

# Advancing Geographic Place-Based Understanding for Decision-Making



Monitoring the Performance and Reliability of Geospatial Web Services



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SGT Contractor to USGS EROS

## Background

#### **Geospatial Service Health**

- Web Services discovery, availability and quality are critical in fostering adoption and re-use of geospatial information.
- Service Status Checker (SSC) established to provide service health analytics to assess geospatial service health

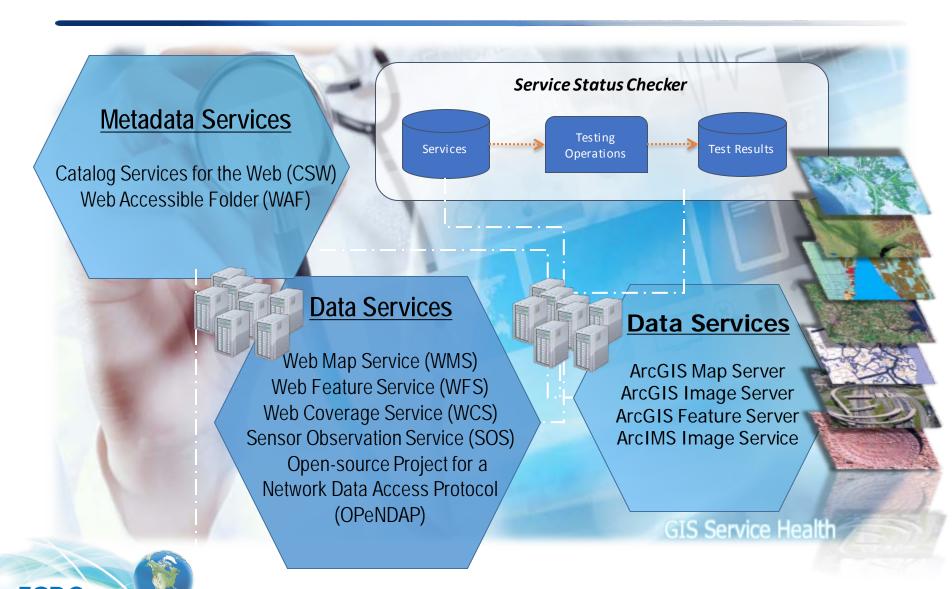


#### SSC Objectives





#### **SSC** Monitored Services



#### SSC Features for the user community





#### Accomplishments – *Increases in Monitoring*

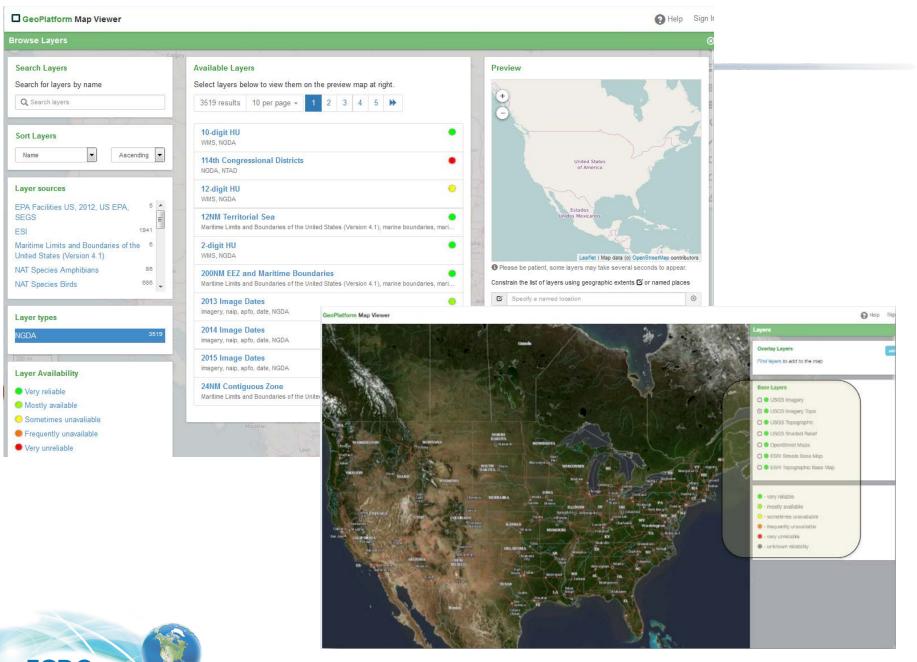


#### Accomplishments – Design, Performance, Economy



#### Implementation Highlight Federal - GeoPlatform





## Geoplatform Dashboard

Selection Type:

(login required)

■ GeoPlatform Performance Dashboard

Submissions as of 12/31/2015

Dashboard

Help

Michelle Anthony -

#### NGDA Lifecycle Maturity Assessment Dashboard

Select a NGDA Dataset Lifecycle Maturity Assessment survey from the drop-down below. This assessment is completed by dataset managers on an annual basis. The most recent results are displayed by default. You may choose to filter by Theme or Agency using the Selection Type and Selection drop-downs. For more details, click on a rating box (cell) or hover over column headings.

By Theme

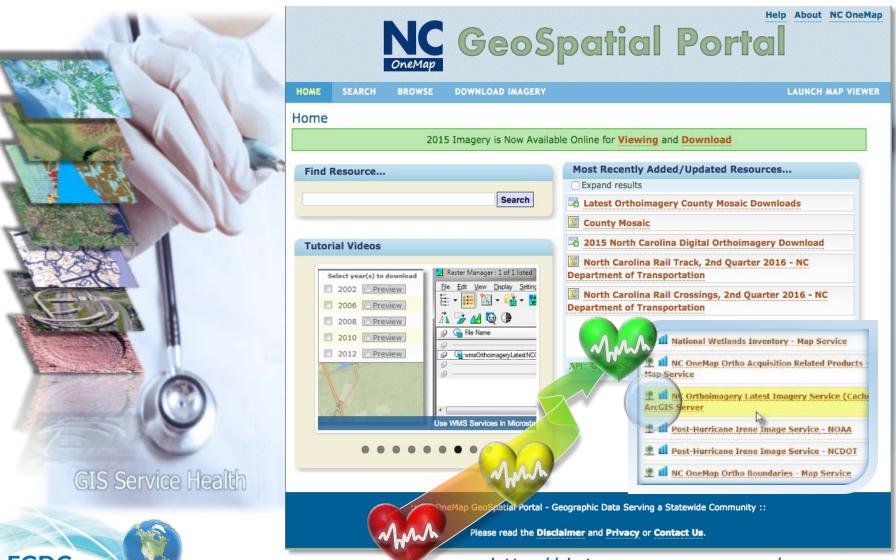
**E** Legend

Dataset	General	Define	Inventory Evaluation	Obtain	Access	Maintain	Use Evaluation	Archive	Overall	Theme	Agency
Theme Rollup	4/5	4/5	4/5	4/5	3/5 ▮▮	3/5 ▮▮	3/5 ▮▮	3/5 ▮▮	3/5 ▮▮		
Bailey's Ecoregions And Subregions Of The United States, Puerto Rico, And The U.S. Virgin Islands - Direct Download	5/5	2/5	5/5	5/5	4/5	5/5	2/5	5/5	4/5	Biota	USDA-USFS
Environmental Sensitivity Index (ESI) Data Viewer and REST Services for Atlases	3/5 ∎∎	5/5	3/5 ▮▮	3/5 ▮▮	1/5	2/5	2/5	2/5 ▮▮	3/5 ∎∎	Biota	DOC-NOAA
FWS Critical Habitat for Threatened and Endangered Species Dataset	3/5 ∎■	4/5	5/5	5/5	5/5	5/5	4/5	5/5	4/5	Biota	DOLFWS
Omernik's Level III Ecoregions Of The Conterminous United States	4/5	4/5	2/5	3/5 ∎■	1/5	2/5	3/5 ∎■	2/5	3/5 ∎■	Biota	USEPA
Terrestrial Ecosystems of the Conterminous United States	4/5	4/5	5/5	4/5	5/5	2/5	3/5 ∎■	5/5	4/5	Biota	DOI-USGS
U.S. Geological Survey Gap Analysis Program Species Distribution Models	4/5 ■■	4/5 ■■	5/5	3/5 ∎∎	4/5	1/5	4/5	2/5 ▮▮	3/5 ∎∎	Biota	DOI-USGS
U.S. Geological Survey Gap Analysis Program Species Ranges  3	4/5	4/5	5/5	3/5	4/5	1/5	4/5	2/5	3/5	Biota	DOLUSGS

