

## **eCoastal Server Setup and Deployment Guide**

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## 1. Background

The concept of enterprise GIS (eGIS) is to take a complete organizational approach to sharing, using, and managing spatial information. eCoastal is an enterprise Geographic Information System (GIS) developed for coastal engineering business practices. It was developed to concentrate on the specific needs of the coastal engineer, scientist and manager. It is an architecture developed by the U.S. Army Corps of Engineers that utilizes spatial data standards (SDS), geodatabase development, and desktop and web applications. eCoastal was designed as data management solution to provide baseline information for effective planning and prediction of regional and local coastal processes.

The recommendations outlined hereinafter are the result lessons learned over the last 8 years and represent the simplest possible setup scenario for the eCoastal system. The Spatial Data Branch, Mobile District maintains a high end architecture that is a more distributed system of servers and databases with a set of CEEIS approved firewall ports for specific design reasons. This document will not enumerate this architecture but, reference documents of this more complex architecture are available for further discussion.

## 2. References

- A009\_SURVEY\_SCHEMA\_SAM-APGIS\_PRODUCTION.pdf
- A017\_DATAPICKER\_ENTERPRISE\_19JAN2008.pdf
- A017\_DATAPICKER\_ARCHITECTURE\_MVN\_19JAN2008.pdf
- A017\_DATAPICKER\_ARCHITECTURE\_SAM\_19JAN2008.pdf
- EGIS\_DATAMANAGE\_SCHEMA\_SAM-DB01MOB\_PRODUCTION.pdf
- EGIS\_DATA\_SCHEMA\_ORACLE\_MVN\_21JAN2008.pdf
- OPJ\_GIS\_DATA\_STANDARDS\_PRODUCTION.pdf
- OPJ\_WORKFLOW\_DATABASE\_STANDARDS.pdf

## 3. Definitions

Certain terms used hereinafter to describe configurations or components of the eCoastal infrastructure are as defined.

**Spatial Server:** Typically a server running windows server operating system that typically holds file-based spatial data in a standard directory structure and also can host an enterprise database, usually SQL Server or Oracle, with ArcSDE installed to provide a geodatabase.

**Non-Spatial Server:** Typically a server running windows server operating system that typically holds file-based non-spatial data in a standard directory structure and can also host an enterprise database, usually SQL Server or Oracle, which typically provides business related data.

**SMTP:** Short for Simple Mail Transfer Protocol, a protocol for sending e-mail messages between servers. Most e-mail systems that send mail over the Internet use SMTP to send

messages from one server to another; the messages can then be retrieved with an e-mail client using either POP or IMAP.

IIS: Short for Internet Information Server, IIS is a capability that runs on a Windows server that allows access to documents on the server using standard HTTP protocol.

Web Services: Sometimes called application services, web services are services (usually including some combination of programming and data, but possibly including human resources as well) that typically provide data or a calculated result to a request made to the service. A request to a web service typically is made programmatically from another application.

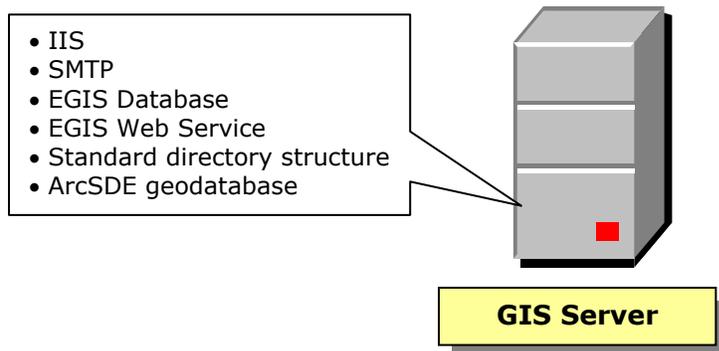
Layer File: A layer file is an ESRI format with a .LYR extension and each layer file is a separate file on disk. When a layer is saved to the disk, everything about the layer is saved; for example, symbology, labeling properties, path to the data, but not the data itself. When adding the layer file to another map the layer draws exactly as it was saved.

NTFS Permission: (NT File System) An optional file system for Windows NT, 2000 and XP operating systems. NTFS is the more advanced file system, compared to FAT32. It improves performance and is required in order to implement numerous security and administrative features in the OS. For example, NTFS supports Active Directory domain names and provides file encryption. Permissions can be set at the file level rather than by folder, and individual users can be assigned disk space quotas.

