connection properties and polling interval by using the Data Import Wizard in IBM Intelligent City Planning and Operations.

**Related tasks:**

“Installing the IBM i2 Intelligence Analysis Platform connector” on page 28  
To enable importing data to use with the Licensing and Tax Investigation application, install the IBM i2 Intelligence Analysis Platform connector.

“Configuring messaging for the Licensing and Tax Investigation application” on page 30

To enable importing data that might be relevant to a business license fraud investigation from IBM i2 Intelligence Analysis Platform, configure messaging for the Licensing and Tax Investigation application.

“Importing data” on page 15

To enable search and view data from all of your data sources, you must import data into the IBM Intelligent City Planning and Operations database and enable the data for search.

“Viewing fraud alerts” on page 44

Examine fraud alerts from IBM i2 Intelligence Analysis Platform to reveal unlicensed businesses and lost revenue opportunities.

---

## Chapter 4. Troubleshooting IBM Intelligent City Planning and Operations

You can examine log files to help resolve common problems.

### About this task

Troubleshooting topics for common issues, known problems, and workarounds.

---

## Log files

View log files to monitor system status and correct errors.

### Installation logs

Installation logs are stored in the `/tmp/ICPO_Install/Linux/Disk1/InstData/VM/temp/log` folder, and a summary installation log, `install_summary.log`, is stored in `/tmp/ICPO_Install/Linux/Disk1/InstData/VM`.

### Data import logs

The **DataUpdateProcessor** writes messages to the console and to a log file in the `/tmp` directory of the system on which the **DataUpdateProcessor** was run. The current log is named `DataUpdateProcessor_0.log`. Earlier log files are named `DataUpdateProcessor_1.log`, `DataUpdateProcessor_2.log`, and so on.

If you need to report problems with the **DataUpdateProcessor** process, gather the log files and include the files with the problem report.

### Block generator logs

The **BlockGenerator** utility writes messages to the console and to a log file in the `/tmp` directory named `BlockGenerator_0.log`. Earlier log files are named `BlockGenerator_1.log`, `BlockGenerator_2.log`, and so on.

### Licensing and Tax Investigation logs

#### IBM i2 Intelligence Analysis Platform Write Side server

```
$WAS_Install_Path\profiles\ApolloWrite\logs\ApolloServerWrite
```

#### IBM i2 Intelligence Analysis Platform Read Side server

```
$WAS_Install_Path\profiles\ApolloRead\logs\ApolloServerRead
```

#### IBM Intelligent Operations Center application node

```
/opt/IBM/WebSphere/wp_profile1/logs/WebSphere_Portal
```

---

## Data import fails - cannot parse date

Importing data can fail if date columns are not mapped to existing fields or date and time formats are not correct.

### Symptoms

While importing data, the process stops and the log displays an error parsing date information.



## Causes

If a date column, such as ENDDATE, is not mapped to a field, or if the date and time formats specified in the import wizard do not match the actual content, the date information cannot be parsed and import fails.

## Resolving the problem

Ensure that all columns from the data source are mapped to fields in IBM Intelligent City Planning and Operations, and that the date and time formats specified match the formats being imported.

### Related concepts

“Staging database” on page 16

You must create the staging database that IBM Intelligent City Planning and Operations uses to prepare data for import into the IBM Intelligent City Planning and Operations database.

### Related reference

“Data Import Wizard requirements and limitations” on page 20

The Data Import Wizard prepares an import definition to bring data into the staging database.

---

## Data layer with different coordinate system is not displayed on the map

If a data layer that uses a different coordinate system from other layers is imported, that data is not displayed on the map.

## Symptoms

Imported data layer is not displayed on the map as expected.

## Causes

The data layer that is not displayed on the map uses a different coordinate system from data layers that are displayed.

IBM Intelligent City Planning and Operations imports data layers from a staging table. That staging table must contain a valid (1003) ST\_GEOMETRY column, and the geometry type must be consistent for all records in that staging table, and therefore for that layer. If a layer is imported with the wrong coordinate system, the data layer is not displayed on the map correctly.

## Resolving the problem

Delete the data layer, correct the coordinate system in the staging table, and import the data layer again.

To delete the data layer:

1. Delete layer data by running the following command: `DataUpdateProcessor deletedata dbUrl layerName dbUserid dbPassword.`
2. Delete the data source definition by running the following command: `DataUpdateProcessor deletesource dbUrl layerName dbUserid dbPassword`
3. With IBM Intelligent City Planning and Operations running, delete the layer definition by running the following command: `DataUpdateProcessor deletelayer layerName portalUrl portalUserid portalPassword.`

Ensure that the staging table includes a valid (1003) ST\_GEOMETRY column, and that the geometry type is consistent for all records in that staging table and for other data layers. Then import the data layer again.



### Related reference

“Spatial data format” on page 18  
Geographic data must conform to the specified geographic coordinate system.

---

## New analysis view or named area is not displayed

New content is not displayed until the browser page is refreshed.

### Symptoms

An administrator or user created a new analysis view or named area, but the new content is not displayed to users.

### Causes

Microsoft Internet Explorer 9 does not refresh pages with updated content unless set to do so.

### Environment

Microsoft Internet Explorer 9.

### Resolving the problem

In Microsoft Internet Explorer 9, click **Tools > Internet Options > General > Browser history > Settings**. For **Check for newer versions of stored pages**: select **Every time I visit the webpage**.

---

## A data layer is not displayed on the query panel

User or group access might prevent a user from viewing a layer.

### Symptoms

A data layer that a user expects to see as a choice on the query panel is not displayed.

### Causes

The user was not granted access to the data layer, or the layer was added to the Areas category.

### Resolving the problem

1. To verify that the user has appropriate access to view the data layer:
  - a. Go to **Configuration > Resource Access** and select **By Resource**.
  - b. Locate the layer in question in the resource list and verify that the user or group have access.
  - c. If necessary, grant the user or group access.
2. To determine if the data layer was added to the Areas category:
  - a. Check the Areas panel to see if the layer is displayed in the Areas category.
  - b. If the layer is erroneously displayed in the Areas category, delete the layer and redefine it in the correct category.

### Related tasks

“Managing access to resources” on page 24

Manage user and group access to viewing data layers and to managing resources.

“Deleting data or a layer” on page 23

You can delete data for a layer, the data source for a layer, or a layer.

---

## A query on a data layer does not return any data

### Symptoms

Queries on a valid data layer do not return any data.

### Causes

Data import might not be complete, filters might be defined too broadly, or the data might be misconfigured.

### Resolving the problem

1. If an error message is displayed, resolve the issue indicated by the message. For example, the data import might not be complete for the referenced table.
2. Modify the query to remove any **where** or **when** conditions and any filters that have been applied. Data might be available but filtered out by the query parameters.
3. Verify that the data import process succeeded. Read the `DataUpdateProcessor*.log` files to see if the affected table is referenced. If the table is not referenced, update the layer again to determine if there errors are occurring.
4. If data is present in the database, the spatial coordinates of the data might be wrong. Check the source data to determine that the coordinates are provided in correct latitude (-90 to 90) and longitude (-180 to 180) ranges. If the data was provided as shape data, check to determine that the data is in the correct spatial reference system.

#### Related tasks

“Updating data” on page 22

You can update data in the IBM Intelligent City Planning and Operations database manually.

#### Related reference

“Spatial data format” on page 18

Geographic data must conform to the specified geographic coordinate system.

---

## Filter or chart options are not displayed or are confusing

Faulty layer definitions can prevent users from selecting filters or layers.

### Symptoms

A user cannot select a filter for a data layer, or cannot select a layer to chart. Or a user cannot make other selections because display names are confusing.

### Causes

Filters or charting categories were not defined during layer definition in the data import wizard, or display names were not updated.

### Resolving the problem

Delete the layer and redefine the layer with one or more columns selected as filters or as charting categories and with meaningful display names.

