Combining Multiple Technologies to Make Statewide, Geospatial Information Available

Emily Wilson and Cary Chadwick
University of Connecticut
Center for Land Use Education and Research

Beth Doran
Connecticut Department of Energy and Environmental Protection
Center for Land Use Education & Research
University of Connecticut
College of Agriculture, Health and Natural Resources
Dept. of Extension, Dept of Natural Resources, Connecticut Sea Grant

Help communities balance growth and natural resource protection

Water
Land & Climate
Mapping & Geospatial
Technologies

ArcGIS Server Enterprise

Map services

Map services

ArcGIS Online

ArcMap

Geocortex

Mosaic datasets

Web app builder

Image services

Bootstrap

Security certificates

Qualtrics

SQL
Outline

• The existing system
• Planning a new system
• Setting up the new system
• What’s in the works
• What is coming
CT ECO is

• a website containing Connecticut’s statewide, geospatial information

• a partnership between CT Dept. of Energy and Environmental Protection and the University of Connecticut

• designed for users of varying technical sophistication
Long process for Funds

• Finally included as part of a grant
• Grant period November 2014 - November 2015 extended 9 months just to buy hardware

• Start the research – what to get?
## Esri Capacity Planner

### Capacity Planning Calculator

#### Software Technology Performance Factors

**Requirements Analysis**

<table>
<thead>
<tr>
<th>Workflow Labels</th>
<th>User Environment</th>
<th>Types of Workflows</th>
<th>Network Capabilities</th>
<th>Display Response Time (sec)</th>
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<td>Standard</td>
<td>Bandwidth Mbps</td>
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<td>User or TPH</td>
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<td>75K TPH</td>
<td>2 Tier</td>
<td>2 Tier</td>
<td>Traffic Mbps</td>
<td>Traffic Mbp</td>
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<td>Platform</td>
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<tr>
<td>Architecture</td>
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<td>Minimum</td>
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<td>2 Tier</td>
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<td>Minimum</td>
<td>Minimum</td>
<td>Service</td>
<td>2 Tier</td>
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<tr>
<td>DC</td>
<td>Minimum</td>
<td>Minimum</td>
<td>Service</td>
<td>2 Tier</td>
</tr>
</tbody>
</table>

**Background Traffic**

- Total Throughput: 200 Gbps
- Total Throughput: 720 Gbps

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### Workflow Performance Summary

**Performance (sec)**

- Performance: 0.00
- Performance: 0.01
- Performance: 0.02
- Performance: 0.03
- Performance: 0.04
- Performance: 0.05
- Performance: 0.06
- Performance: 0.07
- Performance: 0.08
- Performance: 0.09
- Performance: 0.10

**4 Tier Platform Solution**

- 8 Hosts
- 8 Chips
- 32 Core

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### 4 Tier Selected Platforms

- Intel Xeon E5 10520 V4 (1 core) 3.0 GHz
- Intel Xeon E3-1208 V4 (1 core) 3.6 GHz
- Intel Xeon E3-1208 V4 (2 cores) 3.6 GHz
- Intel Xeon E3-1208 V4 (4 cores) 3.6 GHz
- Intel Xeon E5 2650 V4 (20 cores) 2.3 GHz
- Intel Xeon E5 2650 V4 (20 cores) 2.3 GHz

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**Yikes!**
Esri consultant
UConn UITS

• Used the diagram
• Bought some shiny hardware
• Set up virtual environment

They will take care of
• updates
• security
• antivirus
• power
• and other stuff
Meanwhile ... conduct a survey

Ask

• How you use CT ECO
• Favorite and least favorite parts
• What would you like to see
• Preferred coordinate system
• Preferred map service format
• Suggestions
Users

- Teachers
- Researchers
- GIS professionals
- Consultants
- Engineers
- Public Officials
- Municipal Staff
- Geologists
- Surveyors
- State DEEP Staff
- State Employees
- Federal Employees
- Real Estate
- Legal Professionals
- Land Trusts
- Town Planners
- Regional Government
Survey Results

• 204 responses
• Results summary and explanations
  http://cteco.uconn.edu/media/survey/answers2015.htm

Suggestions
• Incorporate HTTPS
• More tiled/cached services
• WGS84 projection
• More data of all kinds (whether it exists or not)

Problems
• Slow
• Tablet issues
• Server breakdown
• Advanced Viewer issues
My Favorites

Do you have any suggestions to make accessing Connecticut's geospatial data...

You guys are doing just fine. Just keep maintaining what you have, keep a focus on education, and add new services as your budget allows.

It's awesome, you know that.

I think you do an Excellent job I would not change a thing
Just keep doing what you're doing!

I think you're doing a great job
Keep on doing what you're doing.

