



# Maryland's Emergency Geographic Information Network, a Technical Walkthrough

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# Overview

- MEGIN is a resource metadata system for the Emergency Management community, as well as a system for secure map services
- This is a discussion/demo presentation of the working MEGIN pilot system
  - MEGIN Functions
    - Portal
    - Map Service Security
  - MEGIN Technology
    - Security
    - Software
    - Network Concepts





# Portal Security

- Public MEGIN Home Page
- Secure Site
  - IIS 6.0 (Web Server)
  - HTTPS [SSL] 128 bit encryption
  - Certificates
    - HTTP 1.1 Protocol for Certificate Authentication
    - X.509 v.3
    - Aladdin eTokens
  - Oracle COREID Access
    - ISAPI Filters
    - AAA
    - URI Registration for Applications
    - Passing user information to the Java Applications





# Permissions System

- Directory (Active Directory)
  - Organized with roles and organization grouping
  - Used by Oracle CoreID Access for Authenticating and Authorizing users based on roles and group membership Directory Harvesting
- Java Application harvesting the directory to populate the database in order to achieve record level security
  - Users
  - Groups
  - Roles
- Booz Allen Hamilton, a security consultant company has reviewed this architecture





## Portal – “Publish”

- Upgraded system that was originally developed for the Maryland Mapping Resource Guide
  - Publishing to a ArcIMS Metadata Service
  - Adding extra data for searching, etc.
- The Data Provider is in control of its records and the permissions set on them
- User can belong to multiple organizations

A screenshot of the MEGIN Metadata Entry System web interface. The header includes the MEGIN logo and the slogan "Saving Data. Saving Lives." Below the header, the page title is "Metadata Entry System". A message reads: "Thank you for helping Maryland build an inventory of geographic resources!" followed by the user name "Blizzeil, Charles". There are two radio buttons for user roles: "User" (selected) and "Admin". Under "Select Your Interface", there are two options: "Basic" (selected) and "Advanced". The "Basic" option description says: "Use this interface to be assured through the basic process of setting up and adding information to be used in creating the list." The "Advanced" option description says: "Use this interface if you are familiar with the system and want to be able to see all things at once."



# Portal – “Publish” cont.

- Stored information used for simplified record creation
  - Map Services
    - Used for MEGIN secured mapservices
  - Contact Information
  - Preference Information (Project, organization, etc.)
- Easy to use publish System
  - Publish form utility to create FGDC level 1 metadata
  - Upload utility to upload FGDC metadata
  - Extra “EGIN” specific fields handled automatically

MEGIN sharing data SAVING LIVES  
Maryland emergency geographic information system

1 2 3 4 5

Preferences: 0

Below is a list of preference settings for your organization that contains pre-defined information about your data. In Step 3, when you are entering multiple records that are similar to one another from the same project, for example, you can select one of the preferences below to automatically fill out most of the information.

Description	Update
MALC Project Preferences	<a href="#">Edit / Update</a>
MALC Risk Assessment	<a href="#">Edit / Update</a>
COG Contact Preferences	<a href="#">Edit / Update</a>

[Add New Preference](#)

Inventory of Geospatial Resources: 0

Below is a list of geospatial resources that your organization maintains. Each record describes a GIS file, application, Web service, or person. You can create and update these records by filling out a user-friendly form or you can upload an existing metadata record.

Any new record you create will be searchable by the public after an administrator confirms its completeness. You may update the content of the record at any time without the need for reapproval.

After you add a new record, you will be returned automatically to this page to add or edit records.