#### Related tasks

“Defining data layer and data source structure” on page 19

Before you can import layer data, you must define the data source structure.

#### Related reference

“Data Import Wizard requirements and limitations” on page 20  
The Data Import Wizard prepares an import definition to bring data into the staging database.

---

## Import process takes too long

### Symptoms

Data import seems to take a long time.

### Causes

The polling interval might be too long, or the last update column might be missing.

### Diagnosing the problem

Optional. Clearly state the steps necessary to diagnose the problem. Optionally, include appropriate response role elements. Alternatively, imbed a task topic or conref that provides the steps to diagnose the problem.

**User response:** Optional. When you have particular actions that are performed by particular users, use one or more of the ts\*Response elements.

### Resolving the problem

- If layers are not changing, or are not changing as frequently as expected, go to **Configuration > Import Data** to view the import sources and determine if the polling interval is set appropriately.
- Verify that a last update column was specified. If a last updated column is not specified, then all of the rows in the table will be updated repeatedly. Read the DataUpdateProcessor.log file for the affected table, checking the number of rows returned, the rows inserted, and the rows updated. If no rows are inserted but rows being updated repeatedly, there might be no last updated date defined, and the import process is importing each row with every update.

---

## The same fact is present multiple times

Missing keys can result in fact duplication.

### Symptoms

The same fact appears repeatedly.

### Causes

No column was specified as a key for the data layer.

### Resolving the problem

If no columns were defined as the keys during layer definition, data update will insert all the rows from a table as new facts each time an import is run for the table instead of updating existing rows. Delete the layer and redefine the layer with one or more key column identifiers.

---

## Query with blocks fails

A query that includes blocks as a parameter fails.

### Symptoms

A query that includes blocks as a parameter fails. An error message states: "No boundary results returned. Query will not continue."

## Causes

Block data does not cover the area being queried.

## Resolving the problem

Run the query in an area that has block data defined, or add block data that covers the area being queried.

### Related tasks

“Importing block data” on page 18

To perform searches that specify a given number of blocks from a specified location, you must import data about blocks.

---

## Verifying the database connection

If users report problems viewing data, verify the database connection.

## Symptoms

Users report problems viewing data, such as blank fields when selecting search criteria.

## Causes

The system might not be connected to the configured database.

## Resolving the problem

Fields such as **Application Module**, **Application Type**, **Review Type**, and **Review Result** rely on the database with the following tables:

PO.APPLICATION\_CATEGORY, PO.APPLICATION\_TYPE, PO.REVIEW\_TYPE, PO.REVIEW\_RESULT\_CODE,

PO.APPLICATION\_CATEGORY\_X\_APPLICATION\_TYPE,

PO.APPLICATION\_TYPE\_X\_REVIEW\_TYPE,

PO.REVIEW\_TYPE\_X\_REVIEW\_RESULT\_CODE. To verify the connection, log on to the WebSphere Application Server administrator console, navigate to the Data Resources page and find the data source with the JNDI name of **jdbc/ioc**. Select the data source and click **Test Connection** to verify the connection.

### Related tasks

“Reviewing permit applications” on page 43

Review and evaluate permit applications for various activities in your city to reveal conflicts over time and space.

---

## Chapter 5. Analyzing and planning city operations

Depending on how your administrator configured IBM Intelligent City Planning and Operations, you can analyze and monitor city operations, review permits, discover unlicensed businesses, and plan infrastructure maintenance.

### About this task


In IBM Intelligent City Planning and Operations you have access to a wide range of data from different sources, depending on the databases your administrator configures. You can search for and display facts such as events, incidents, infrastructure, permits, and service requests, and specify locations and time periods of interest.

### Procedure

To analyze and plan city operations:

- Search and filter data sources (layers), and save useful queries for later.
- Reveal relations and correlations (analysis views).
- Save information about a fact (bookmarks).

#### Related information:

 [IBM Intelligent Operations Center Executive Dashboard Interim Feature](#)  
This document contains the documentation for the IBM Intelligent Operations Center Executive Dashboard feature of the IBM Intelligent Operations Center.

