



Offline Routing and Geocoding using ArcGIS Runtime SDK

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Technical Workshop

Agenda

- **Why offline routing and geocoding?**
- **Advantages of ArcGIS runtime SDK**
- **Demo 1: Prepare data for offline use**
- **Demo 2: Perform offline routing/geocoding on an Android device**

Why Offline Routing and Geocoding?

- **Internet connection is not available or not reliable**
- **Users have their own street network and geocoding index**
- **Local solve provides a better performance**
 - **Eliminate the negative impact of Internet latency**

Advantages of ArcGIS Runtime SDK

- **Geocoding/Reverse Geocoding:**
 - Address, Place of Interest
- **Routing:**
 - Multiple stops: fixed sequence, optimal sequence
 - Stop time windows
 - Curb approach/U-Turn policy
 - Street network restrictions
 - Historical traffic
 - Point/Polyline/Polygon barriers
- **Available in 10.2.3 SDKs:**
 - Android, Java SE, iOS, Mac OS X, .Net (beta), and Qt

Demo

- **Prepare transportation network and locator for offline use**
- **Deploy data on device**
- **Consume data in mobile application with runtime SDK**

Demo 1: Prepare data

Na An



Demo 2: Disconnected routing/geocoding on an Android device

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Runtime Geocoding API Cheat Sheet

Creation (Offline/Online)

```
Locator locator;  
  
locator = Locator.createLocalLocator("/absolute/path/locator.loc");  
locator = Locator.createOnlineLocator();
```

Geocoding

```
List<LocatorGeocodeResult> results =  
    locator.find(new LocatorFindParameters("380 New York St Redlands CA"));  
LocatorGeocodeResult bestResult = results.get(0);  
Point location = bestResult.getLocation();  
String address = bestResult.getAddress();
```

Reverse Geocoding

```
LocatorReverseGeocodeResult result = locator.reverseGeocode(new Point(-117, 34), 2000);  
Map<String,String> addressFields = result.getAddressFields();
```


Runtime Routing API Cheat Sheet

Class Global Instances

```
RouteTask mRouteTask;  
RouteParameters mRouteParameters;
```

Switching between Online and Offline

```
boolean offline = true;  
if (offline) {  
    mRouteTask = RouteTask.createLocalRouteTask("~/sandiego.geodatabase", "Streets_ND");  
}  
else {  
    mRouteTask = RouteTask.createOnlineRouteTask("service.url", null);  
}
```

Runtime Routing API Cheat Sheet (Continued)

Optimized Routing

```
mRouteParameters.setFindBestSequence(true);  
mRouteParameters.setPreserveFirstStop(true);  
mRouteParameters.setPreserveLastStop(true);
```

Runtime Routing API Cheat Sheet (Continued)

Adding Stops

```
Graphic stop1 = new Graphic(new Point(x1,y1), null);  
Graphic stop2 = new Graphic(new Point(x2,y2), null);  
NAFeaturesAsFeature stops = new NAFeaturesAsFeature();  
stops.addFeatures(new Graphic[] { stop1, stop2 });  
mRouteParameters.setStops(stops);
```

Adding Polygon Barriers

```
Polygon polygon = new Polygon();  
polygon.startPath(x1, y1);  
polygon.lineTo(x2,y2); polygon.lineTo(x3,y3);  
NAFeaturesAsFeature barriers = new NAFeaturesAsFeature();  
barriers.addFeature(new Graphic(polygon, null));  
mRouteParameters.setPolygonBarriers(barriers);
```

Runtime SDKs Document and Sample

- **Document:** <https://developers.arcgis.com/documentation/>
- **Samples:** <https://developers.arcgis.com/android/sample-code/>
- **Demo source code:** <https://github.com/Esri/arcgis-runtime-demos-android>

What's Next

- **Navigation application:**
 - Stand alone application
 - Remote control API
 - No SDK

Session Name	Time	Location
ArcGIS Apps: The Road Ahead	Thursday 3:15pm– 4:30pm	Ballroom 06 D

ArcGIS Runtime SDK sessions Thursday

Session Name	Time	Location
Create your own Android App Tools Using ArcGIS Runtime SDKs	9:30am – 10:00am	Developer Island (demo theatre)
Developing Mobile Apps with ArcGIS Runtime SDK for .NET	10:15am – 11:30am	Room 05 A
Dive Deep into the Performance of the ArcGIS Runtime SDKs Core Display Architecture	10:30am – 11:00am	Developer Island (demo theatre)
10 Things you Didn't Know You Can Do with ArcGIS Runtime SDK for iOS	11:30am – 12:00pm	Developer Island (demo theatre)
Offline Routing Using Network Analysis in Runtime	11:30am – 12:00pm	Developer Island (demo theatre)
ArcGIS Runtime SDKs: The Road Ahead	1:30pm – 2:45pm	Room 07 A/B

Thank you...

- Please fill out the session survey:

First Offering ID: 1745 (Wednesday)

Second Offering ID: 1754 (Thursday)

Online – www.esri.com/ucsessionsurveys

Paper – pick up and put in drop box



Understanding our world.