[Add New Record](#) [Upload a New Metadata Record \(Advanced\)](#)

Resource Name	Resource Type	Status	View Record	Update
Maryland State Boundary	Downloadable Data	Approved	<a href="#">View XML</a>	<a href="#">Upload File</a>
Power outages by zipcode	Offline Data	Approved	<a href="#">View XML</a>	<a href="#">Form Edit</a> <a href="#">Upload File</a>
MEGIN System	Application	Approved	<a href="#">View XML</a>	<a href="#">Upload File</a>
Enterprise Zones	Offline Data	Approved	<a href="#">View XML</a>	<a href="#">Upload File</a>
Maryland Park And Ride Location Map	Downloadable Data	Approved	<a href="#">View XML</a>	<a href="#">Upload File</a>





## Portal – “Set Permissions”

- Security is record level at the record level and controlled by the data provider
  - Security is stored in the database for fast searching
- We have setup 3 primary roles for this system to be used for base permissions
- Easy one click option to set base permissions on a record
  - Overall role (Official Use, Sensitive, Restricted)

**set** Official Use  
Full Access to all MEGIN users

**set** Sensitive  
Full Access to MEGIN users who h  
(NDA)

**set** Restricted Full Access to user  
government law enforcement organi  
federal National Crime Information C  
as well as any available state crim  
user's state.





## Portal – “Set Permissions” cont.

- Security level customization is granular
  - Access levels are used, where a user can be locked down to an unclassified part of a record (or just part of a record)
  - Role access can be customized
  - Group / Individual user access can be customized
    - Group based system allows drill down approach to select groups / users
    - Group based access can hierarchically populate down
    - Users/groups can be “explicitly denied”







# Portal – “Search”

- Customized system that is part of ESRI’s Portal Toolkit 2.0 (PTK)
  - Only customized Search being used, all admin, publish, and channel management stripped
  - Portal Toolkit calls SQL stored procedures directly, for faster searches
- Complex query driven, but simple to use form





## Portal – “Search” cont.

- Search results are limited to what you’re allowed to view
  - Unclassified access gives just an unclassified name and abstract, which are not part of the actual content of the record.
  - Users can be denied access altogether
  - Using separate XML style sheets for different permission levels
- Communities of interest provide information for different user groups (PTK 2.0 Channel System)
  - Highlighted records
  - Resource Links