You do a great job with access.
I like it the way it is.
Just keep on keeping on! :)

Anything else you'd like us to know? Kudos? Complaints? Suggestions? Predict...

you guys are awesome

You do great work and I can't wait to see what comes next! :) Keep up the good work.
Back to the new system - planning
The New System

ccteco.uconn.edu

cteco-maps1
ArcGIS Server 10.4
Config Store
Server Directories

cteco-raster1
ArcGIS Server 10.4
Config Store
Server Directories

database
ArcGIS Server 10.4

Data
Completed Tasks

• Map storage drive
• Install ArcGIS server on GIS servers
• Config store and server directories
• Install IIS on web server
• Open ports
• Poke holes in firewalls
• Create and use security certificate
GIS Server 1

install web adaptor1

ArcGIS Web Adaptor

Server Error in '/arcgis_wa_maps' Application.

Not secure

Name is too long

Configuration Error

Description: An error occurred during the processing of a configuration file required to service this request. Please review the specific error details below and modify your configuration file appropriately.

Parser Error Message: An error occurred loading a configuration file. Failed to start monitoring changes to C:\web\cticero because access is denied.

Source Error:

[No relevant source lines]

Source File: C:\web\cticero.web.config Line: 0

Version Information: Microsoft .NET Framework Version 4.0.30319; ASP.NET Version 4.6.1088.1
mess with permissions
GIS Server 2

Failed to create the site. The configuration store location contains server configuration files that are being used by another site.

Configuration Summary

Your ArcGIS Server installation is ready to be completed.

Username: ArcGISserverAdmin
Root Server Directory: \CTECO-Data1\directories
Configuration Store: \CTECO-Data1\config-store

Click Finish to create your ArcGIS Server site.
Web Adaptors

Edit Machine

Warning
A change in the web server's heap size will cause the web server to be restarted.

Server Machine Properties
Machine name: **CTECO-RASTER1.GROVE.AD.UCONN.EDU**
Admin URL1:
https://cteco-raster1.grove.ad.uconn.edu:6443/arcgis/admin
Web server maximum heap size (in MB):
128
Web server SSL Certificate:
dc.uconn.edu
App server maximum heap size (in MB):
256
SOC maximum heap

Application Error

https://cteco-web1.grove.ad.uconn.edu:6443/ctraster/webadapter/server

ArcGIS Web Adaptor

Access to the path 'C:\web\cteco\ctraster\WebAdaptor.config' is denied.
Add ports, firewalls, accounts, other stuff

https://ourwebserver.edu (will eventually be http://cteco.uconn.edu)
https://ourwebserver.uconn.edu/ctmaps/rest/services
https://ourwebserver.uconn.edu/ctraster/rest/services
Outline

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New Website

- Responsive
- Streamlined
Map Catalog

- Mostly unchanged
- Additions include
  - Hillshade
  - Slope
  - Aspect

visit
Map Viewers

• Existing javascript viewers re-created with the ArcGIS web app builder

• Existing WebAdf (gulp) Advanced Viewer re-created

• More viewers, less complexity

• Minimal scale dependency
Map Services

- More services, fewer layers
- Minimal scale dependencies
- Some cached
Image Services

image tiles > mosaic dataset > image service

- Web Mercator
- Most popular ones will be cached
- New imagery added

- images/Ortho_1990 (ImageServer)
- images/Ortho_2004 (ImageServer)
- images/Ortho_2004_Coast_Color (ImageServer)
- images/Ortho_2004_Coast_Infrared (ImageServer)
- images/Ortho_2005_Coast_Infrared (ImageServer)
- images/Ortho_2006_Color_NAIP (ImageServer)
- images/Ortho_2008_4Band_NAIP (ImageServer)
- images/Ortho_2008_Color_Urban_Area (ImageServer)
- images/Ortho_2009_Color_CRCOCOG (ImageServer)
- images/Ortho_2010_4Band_NAIP (ImageServer)
- images/Ortho_2010_Coast_4band (ImageServer)
- images/Ortho_2012 (ImageServer)
- images/Ortho_2012_4band_NAIP (ImageServer)
- images/Ortho_2012_Infrared (ImageServer)
- images/Ortho_2014_4Band_NAIP (ImageServer)
Other Updates

• ArcGIS Online organization
• All help and FAQ materials
• Data guides and metadata, add missing ones

visit
New Information and Layers

- Info about open space layers (it is confusing!)
- Viewer about fish samples across the state
- 2016 NAIP Imagery (soon)
- 2016 statewide, 3” imagery (early 2017)
- 2016 statewide DEM (early 2017)
- Statewide 1m impervious cover (summer 2017)
To Do

• domain account on data drive
• finish copying data
• publish map and image services
• cache
• re-build viewers
• learn and implement Geocortex

• process and serve 2016 statewide, 3” imagery
• process and serve 2016 statewide DEM
• provide imagery for download
Still a work in progress – there is a lot to know

- Bootstrap
- Geocortex
- SQL
- Web app builder
- ArcGIS Online
- Map services
- Image services
- Qualtrics
- ArcGIS Enterprise
- Mosaic datasets
- ArcMap

- Incorporate HTTPS
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Suggestions, knowledge, feedback, volunteer time welcome
Thank you

Emily.Wilson@uconn.edu
Cary.Chadwick@uconn.edu

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