---

## Searching and filtering data sources (layers)

You can select, search, and filter data, which is viewed as layers and displayed on the map.

### Procedure

1. Click **Layers**.
2. Select a layer category, such as **Events** or **Incidents**.
3. Select one or more layers. You must select at least one layer to run a query. You can choose to filter data from a layer based on attributes that are configured for the layer. Filters apply only to the selected layer.
4. Optional: Click **When** and specify a date or time range. The selected parameters apply to all selected layers.
5. Optional: Click **Where** and specify parameters, such as region, address, or proximity, or an area that you draw on the map. The selected parameters apply to all selected layers.
6. Click **Submit**.
7. Optional: To save a query, click **Save**. You must specify a name for the saved query, and choose to make it private or public.

### Results

The results of the query are displayed on the map, and each layer is listed in the map legend with an identifying icon and the number of facts that are returned for

each layer. If more facts are available for a layer, you can click the green arrow to retrieve more facts, up to the maximum number of facts configured by your administrator.

If a pie chart icon is displayed, you can view a distribution of the data for that layer, depending on the attributes configured by your administrator.

**Related tasks:**

Chapter 5, “Analyzing and planning city operations,” on page 39

Depending on how your administrator configured IBM Intelligent City Planning and Operations, you can analyze and monitor city operations, review permits, discover unlicensed businesses, and plan infrastructure maintenance.

“Revealing relations and correlations (analysis views)”

You can reveal relations and correlations by using analysis views.

“Saving information about a fact (bookmarks)” on page 41

You can save and retrieve information about a fact, including comments and locations, in a bookmark.

---

## Revealing relations and correlations (analysis views)

You can reveal relations and correlations by using analysis views.

### About this task

You can learn more about analysis views, also known as hotspots, from the IBM Intelligent Operations Center Executive Dashboard feature documentation.

### Procedure

To reveal relations and correlations:

1. Click **Analysis Views**.
2. Select a predetermined analysis view.
3. Review the details of facts included in the analysis view. You can show or hide layers listed in the map legend, and view details in the timeline and detail panel at the bottom of the page.

**Related tasks:**

Chapter 5, “Analyzing and planning city operations,” on page 39  
Depending on how your administrator configured IBM Intelligent City Planning and Operations, you can analyze and monitor city operations, review permits, discover unlicensed businesses, and plan infrastructure maintenance.

“Searching and filtering data sources (layers)” on page 39

You can select, search, and filter data, which is viewed as layers and displayed on the map.

“Saving information about a fact (bookmarks)”

You can save and retrieve information about a fact, including comments and locations, in a bookmark.

“Creating analysis views” on page 25

Create analysis views to reveal relations and correlations among data.

**Related information:**

IBM Intelligent Operations Center Executive Dashboard Interim Feature  
This document contains the documentation for the IBM Intelligent Operations Center Executive Dashboard feature of the IBM Intelligent Operations Center.

---

## Saving information about a fact (bookmarks)

You can save and retrieve information about a fact, including comments and locations, in a bookmark.

**About this task**

By bookmarking a fact you can return to that fact on the map without searching again, and you can save comments about the fact. You can collaborate with other users by responding to each other's comments.

**Procedure**

1. Select a fact on the map. A fact details page is displayed.
2. Click **Add Bookmark**. The Bookmark window opens.
3. Enter a name for the bookmark, and click **Create Bookmark..** The new bookmark is added at the bottom of the bookmark list.
4. Optional: Add a comment, and click **Add Comment**. If the bookmark is not private, other users can add comments.

**Related tasks:**

Chapter 5, “Analyzing and planning city operations,” on page 39  
Depending on how your administrator configured IBM Intelligent City Planning and Operations, you can analyze and monitor city operations, review permits, discover unlicensed businesses, and plan infrastructure maintenance.

“Searching and filtering data sources (layers)” on page 39

You can select, search, and filter data, which is viewed as layers and displayed on the map.