Selection: 1 selected ▼



## Implementation Highlight – North Carolina



Help About NC OneMap

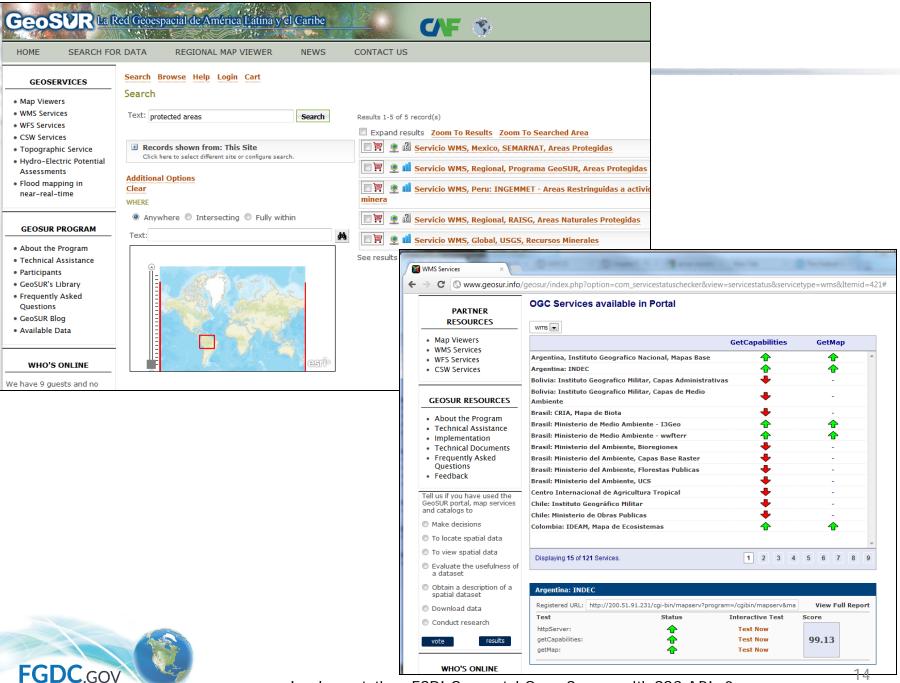
## NC GeoSpatial Portal

HOME	SEARCH	BROWSE	DOWNLOAD IMAGERY	LAUNCH MAP VIEWER
Search	1			
Text: wr	ms		Search	Results 1-10 of 20 record(s) 1 2 > Last
				Expand Results Zoom To Results Zoom To Search Area
		rom: This Sit	te configure search.	NC OneMap Orthoimagery (all) - OGC WMS
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More Sea	arch Options	<u>Clear</u>		NC OneMap - Latest Imagery Image Service - OGC WMS
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Start Dat			(yyyy-mm-dd)	
End Date	e:		(yyyy-mm-dd)	2015 North Carolina Digital Orthoimagery Service - OGC WMS
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	Greenville*	8	D THE STATE OF THE	See results through REST
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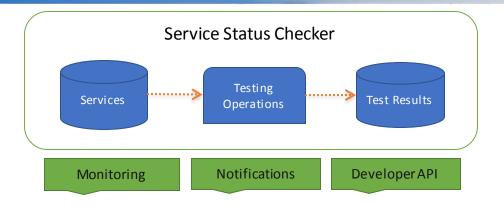


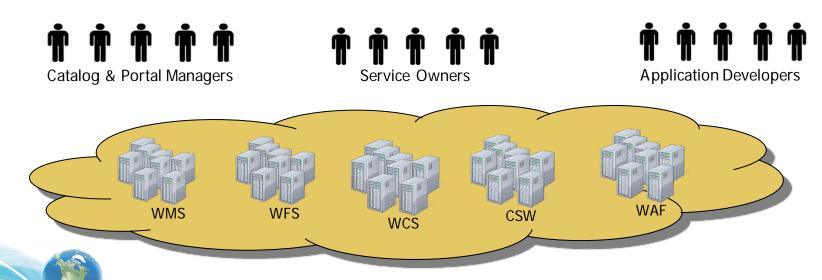
#### Implementation Highlight International - GeoSUR

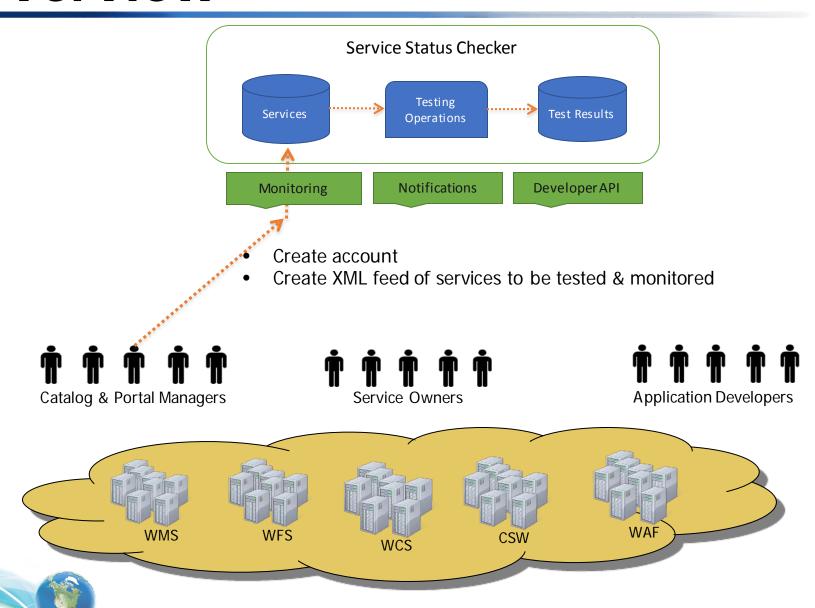


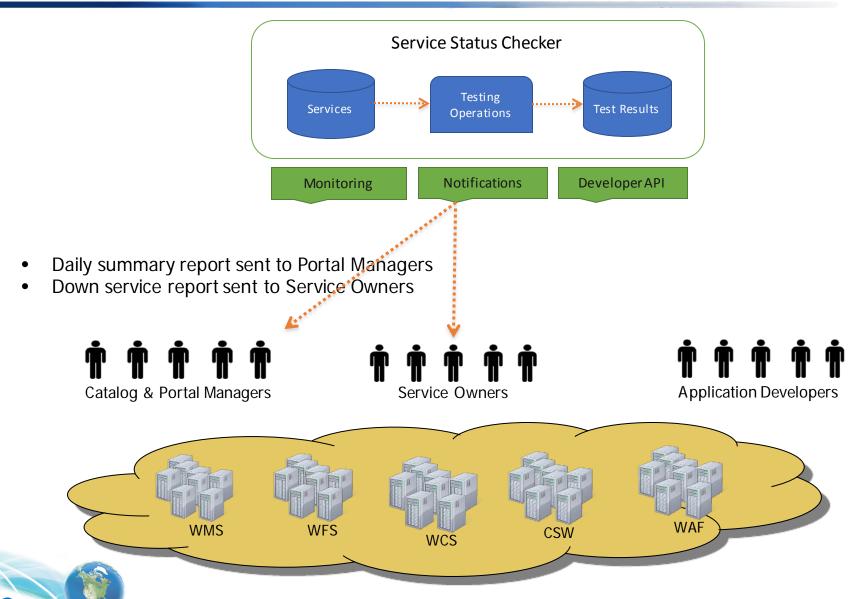


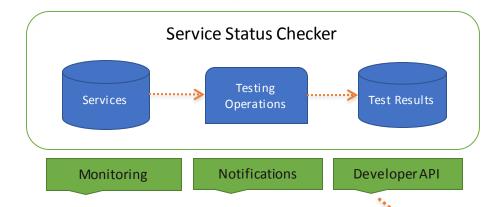
Implementation: ESRI Geoportal Open Source with SSC API v2









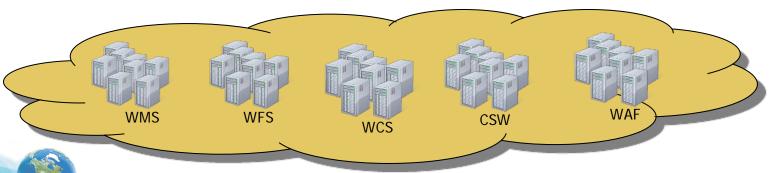


- Create API key
- Connect to API and consume test results
- Integrate into local website and applications









## 50+ Current Service Feeds



**HOME** 

WHO WE ARE

WHAT WE DO

INITIATIVES

ORGANIZATION

RESOURCES

Q

STATUS CHECKER

**FEATURES** 

GETTING STARTED

TEST RESULTS

DOCUMENTATION

CONTACT

OGIN

#### **TEST RESULTS**

Our current account owners have registered their services for daily monitoring and reporting. The results of their service tests are available below.



#### MY ACCOUNT

Take full advantage of the Service Status Checker today!

LOGIN

REGISTER

#### GETTING STARTED

Create your list of services to be monitored and register it.

LEARN MORE

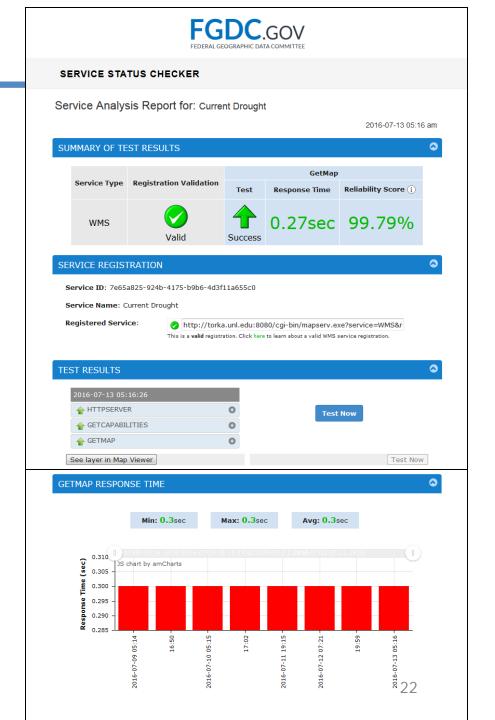
21

FEDERAL GEOGRAPHIC DATA COMMITTEE

## WMS Monitoring

- WMS Requirements:
  - Registered service must be:
    - getCapabilities
    - getMap
- WMS Tests Performed:
  - **■** HTTP
  - getCapabilities
    - If failed, try to generate it
  - getMap
    - If success, calculate score
    - If failed, try to generate it





## Service Scoring for WMS GetMap

- Response Time: time in seconds for response
- Reliability Score: score calculated on response time and correctness of the response

Summary of Test Results							
Click on each service to view more details about the service test results.							
Service Type	Registration						
	Validation	Test	Response Time	Reliability Score (i)			
WMS	Valid	Success	0.2sec	99.84%			



## **Service Monitoring**

#### Service List

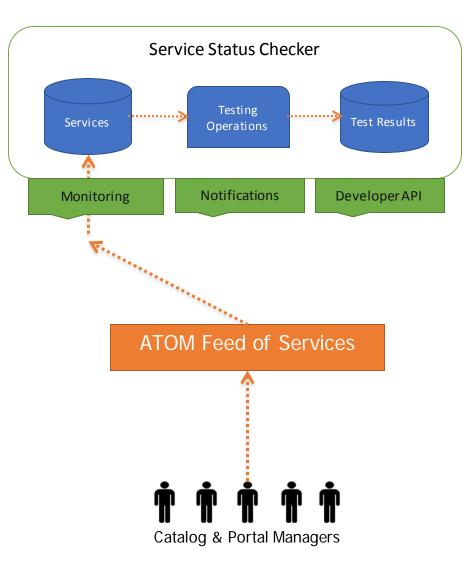
- Create list of services
  - XML list of services (ATOM feed)
- Create account in Control Panel
- Share list of services to be tested
  - Processed daily for updates