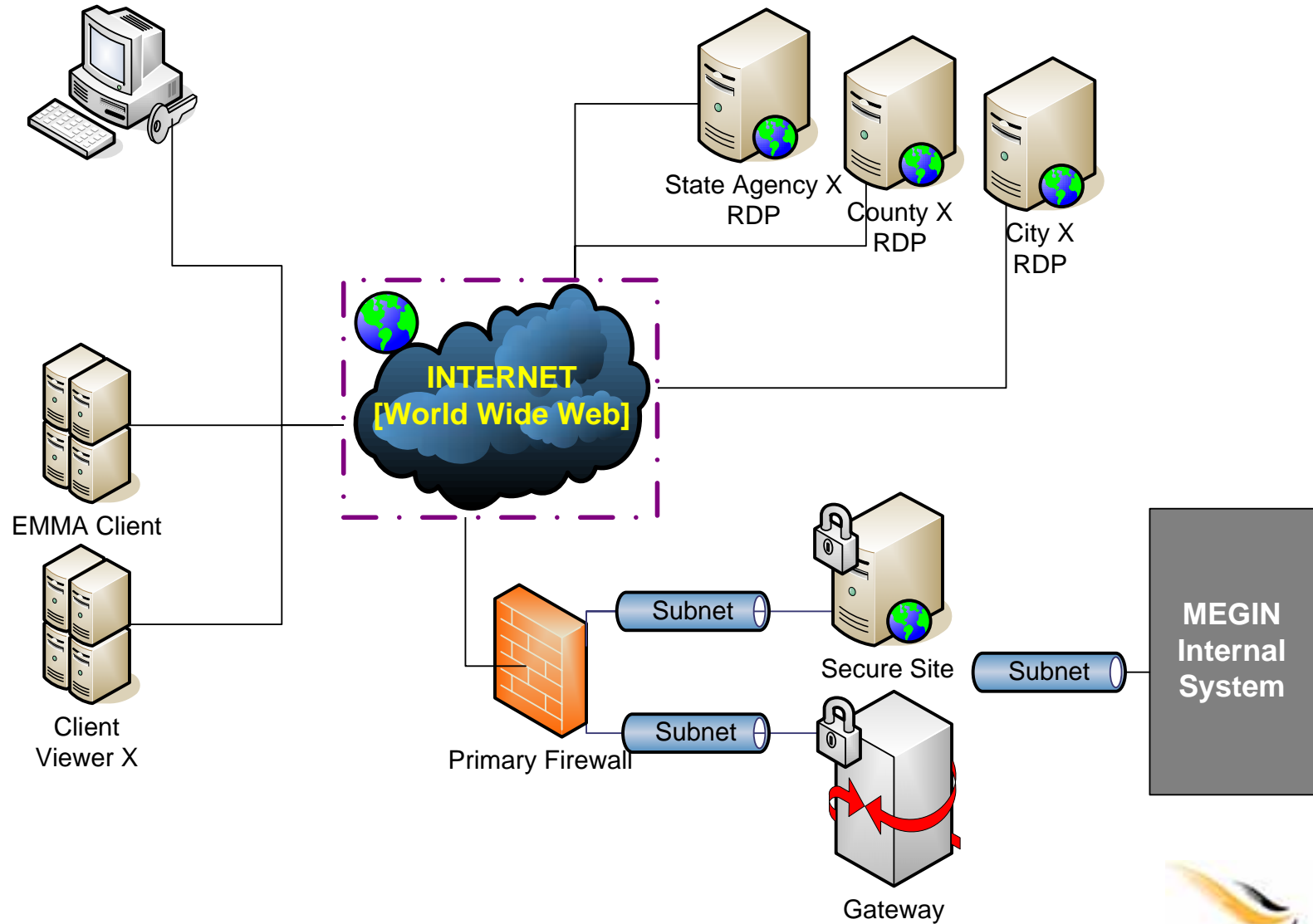
# MEGIN Software

- Microsoft Network
  - Windows Server 2003 Enterprise and Standard
  - IIS 6.0
  - DNS
  - Active Directory
  - PKI
- Microsoft SQL Server 2000
- Apache Tomcat 5.0
- Sun Java SDK 1.4.2
- ESRI
  - Portal Toolkit 2.0 (Customized)
    - (PTK used in geodata.gov)
  - ArcIMS 9.1
  - ArcSDE 9.1
- Oracle COREID





