

Esri Developer Summit

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esri.com/events/devsummit



Performing Network Analysis with Online Services

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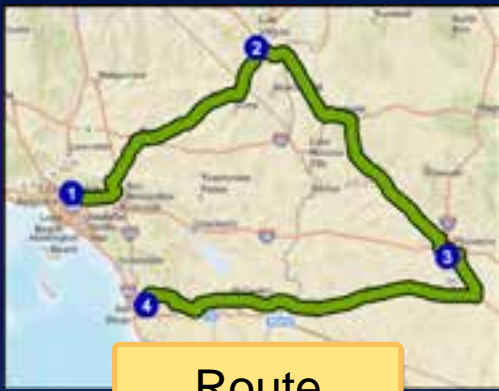
Patrick Stevens

A decorative graphic at the bottom of the slide. It features a curved orange border at the top. Below the border is a semi-transparent map of a city area. Overlaid on the map is white text representing code snippets. The code includes symbols like 'esri.symbol.SimpleLineSymbol', 'new dojo.Color([0,0,0,0.5])', and 'feature.setSymbol(polySymbolGreen)'.

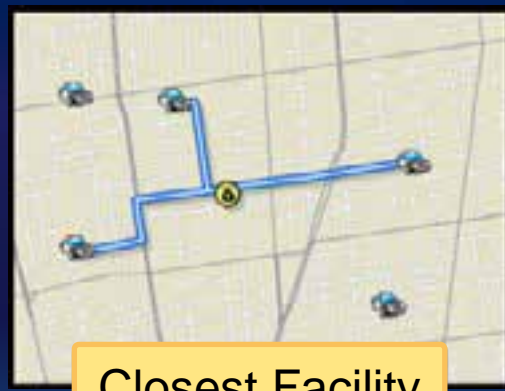
```
esri.symbol.SimpleLineSymbol  
new dojo.Color([0,0,0,0.5])  
polySymbolGreen = new esri.symbol.SimpleLineSymbol(  
    feature.setSymbol(polySymbolGreen)  
)  
else if(f == 1) {  
    polySymbolGreen = new esri.symbol.SimpleLineSymbol(  
        symbol.SimpleLineSymbol(esri.symbol.  
        Color([0,0,0,0.5]), 1));  
    polySymbolGreen.setSymbol(polySymbolGreen)  
}  
polySymbolGreen = new esri.symbol.SimpleLineSymbol(  
    new dojo.Color([0,0,0,0.5]), 1);  
polySymbolGreen.setSymbol(polySymbolGreen);
```

Introduction

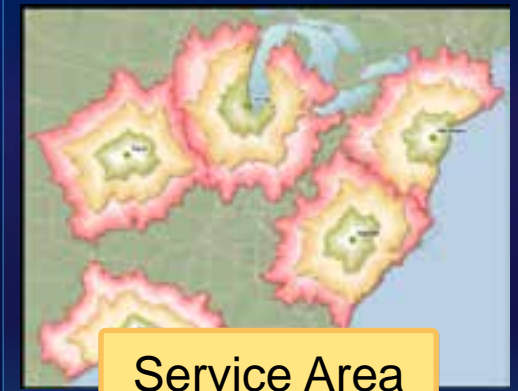
- **Who are we?**
 - **Network Analyst Product Engineers**
- **Who are you?**
 - **Current Network Analyst users?**
 - **Familiarity with web APIs?**



Route



Closest Facility



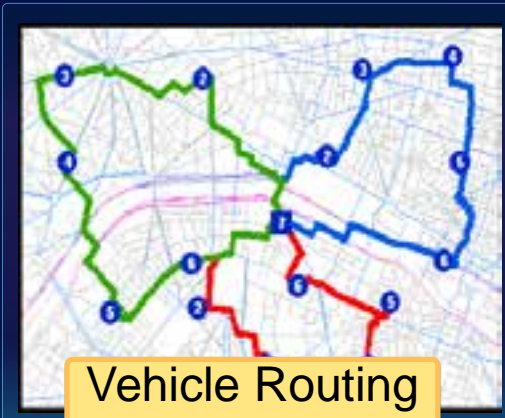
Service Area

ArcGIS Network Analyst Extension

Solving transportation problems



Location-Allocation



Vehicle Routing Problem



Origin-Destination Cost Matrix

Agenda

- **New 10.1 Capabilities**
- **Public online services available**
- **Demos**
 - **Route**
 - **Service Area**
 - **Closest Facility**
 - **Vehicle Routing Problem**
- **Custom traffic provider**
- **Network analysis vs. Geoprocessing services**
- **Conclusion**
- **Questions**

Network Analyst at 10.1

- **Performance, durability, and scalability improvements**
- **64bit Server capabilities**
- **Capacitated Location-Allocation**
- **Soft restrictions**
- **Hierarchical service area**
- **Live traffic**
- **All solvers are time-based**
- **Network Analyst python module**
- **Geoprocessing tools**

Public analysis services

- **Free public service**
 - Can be used in a production environment
 - North America and Europe
 - Route

<http://tasks.arcgisonline.com/arcgis/rest>

Public analysis services

- **Sample services**
 - **Not to be used in a production environment**
 - **<http://networkanalysis.arcgisonline.com/arcgis/rest>**
 - **Global coverage**
 - **Route, Service Area, Closest Facility, Vehicle routing problem**
 - **<http://sampleserver3.arcgisonline.com/arcgis/rest>**
 - **North America only**
 - **Route, Service Area, Closest Facility**

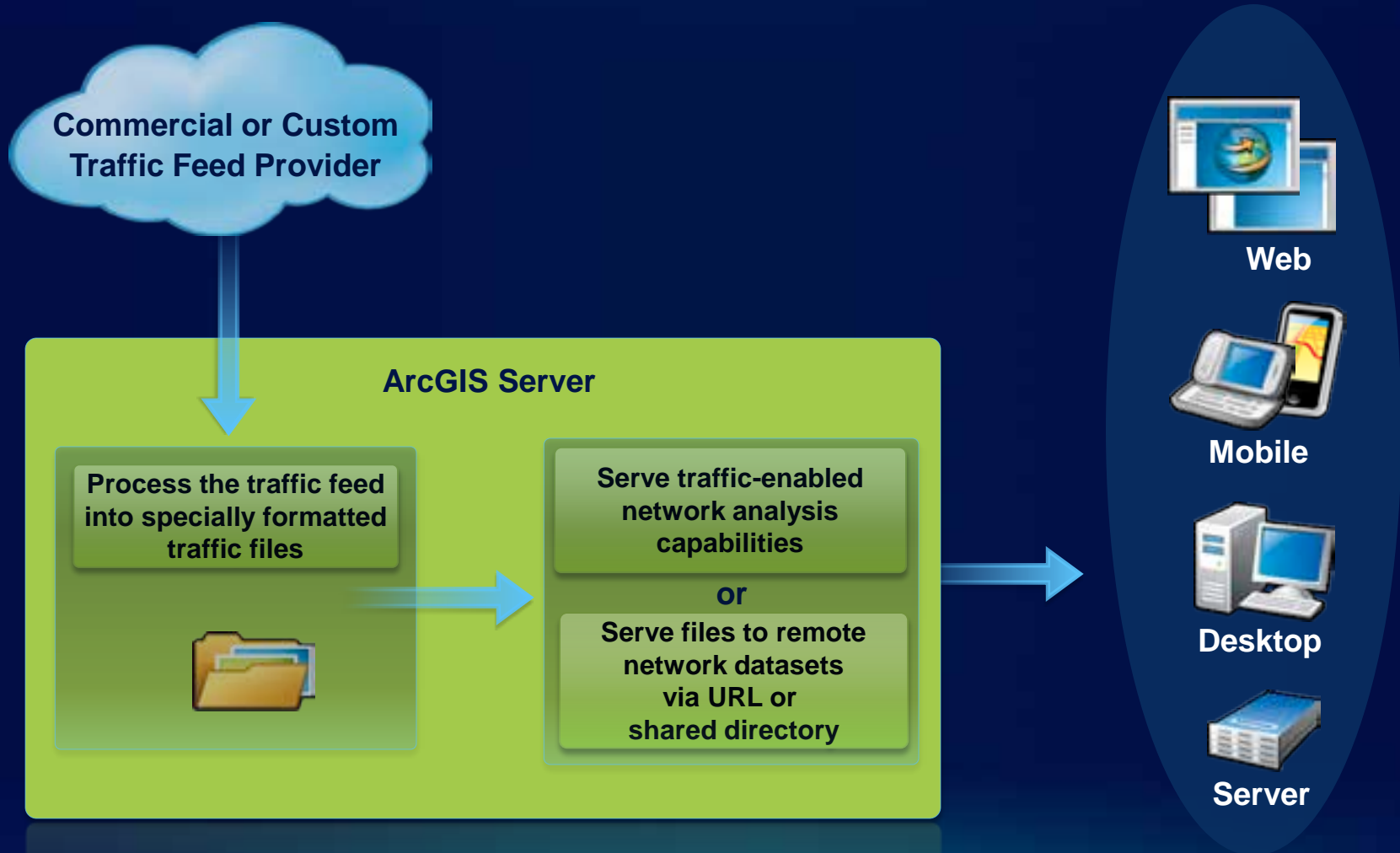
Traffic service

- **Traffic speeds and incident data**
 - **Currently available as a sample service**
 - **Potentially available as a service in the future, depending on demand**
 - **Historical, live and predictive traffic speeds**
 - **Premium global coverage, sample San Diego coverage**
 - **Available as traffic for display only, and as a feed for network analysis**
- **<http://traffic.arcgisonline.com/arcgis/rest>**

Routing demonstrations



Traffic



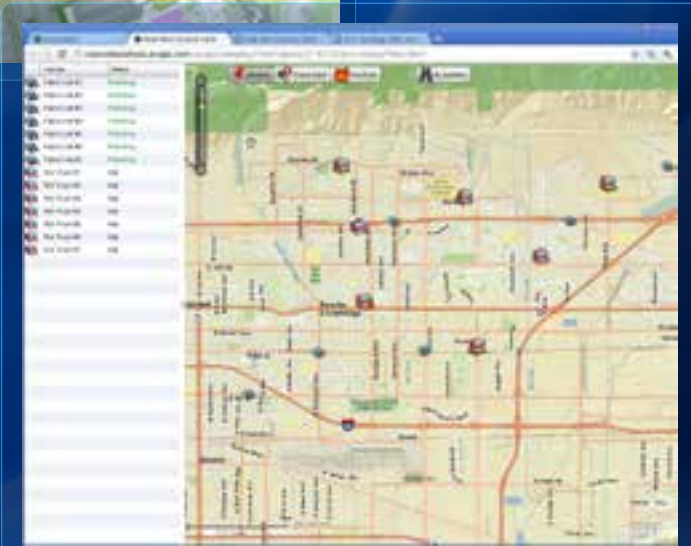


Service Area demonstration





Closest Facility demonstration



Vehicle Routing Problem demonstration



Geoprocessing services vs Network Analysis services



```
esri.symbol.SimpleLineSymbol
new dojo.Color([0,0,0,0.5])
polySymbol(feature.setSymbol)
} else if(f == 1) {
var polySymbolGreen =
polySymbolGreen.setOutline
symbol.SimpleLineSymbol(esri.symbol
Color([0,0,0,0.5]), 1));
polySymbolGreen.setSymbol(polySymbolGreen)
} else if(f == 2) {
polyBlue = new esri.symbol.SimpleLineSymbol
setOutline(new
esri.symbol.SimpleLineSymbol
new dojo.Color([0,0,0,0.5]), 1));
```

Geoprocessing or Network Analysis Service?

- Both support the full network analysis capabilities
- Select **geoprocessing** service if:
 - Analysis runs for long duration (greater than 60 seconds)
 - Out-of-the box client support is important
 - Network analysis is just one part of a larger analysis
 - Need to access OD Cost Matrix, Vehicle Routing Problem, or Location Allocation Solvers from REST based Web APIs
- Select **network analysis** service if:
 - Analysis runs for short duration (less than 60 seconds)
 - Need very fast execution

Geoprocessing or Network Analysis Service?

	Speed	Problem Size	Access to ArcObjects	Out-of-the-box client support	Development overhead
Geoprocessing service	Constant overhead	Medium to large	No	Good	Low
Custom geoprocessing tool	Constant overhead	Medium to large	Yes	Good	Medium
Network analysis service	Fast	Small to medium	No	Limited	Low
Custom server object extension	Fast	Small to large	Yes	None	High

Conclusion

```
esri.symbol.SimpleLineSymbol({
  color: [0, 0, 255],
  width: 2
});
feature.setSymbol(new esri.symbol.SimpleLineSymbol({
  color: [0, 0, 255],
  width: 2
}));
else if(f == 1) {
  var polysymbolGreen = new esri.symbol.PolySymbol({
    color: [0, 0, 0.5],
    width: 1
  });
  feature.setSymbol(polysymbolGreen);
} else if(f == 2) {
  var polysymbolBlue = new esri.symbol.PolySymbol({
    color: [0, 0, 255],
    width: 1
  });
  feature.setSymbol(polysymbolBlue);
}
```

Resources

- **Online services**
- **Samples**
- **Documentation**
- **Forums**
- **Presentation, video recording and code samples will be available at <http://proceedings.esri.com>**
 - **Look for Developer Summit with 2012 dates**
- **ArcGIS online Transportation Analytics group**



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