CEEIS: The Corps acquired and owns the Corps of Engineers Enterprise Information System (CEEIS) wide area network, which supports multiple unclassified Corps systems, including its key financial management system, CEFMS. The CEEIS interconnects Corps sites worldwide, providing for the exchange of traffic between sites in support of engineering, financial management, E-mail, and real-time data collection

#### 4. Scenario 1 – Single Box Approach

In this setup all required components are installed on a single server. Window Server should be the operating system. In this approach it is assumed that this server has the



database software already installed with ArcSDE to provide a geodatabase for holding spatial data.

## 4.1 Database Setup

If the database software is Oracle a new database schema should be created and the schema name should be ECOASTAL. Scripts to create the entire required ECOASTAL Oracle schema shall be provided by the Spatial Data Branch, hereinafter referred to as OPJ. If the database software is SQL Server, OPJ shall provide a SQL Server backup file to create the EGIS database.

## 4.2 Directory Structure

The spatial server typically holds file based GIS data and this data must fit into a standardized structure of some type. OPJ recommends the structure that is outlined in the document OPJ\_GIS\_DATA\_STANDARDS\_PRODUCTION. This folder structure and all its sub-folders typically should have (RX) NTFS permissions for each group of domain users needing access to your spatial server working directory. This allows any user on the USACE network the right to read the layer files and spatial data stored in this directory structure.

- MVN domain users: MVN OU User
- SAM domain users: CESAM-Domain Users

## 4.3 IIS

IIS should be installed on this server. This is required in order for the server to host the EGIS web service. The EGIS web service is a critical component of the eCoastal system and its configuration is explained in greater detail in the PDF document titled "A017 DATAPICKER ARCHITECTURE SAM (or MVN) 19JAN2008". Many of the settings found in the web.config file are explained in this document. IIS should be configured for anonymous access and should have a virtual folder called METADATA established. The METADATA folder should point to the value of the key "P-Layer-Path" which is found in the EGIS web service "web.config" file and the value of this key is specific to your site.

### 4.3.1 EGIS Web Service

The EGIS web service code is copied into the IIS web site, typically c:\inetpub\wwwroot on this server. The web service is a small set of code contained in a standard folder name. Its impact on any server resources is small. The web service will require the .NET 2.0 Framework in order to function and must be configured to use this framework using the IIS management console. The framework is easily installed on the server and requires no special configuration. It is highly recommended that this web service be configured for anonymous access from the IIS admin console. This will allow participation of other districts in your eCoastal system.

Key values that may have ampersands in them must write the ampersand as "&";

```
<add key="P-Layer-Path" value="\\mvn-fs01\h&h1\eCoastal\Work"/>
<add key="P-UNC-Share" value="\\mvn-fs01\h&h1"/>
```

## 4.4 SMTP

SMTP should be installed on this server. This is required for sending e-mail to eCoastal users. Stored procedures in the EGIS database and the web service both use SMTP to send e-mail messages.

## 5. Oracle Schema

Here are instructions for production implementation of the eCoastal Oracle schema that supports the eCoastal Tools.

1. Create ECOASTAL user with EGIS as default table space by running the ECOASTAL\_USER script.
2. Create the Oracle sequences (scripts\sequences).
3. Create the Oracle tables (scripts\tables).
4. Create the Oracle views (scripts\views).
5. Create the Oracle indexes (scripts\ indexes).
6. Create the Oracle triggers (scripts\ triggers).
7. Create the Oracle constraints (scripts\ constraints).
8. Create the Oracle functions (scripts\functions).
9. Create the Oracle procedures (scripts\procedures).

## 6. SQL Server Schema

SQL Server does not require scripts to create the schema. OPJ will provide an EGIS database backup file with the complete schema contained therein. The backup can be restored to any existing SQL Server instance as its own EGIS database.

## 7. Security

There is no significant security issues associated with this simple configuration. The following access requirements for the eCoastal system will allow other eCoastal users in other districts access to your system.