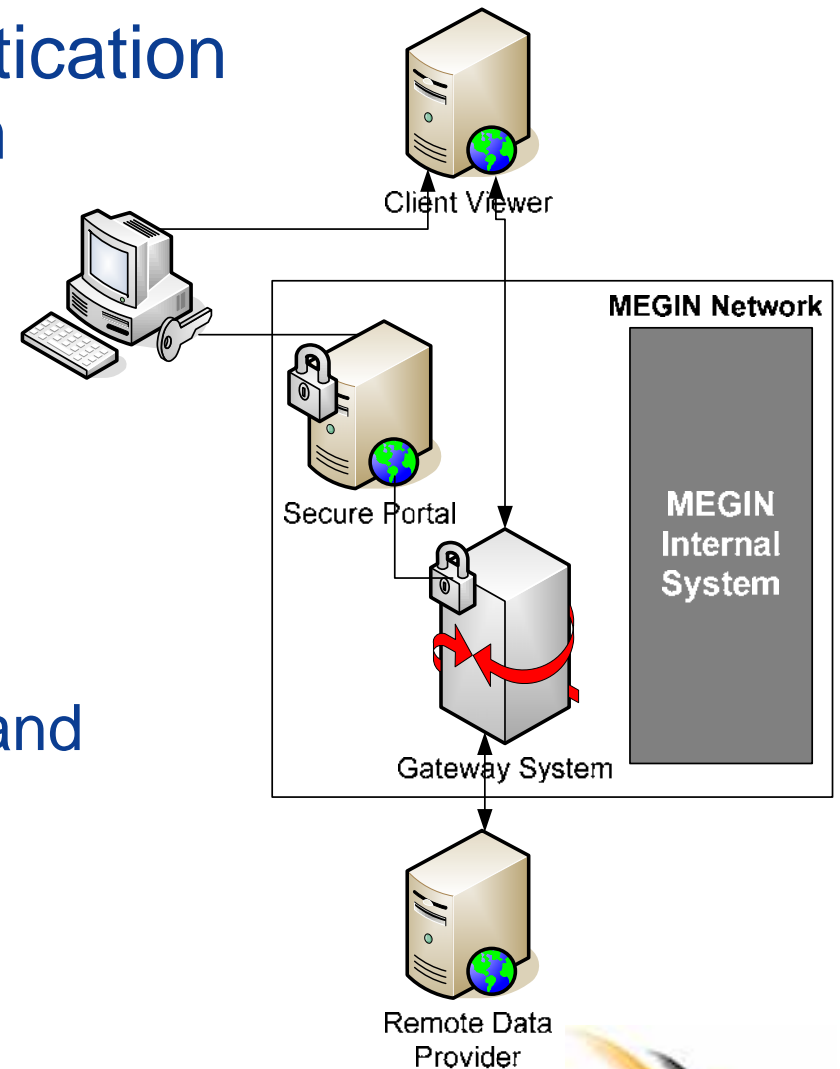
# MEGIN Network Architecture





# Map Service Security

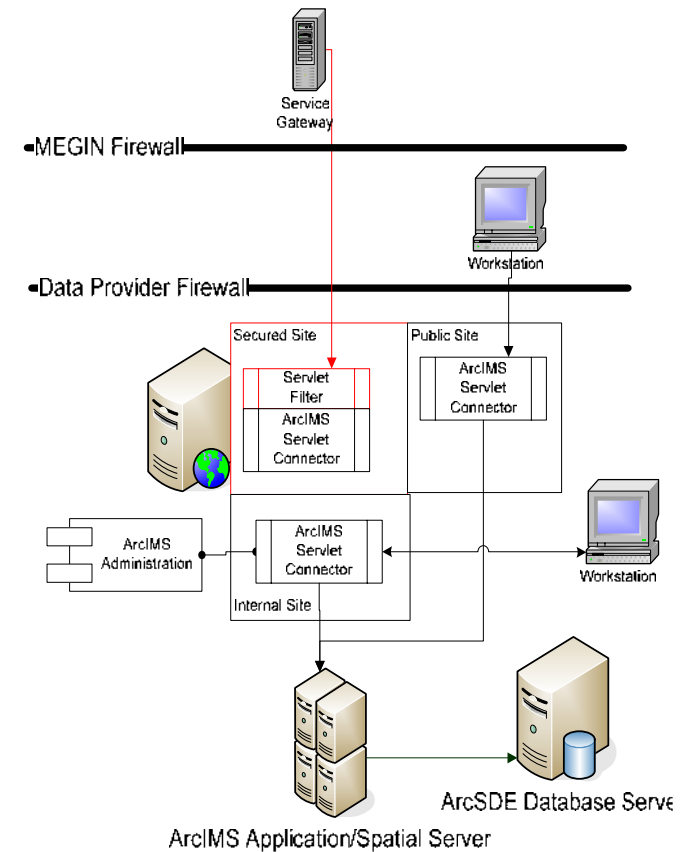
- Client-MEGIN authentication / authorization system
  - MEGIN to log in
  - Service establishing communication
- Gateway System
  - Authentication
  - Authorization
  - Message Translation and Forwarding
    - ArcXML to SOAP





# Map Service Security cont.

- RDP Side (Remote Data Provider)
  - IPSEC Security between Gateway and RDP secure site
  - Filter System
    - Reverse SOAP / AXL Translation
  - Combined Hosting Options
- Image Streaming / Image Servlet
  - Response with stream
    - Stored in database for specific user
    - Updated to URL
  - Image Servlet serves the image data for the client
    - Can require security





# Questions?

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