“Revealing relations and correlations (analysis views)” on page 40

You can reveal relations and correlations by using analysis views.







---

## Analysis workbench buttons

You can filter and manage data that is displayed on the analysis map.

## Toolbar buttons

Table 3. Toolbar buttons

Icon	Description
	Bookmark. You can include metadata and comments about a fact in a bookmark. "Saving information about a fact (bookmarks)" on page 41
	Data layers. You can select which data to display or hide. "Searching and filtering data sources (layers)" on page 39
	Area-based facts. Display information relevant to specified areas.
	Configuration. Configure data sources. Chapter 3, "Configuring IBM Intelligent City Planning and Operations," on page 13
	Analysis views. Create or modify analysis views. "Revealing relations and correlations (analysis views)" on page 40
 Permitting	Permitting. Review and approve permit applications. "Reviewing permit applications" on page 43



---

## Chapter 6. Additional applications

If your administrator has configured the system with the required connections and applications, you can review permit applications or investigate unlicensed business.

---

### Reviewing permit applications

Review and evaluate permit applications for various activities in your city to reveal conflicts over time and space.

#### Before you begin

Before you can review permit applications, your system administrator must configure IBM Intelligent City Planning and Operations to import permit data from existing systems.

#### About this task

Cities issue permits for a wide variety of activities. You can:

- Support the permit approval process with detailed analysis of city facts
- Visually analyze permits relative to city, planned events, and so on
- Track status of permits under consideration
- Annotate permits for review

#### Procedure

To analyze and monitor permits:

1. Open and log in to IBM Intelligent City Planning and Operations.
2. Click **Permit Optimization**.
3. From the Search Criteria panel, select an **Application Module**, **Application Type**, **Review Type**, and **Review Result**, then click **Submit**. If any of these fields is blank, ask your system administrator to verify your database connection.
4. Select a permit application to review from the search results, then click **Select**.
5. To specify an area associated with the selected permit application, click **Define Area**. You can draw an area on the map, name the area, and specify start and end dates. Or you can display the coordinates of a selected area. You can reuse previously defined areas.
6. To view the layers displayed on the map for the selected permit, expand the map legend panel. If defined areas are associated with the selected permit application, they will be listed in the legend. You can toggle the defined areas that are displayed on the map.
7. To associate a bookmark with the selected permit application, click **Bookmarks** and select an existing bookmark, or create a new bookmark. Use bookmarks to save related data between data layers and permits
8. To add comments, click **Notes**.
9. To view dates and times associated with the permit application, open the timeline panel at the bottom of the page.

10. When you have finished editing the permit application properties, click **Save**, or to revert to the previous properties, click **Reset**.
11. If you are ready to accept or deny the permit application, select an action from the **Review Result** menu, then click **Save**.

**Related information:**

“Verifying the database connection” on page 38

If users report problems viewing data, verify the database connection.

---

## Viewing fraud alerts

Examine fraud alerts from IBM i2 Intelligence Analysis Platform to reveal unlicensed businesses and lost revenue opportunities.

### Before you begin

To view fraud alerts from IBM i2 Intelligence Analysis Platform, your system administrator must install the connector and configure data import from the IBM i2 Intelligence Analysis Platform database. Unlicensed business analysis in IBM Intelligent City Planning and Operations relies on input and notifications from IBM i2 Fraud Intelligence Analysis Version 1.0.5.

### About this task

You can:

- Identify cases of potential lost revenue due to unlicensed or unpermitted activities
- Ensure a safer city through more rigorous informant of licensing and permitting
- Respond in standard defined ways to identified suspect activity (SOP)

### Procedure

To view fraud alerts:

1. Open and log in to IBM Intelligent City Planning and Operations.
2. Click **Layers**.
3. Select the data layer that includes alerts from the IBM i2 Intelligence Analysis Platform database.
4. Click **Submit** to submit a query that will display the imported fraud alert data. To view the alerts in the context of other data, include additional layers in your query.

---

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