### 7.1 Database Access

To allow access to your database create an EGIS\_READER database role and assign

REF_OFFICE_SYMBOL	DESC_DB_CONN	DESC_SPATIAL_SERVER	DESC_NONSPATIAL_SERVER	BOOL_ON_LINE
CEMWN	SERVER=(DESCRIPTION=(ADDRESS_LIST=(ADDRESS(	\\155.76.128.189)eCoastal\Work	\\155.76.128.189)eCoastal\Work	1
▶ CESAM	Integrated Security=SSPI;Persist Security Info=False	\\155.82.164.28\gis\sam_gis\work	\\155.82.164.41\d_drive\sam_gis\work	1

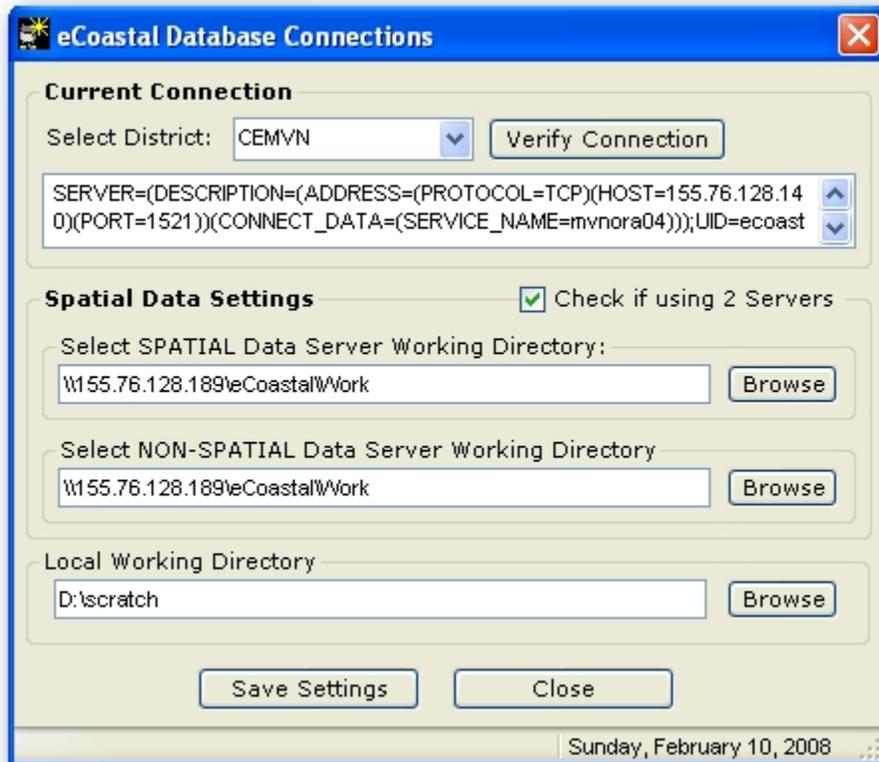
**Figure 1 - DB connections**

permissions on schema objects to this role, for Oracle, by running the EGIS\_READER script. For SQL Server it is not necessary to create the EGIS\_READER role or assign required permissions as these settings are contained in the backup file provided by OPJ. To allow other districts and your users to select an eCoastal system for access, the connection data of all active eCoastal systems must be provided in your EGIS database as shown in Figure 1.

For Oracle this table is:  
ECOASTAL.BIZ\_LOOKUP\_USACE\_DB\_CONNECTION

FOR sql Server this table is:  
DBO.EGIS\_TBL\_8556\_BIZ\_LOOKUP\_USACE\_DB\_CONNECTIONS

With SQL Server and for each office listed in this table, the district domain users group must be added to the EGIS\_READER role in the EGIS database. Each set of connection data placed in the table shown in Figure 1 is accessible from the Database Connection dialog shown in Figure 2. This dialog is opened from the eCoastal DataViewer toolbar.



**Figure 2 - Datapicker Connections Dialog**

## 8. eCoastal Welcome Form

Not seen in Figure 1 (for clarity), there is a column called DESC\_WELCOME. This column contains HTML text that constitutes the standard welcome message that is sent to a new eCoastal user upon completion of the registration process. The registration process is a one time task that a user accessing your eCoastal system for the first time must complete. OPJ will provide the standard HTML text with modifications to site specific text contained therein.

## 9. Administrative Messages

The eCoastal system provides several quality control functions that require sending messages to additional designated "administrative" managers of the system. These designated overseers do not necessarily need to be limited to just your district personnel. These messages are typically GIS related issues and should be attended to by personnel with GIS knowledge.