#### Testing Operations

- Battery of tests run multiple times/day
- Main service "output" test is used to provide overall score

#### Results Stored in Database

- Two months of historical available
- Results available from website or API





## Service Monitoring: ATOM feed

```
<?xml version="1.0" encoding="UTF-8"?>
<feed xmlns="http://www.w3.org/2005/Atom" xmlns:gos="http://www.geodata.gov/gos_atom">
  <title>Example of GOS Services provided to Status Checker</title>
  <updated>2011-10-31 21:59:44</updated>
  <entry>
     <id>{F4783431-07B7-E012-1F9D-9497D90E9BB5}</id>
     <title>The National Map - Large Scale Orthoimagery WMS </title>
     <servicetype>wms</servicetype>
     <serviceurl>
     http://isse.cr.usgs.gov/ArcGIS/services/Combined/TNM Large Scale Imagery/MapServer/WMSServer?re
     quest=GetCapabilities&service=WMS&version=1.3.0
    </serviceurl>
     <serviceEmail>isse@usgs.gov</serviceEmail>
  </entry>
</feed>
```



## Service Monitoring: Service List

Home Features Getting Started Test Results Documentation Contact

Your Account: Profile Service Feeds Subscriptions Developer API Welcome, statuschecker@usgs.gov Logout

Control Panel >> Service Feeds

#### Service Feeds

To initiate the automated testing of your geospatial services, you need to provide a list of your services. You need to provide your service feed as a web-accessible XML file in ATOM format. View the documentation for more information concerning service feeds and their formats.

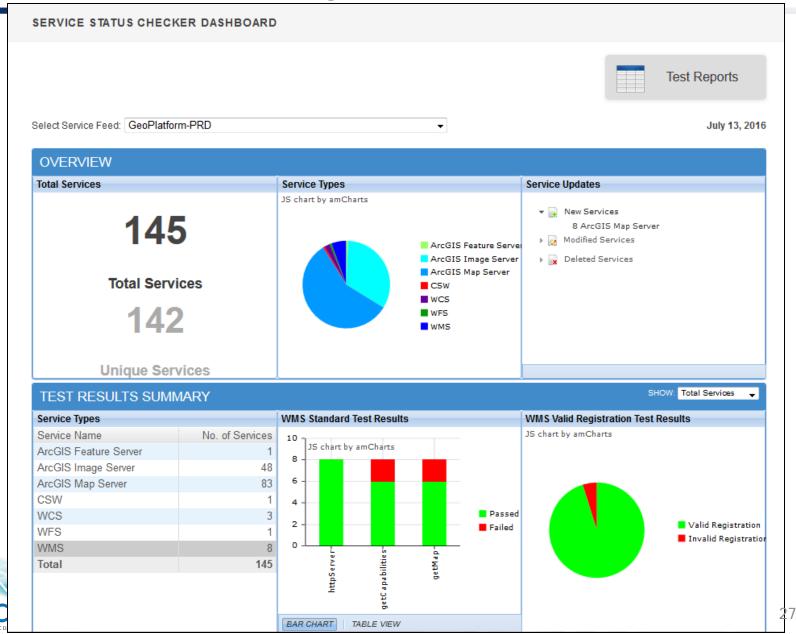
Register your ATOM feed and your services will be tested within 24 hours.

