

# Vehicle Routing Problem with ArcPro

In [2]:

```
import arcpy
```

In [3]:

```
# Create the vehicle routing problem analysis layer
arcpy.na.MakeVehicleRoutingProblemAnalysisLayer(r"D:\2021-spring\ArcGIS\Lab3\lab3\lab3.
gdb\mn\mnnetwork",
                                                "Vehicle Routing Problem",
                                                "Driving", "Minutes", "Miles")
```

Out[3]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 02:02:15

New analysis data source feature dataset:

C:\Users\user\AppData\Local\Temp\scratch.gdb\VehicleRoutingProblemw805mc.

Succeeded at 2021年3月28日 下午 02:02:18 (Elapsed Time: 3.55 seconds)

In [4]:

```
# Add the stop locations
arcpy.na.AddLocations("Vehicle Routing Problem", "Orders", r"D:\2021-spring\ArcGIS\Lab3
\lab3\lab3.gdb\mn\stops")
```

Out[4]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 02:03:06

10 features located out of 10.

Succeeded at 2021年3月28日 下午 02:03:06 (Elapsed Time: 0.63 seconds)

In [5]:

```
# Add the depot location
arcpy.na.AddLocations("Vehicle Routing Problem", "Depots", r"D:\2021-spring\ArcGIS\Lab3\lab3\lab3.gdb\mn\dept")
```

Out[5]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 02:03:49

1 features located out of 1.

Succeeded at 2021年3月28日 下午 02:03:50 (Elapsed Time: 0.54 seconds)

In [6]:

```
# Add the routes
arcpy.na.AddVehicleRoutingProblemRoutes("Vehicle Routing Problem", 2, "Route",
                                         "1436 Lone Oak Rd, Saint Paul, Minnesota, 55121",
                                         "1436 Lone Oak Rd, Saint Paul, Minnesota, 55121",
                                         "上午 08:00:00", "上午 08:00:00", 10, None, None,
                                         , None, None, "APPEND")
```

Out[6]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 02:05:57

WARNING 030240: Cost Per Unit Time can't contain a null value and has a default value of 1.0.

Succeeded at 2021年3月28日 下午 02:06:08 (Elapsed Time: 10.54 seconds)

In [7]:

```
# Add the highway 35W and highway 94 as line barriers
arcpy.na.AddLocations("Vehicle Routing Problem", "Line Barriers", r"D:\2021-spring\ArcGIS\Lab3\lab3\lab3.gdb\highway_Dissolve")
```

Out[7]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 02:11:06

2 features located out of 2.

Succeeded at 2021年3月28日 下午 02:13:44 (Elapsed Time: 2 minutes 37 seconds)

In [8]:

```
# Solve the routing problems and get the routes
arcpy.na.Solve("Vehicle Routing Problem", "HALT", "TERMINATE", None, '')
```

Out[8]:

## Output

id	value
0	a Layer object
1	true

## Messages

Start Time: 2021年3月28日 下午 02:15:51

Succeeded at 2021年3月28日 下午 02:15:55 (Elapsed Time: 3.16 seconds)

# Vehicle Routing Problem with ArcOnline

In [30]:

```
# Create the vehicle routing problem analysis layer
arcpy.na.MakeVehicleRoutingProblemAnalysisLayer("https://www.arcgis.com/",
                                                "Vehicle Routing Problem 1",
                                                "Driving Time", "Minutes", "Miles")
```

Out[30]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 06:04:15

New analysis data source feature dataset:

C:\Users\user\AppData\Local\Temp\scratch.gdb\VehicleRoutingProblem1y3v8do.

Succeeded at 2021年3月28日 下午 06:04:18 (Elapsed Time: 2.83 seconds)

In [31]:

```
# Add the stop locations
arcpy.na.AddLocations("Vehicle Routing Problem 1", "Orders", r"D:\2021-spring\ArcGIS\Lab3\lab3\lab3.gdb\mn\stops")
```

Out[31]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 06:04:21

10 features located out of 10.

Succeeded at 2021年3月28日 下午 06:04:21 (Elapsed Time: 0.33 seconds)

In [32]:

```
# Add the depot location
arcpy.na.AddLocations("Vehicle Routing Problem 1", "Depots", r"D:\2021-spring\ArcGIS\Lab3\lab3\lab3.gdb\mn\dept")
```

Out[32]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 06:04:25

1 features located out of 1.

Succeeded at 2021年3月28日 下午 06:04:25 (Elapsed Time: 0.32 seconds)

In [33]:

```
# Add the highway 35W and highway 94 as line barriers
arcpy.na.AddLocations("Vehicle Routing Problem 1", "Line Barriers", r"D:\2021-spring\ArcGIS\Lab3\lab3\lab3.gdb\mn\highway")
```

Out[33]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 06:04:29

186 features located out of 186.

Succeeded at 2021年3月28日 下午 06:04:29 (Elapsed Time: 0.40 seconds)

In [34]:

```
# Add the routes
arcpy.na.AddVehicleRoutingProblemRoutes("Vehicle Routing Problem 1", 2, "Route",
                                         "1436 Lone Oak Rd, Saint Paul, Minnesota, 55121", "1436 Lone Oak Rd, Saint Paul, Minnesota, 55121",
                                         "上午 08:00:00", "上午 08:00:00", 10, None, None, None, None, "APPEND")
```

Out[34]:

## Output

a Layer object

## Messages

Start Time: 2021年3月28日 下午 06:04:39

WARNING 030240: Cost Per Unit Time can't contain a null value and has a default value of 1.0.

Succeeded at 2021年3月28日 下午 06:04:47 (Elapsed Time: 7.93 seconds)

In [35]:

```
# Solve the routing problems and get the routes
arcpy.na.Solve("Vehicle Routing Problem 1", "HALT", "TERMINATE", None, '')
```

Out[35]:

## Output

id	value
0	a Layer object
1	true

## Messages

Start Time: 2021年3月28日 下午 06:05:25

Executing network analysis service Job Id: "j5f12af07681c43babdd9e4fbaa7d59a0".

Submitted.

Executing...

Network elements with avoid-restrictions are traversed in the output (restriction attribute names: "Through Traffic Prohibited").

Succeeded.

Succeeded at 2021年3月28日 下午 06:05:50 (Elapsed Time: 24.89 seconds)

In [ ]: