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## Designing Large Cached Map Services with DeLorme World Data



#### **Initial Cache Setup**

- Web Mercator Aux Sphere coordinate system
- Define number of zoom levels to be used
   We used ten, 1:148 million down to 1:289k
- Define small test area to be cached
   We chose the country of Colombia
- Outline features to be displayed at zoom levels
   Displayed features should be appropriate to map scale
- Define style of your map



### **Map Service Properties**

- Ten scales
- JPEG tile format

   No transparencies
- 256x256 tile size

   Improved performance

   Fused cache

ArcGIS Server - Map Service Prop	erties 🛛 🖓 🔀
General         Parameters         Capabilities         Parameters           Draw this map service:         C         Dynamic           C         Using till         Using till           Tiling Scheme         Load tiling scheme from         Scales:           I:147,914,381.897889         1:73,957,190.94894         1:36,978,595.474472           I:19,499,297.737226         1:9,244,640.06610         1:4,622,324.494309           I:2,311,162.217155         1:1,155,551.106577         1:577,790.554209           I:288,895.277144         I:288,895.277144	oling Processes Caching ally from the data s from its cache Origin (x, y) in map units: X: 20037508.342787 Y: 20037500.342787 Y: 20037500.342787 Add Delete Delete Tile Pormat: 3PEG V Compression: 90 Height: 256 V pixels Width: 256 V pixels Dets per inch: 96 Dels per inch: 96 Dels per inch: 96 Dels per inch: 96 Dels per inch: 96
Create tiles on demand	Advanced Options Cache directory: E:\arcgisserver\arcgiscache



#### Labeling

- Maplex labeling engine is a valuable tool
  - Allow time for experimenting with different label placement options at different zoom levels
  - Take the time to establish rules for Maplex that meet the needs of your cached data
- To create clean-looking type you should
  - Turn anti-aliasing on
  - Use JPG file format for cached tiles
  - Set LOI for different features



#### Maplex settings

#### • Use all available options to get nice labels

Label Stacking Options	2 🛛		Abbreviation		2 🛛	
Label Justification: Automatically choose best	×		Abbreviation Dictionary Name	Placement Properties Label Paston   Pitrig Statugy Confect New	2 🔀	
Stacking Separators: Strateg	gy Order	2 🛛	Geo_Hydro_Lai		1	
Stacking Visi Separator Visi Separator Rani	egy Order k placement strategies in priority order: s top of the list have the highest priority.	trategies at	Applies an abbre the label text.	[on so wight	<b>○</b>	
. Se Com	ck label npress label in width luce label in size	Ŧ	Truncation	Eachgoord labe	(galaced first)	
Limits Maximum number of lin	reviate label		Applies an algorit label. The remove	Charand Charand Charand	er Linds	
Migimum number of ch Magimum number of ch		¥			Duplicate Labels	
	COK C	ancel		T given mesons in	Search radius: Removes duplicate labels distance from each other.	2 Inches  important lie within the specified
					DK Carcel	OK Cancel
					0	DELORME

#### Maplex – Before and After



Before

After

DELORME

 Some label editing may be need to be done by hand in dense areas

### What is displayed at each zoom level or scale? What changes from 1 to 2 to 3 etc.

- 1 = Continent outlines and oceans with labels
- 2 = 1 + Boundary lines, country names and lakes and rivers
- 3 = 2 + LULC and labels for major seas and bays
- 4 = 3 + Country capitals, major cities, additional country and water body labels
- 5 = 4 + Contour lines, first order admin boundary lines, urban areas, island names
- 6 = 5 + Major roads, hydro lines, inland hydro labels, major mountain peak labels, additional place names
- 7 = 6 + Major airports, railroads, ferry lines, secondary roads, more place names
- 8 = 7 + Route numbers, more roads, railroads, all airports w/ labels + runways, labeled rivers, place names, island labels, geo-features, intermittent hydro lines
- 9 = 8 + All roads, tunnels for railroads and roads, additional hydro lines
- 10 = 9 + All ferry lines, additional route numbers, additional inland hydro labels



#### **Data transition between scales**



#### Timing is important

- Allow plenty of time to cache and re-cache after corrections/tweaks are made
  - DeLorme World Data took days to cache...
  - 140 machine hours required for caching time
- Millions of individual tiles to deal with
- Re-cache only updated areas to save time
- No need to cache the ocean more than once
   A hard lesson learned



#### **Optimizing cache generation and delivery times**

- Install maximum amount of RAM in your caching machine and have plenty of hard disk space
- Connect to SAN environment, maximize read/write speed
- Research which file system works best for you
   FAT32, NTFS, etc.
- Establish a delivery format
  - TAR files work well for streaming many files into one
- Test your caching process to ensure things go smoothly



#### Accessing DeLorme's World Basemap Cache

- DeLorme World Basemap Cache can be accessed on ArcGIS.com
- Viewed on a variety of platforms
  - ArcGIS Explorer, Google Earth, Bing Maps
- Generate KML files, customize layers displayed
- Export specific area as image, JPG, PNG, etc.



#### The DeLorme World Base Map cache is...

Global... Comprehensive... Accurate... Seamless...

Consistent...





# Thank you Time for Questions