Add New Service Feed

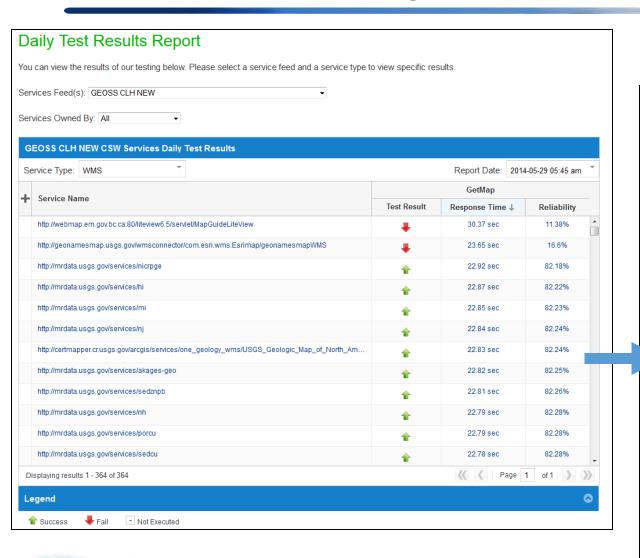
Current Service	Feed	s:
Service Feed Name		Service Feed URL
GeoSUR Geoportal		http://www.geosur.info/geoportal/Eros
00111	40	Service Feed ID: geosur_28
CSW services: UNDEFINED services:	12 11	
WFS services: WMS services:	12 229	
TOTAL services:	264	
Horizons sos2 feeds		http://hilltopserver.horizons.govt.nz/hrc_
000		Service Feed ID: horizo_50
SOS services: TOTAL services:	2 <b>2</b>	



#### Service Monitoring: Dashboard & Reports



#### Service Monitoring: Dashboard & Reports







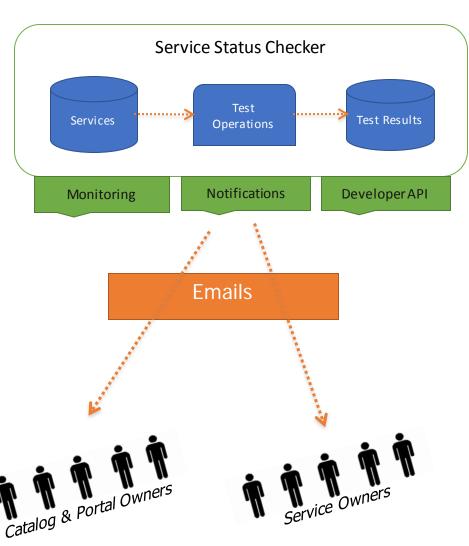
## Service Notifications

#### Summary Report

- Full summary of monitoring process for service list
- Emailed daily to service feed owner
- Can sign up others to receive report

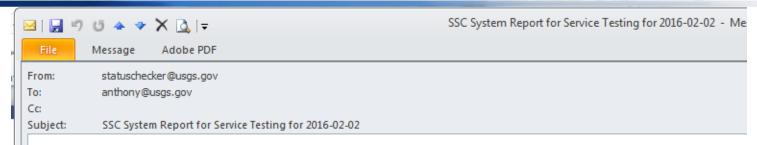
#### Down Service Notification

- Email sent to service owner when tests show
  - Service is unavailable
  - Service not operating correctly





## Service Notifications: Summary Report



#### SSC System Report for Spain IDEC 2016-02-02

#### **Synchronization Summary**

Carriag Type	Services Added		Servic	es Modified	No. of Services		
Service Type	Total	Unique	Total	Unique	Total	Unique	
wms	0	0	0	0	540	510	
Total	0	0	0	0	540	510	

#### **Test Summary**

WMS Service Test Summary							
	httpServer		getCapabilities		getMap		
	Total	Unique	Total	Unique	Total	Unique	
Successful Services	419	394	308	278	189	160	
Failed Services	120	115	231	231	119	118	
Banned	0	0	0	0	0	0	
Not Tested	1	1	1	1	232	232	
Total	540	510	540	510	540	510	
Successful Generated Tests*	-	-	2	2	1	1	