**Welcome to the eCoastal System!**  
(Click the gray bar above that says "This message was converted to plain text" and display as html)

The Spatial Data Branch, Mobile District would like to take this opportunity to welcome you to the eCoastal System. There are a number of eCoastal and GIS resources available to you through the following link.

[More eCoastal and GIS Information](#)

This is a link to the file ecoastal\_welcome.htm that is in the EGIS web service folder and can be edited to provide site-specific information for your users.

CESAM link:  
[http://155.82.164.41:7556/opj/egis\\_svc\\_sql00/ecoastal-welcome.htm](http://155.82.164.41:7556/opj/egis_svc_sql00/ecoastal-welcome.htm)

For Oracle this table is:  
ECOASTAL.BIZ\_EMAIL\_RECIPIENTS

For SQL Server this table is:  
DBO.EGIS\_TBL\_8556\_BIZ\_EMAIL\_RECIPIENTS

The column XREF\_DESC\_APPLICATION is found in both of these tables and will require the value "Datapicker@Desktop" for each entry in either table. There must be at least one row in either table.

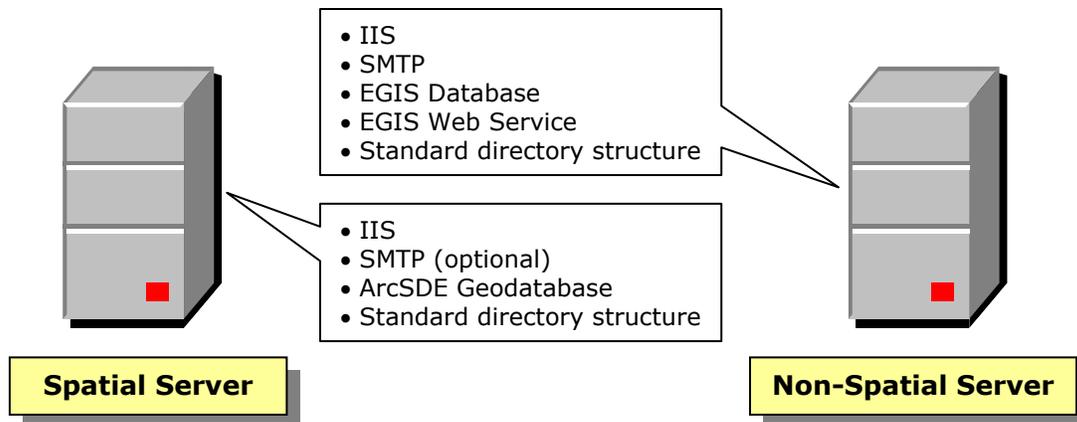
## 10. Scenario 2 – Two Box Approach

In this setup required components are installed on 2 servers. Window Server should be the operating system. In this approach it is assumed that spatial and non-spatial data and

functions are typically separated across 2 servers. It should be emphasized however, that both servers contribute in an integrated fashion to GIS production.

## 10.1 Spatial Server

In this scenario the spatial server holds all file based GIS data and is also the host for an ArcSDE geodatabase. File based storage on the spatial server is as described previously in paragraph 4.2 Directory Structure. IIS should be installed on this server as described in 4.3 IIS. Read access to the GIS data is as per paragraph 7 Security. Other GIS services



can be hosted on this server such as ArcIMS or ArcGIS Server.

## 10.2 Non-Spatial Server

The spatial server typically holds file based non-spatial data and this data must fit into a standardized structure of some type. OPJ recommends the structure that is outlined in the document OPJ\_GIS\_DATA\_STANDARDS\_PRODUCTION. This folder structure and all its sub-folders typically should have (RX) NTFS permissions for each group of domain users needing access to your non-spatial server working directory. This allows any user on the USACE network the right to read the layer files and non-spatial data stored in this directory structure. IIS should be installed on this server as described in 4.3 IIS.

This server also hosts the EGIS database and will require an Oracle or SQL Server database. The EGIS web service, as described in paragraph 4.3.1 EGIS Web Service, is hosted on this server. SMTP should be installed on this server. This is required for sending e-mail to eCoastal users. Stored procedures in the EGIS database and the web service both use SMTP to send e-mail messages.