

The County of Essex provides a clear view with full-colour imagery

Case Study

Challenge:

The County of Essex was looking to improve the quality of their imagery by replacing grayscale images with full colour, high-resolution aerial photos. The new images were too large to display using internet clients, resulting in a system crash.

Goals:

- To substitute full colour, high resolution imagery for grayscale
- To make the new images readily available to users
- To find a solution that would eliminate storage capacity limitations
- To serve data quickly and to multiple users

Results:

- Users can view high resolution imagery without having to wait for large files to load
- Data is served up faster than ever before and imagery refreshes in a fraction of the time
- The County is no longer bottlenecked by storage limitations and can serve up more imagery to better serve clients
- Multiple users can be accommodated at once and data quality is never compromised

ESRI Software Used:

- ArcGIS Server Image Extension
- ArcGIS Server, ArcIMS



Overview

The County of Essex is the southernmost county in Canada and the second most populated in Ontario. It is one of the most agriculturally productive counties in the country, and a leader in manufacturing. The County's Geographic Information System (GIS) Department is responsible for coordinating various GIS activities for seven local municipalities and helps to determine GIS software and hardware needs, promote the establishment of spatial data and technology standards, and provide direction for the management of regional spatial datasets.

In 2006, the County of Essex purchased aerial photography for all seven of its municipalities with the intention of upgrading existing grayscale images to full colour. Imagery products are leveraged by many different departments within each municipality and made available to the public. The shift from grayscale to full colour imagery nearly tripled the size of storage required, leading the County of Essex to seek a new solution that would enable them to effectively process, manage and serve up the large volume of imagery both internally and over the web.

The Challenge

The County of Essex was looking to improve the service they were supplying to local municipalities by replacing existing grayscale imagery with full colour, high resolution images that were flown at a scale of 1:10,000. When the GIS department attempted to store the aerial photography as compressed raster imagery and serve it up through ArcIMS, the interactive mapping sites became unstable and prone to crash during a request. The images were simply too large to display in a fashion that the County and municipalities had become accustomed to. The County was in need of a new approach to image management that would enable them to quickly access, display and serve up their new full-colour imagery.



A full colour, high resolution aerial photograph of a residential neighbourhood in the County of Essex.

The Solution

The County of Essex had previously stored imagery as compressed mosaiced images and leveraged ArcIMS technology to make the data available to municipal departments and online for public consumption. When the GIS department discovered that the new full-



colour aerial photographs would be too large to display using web-based products, the County licensed the ArcGIS Server Image Extension and transitioned to a server-based approach to imagery management.

The Image Extension was integrated with ArcGIS Server at 9.3 and utilizes the server to process imagery on demand. This method allows users to store only base imagery and deliver multiple services of the same or overlapping geographic areas without duplicating the storage of the same raster information. It works by processing imagery requests from desktop, web or mobile clients, interpreting the requests and assigning them to a service provider. The service provider then processes the data and delivers the final imagery to the client.

To implement the solution, the GIS department at the County of Essex removed the 2-terabytes of mosaiced and compressed aerial photos from their website, loaded and compiled the raw tiffs into image services. The Image Extension works directly with raw data, so that once the data was loaded and a service was created, it could be immediately hosted and served.

To support growing demands from multiple county and municipal departments including engineering, public works, infrastructure management and permitting, the Image Extension employs an extremely efficient workflow and utilizes the same base data to create multiple image products at the same time. Only the imagery that is requested by the client is served up, keeping response times to a minimum.

"We are no longer bottlenecked by server space and are now able to display more imagery than ever before," said Mike

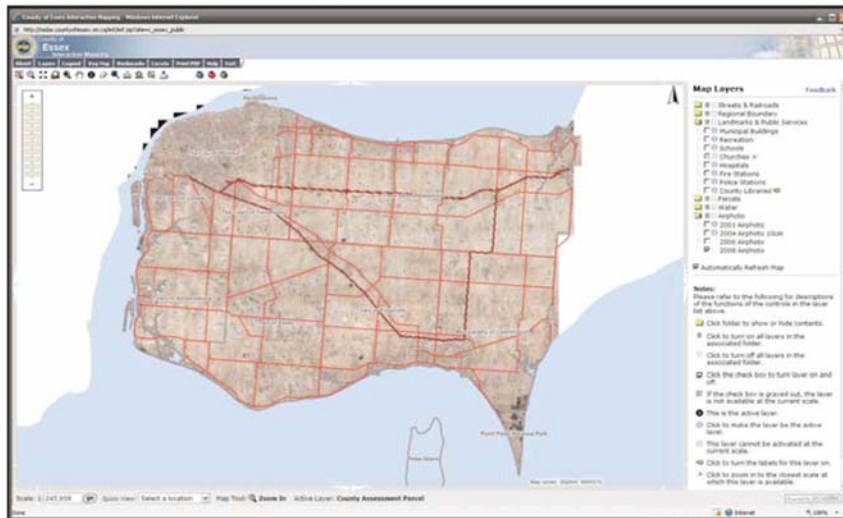
Sherwood, GIS Technician, County of Essex. "The switch to the ArcGIS Server Image Extension has enabled the County to quickly display detailed high resolution imagery using less storage, even when served up to multiple users. It provides an extremely detailed view of our raster imagery and the quality of the data is never degraded."

Results

The ArcGIS Server Image Extension enables the County of Essex to serve up high resolution, full colour imagery to citizens of the county and departments within the municipalities. The County can serve multiple years of

imagery using the same license, as well as change the properties and display settings of a specific service without modifying the raw data.

By leveraging multiple image services, the Image Extension can support competing demands from municipal departments, and data quality is never compromised. It works directly with raw imagery, so the County saves time and server space by no longer needing to preprocess and maintain multiple datasets.



An interactive mapping service made available to the public through ArcIMS. Layers include schools, municipal buildings, hospitals, churches, fire and police stations.

With this new approach to data management, imagery displays in one sixth of the time that it used to take, eliminating costly delays and enabling municipal departments to work more efficiently.



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