## Service Notifications: Summary Report





Control Panel >> Service Feeds >> FGDC Registry Subscribers

#### FGDC Registry Subscribers

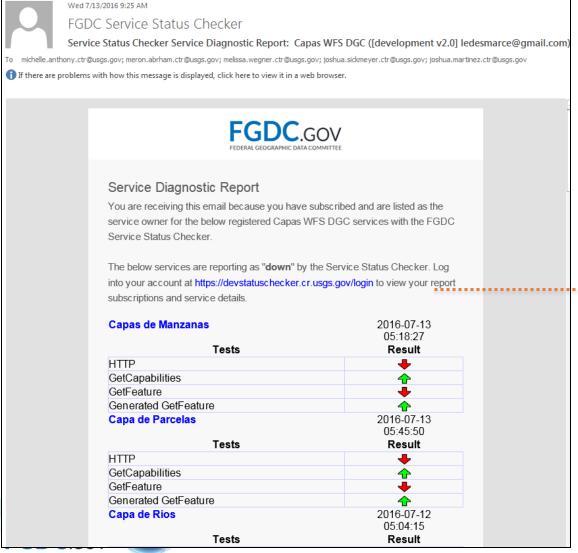
You can subscribe other people to receive service status reports about your service feeds. Simply add as many emails as you wish and submit the form.

Each subscriber will receive an authentication email to verify their email address. Once validated, they will begin to receive reports.





## Service Notifications: Down Services





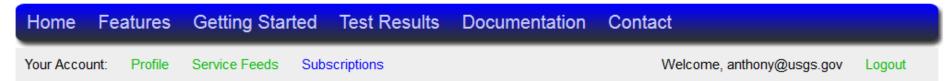
#### Service Notifications: Down Services

Service owner emails new ATOM field

Notifications are sent when services are down



#### Service Notifications: Down Services



Control Panel >> Subscriptions

#### Subscriptions

Listed below are the reports you have been subscribed to receive at **anthony@usgs.gov**. You can update the report email frequency by changing the frequency option. Every time you are subscribed to a report you will receive an authentication email to verify your email address. Once validated, you will begin to receive reports.

Service Feed Name ↓	Report Type	Report Frequency	View Services	Actions
FGDC Registry	Service Feed Summary	Daily ▼		<b>⊠</b>
Spain IDEC	Service Feed Summary	Daily <b>▼</b>		<b>⊠</b>
GeoSUR Geoportal	Service Diagnostic	Daily <b>▼</b>		<b>⊠</b>



## Developer API

#### API version 2

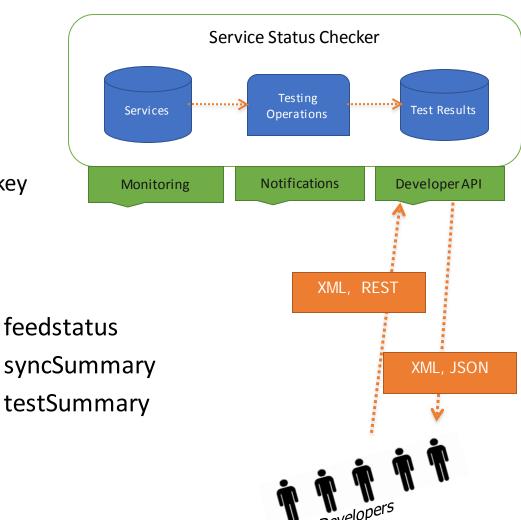
- Restful API
- JSON responses
- Authentication required
  - Account & application key

#### Rest Endpoints

- testTypes
- serviceTypes
- results
- liveTest



- syncSummary
- testSummary





## Developer API: Create API Key

Your Account:

Profile

Service Feeds

Subscriptions

Developer API

Welcome, statuschecker@usgs.gov

Logout

Control Panel >> Developer API

#### Developer API

The developer API allows you to programmatically access the service test/score results for use in your own applications.

Each domain API key can access the data for all services. The API also provides a filter for the services from each registered service feed.

Once you have registered your services feed, and have setup an API Key, you will then be able to query the test results for that list by using the Service Feed ID that comes with each list you register. Refer to the following example for viewing test results for WMS services:

http://registry.fgdc.gov/statuschecker/api/v2/results?auth=YOUR-API-KEY&type=wms&feedid=YOUR-SERVICE-LIST-ID

#### **Current Keys:**

http://registry.fgdc.gov

API Key: b26ba0ea57f9408vf8s5b5d8a080w632



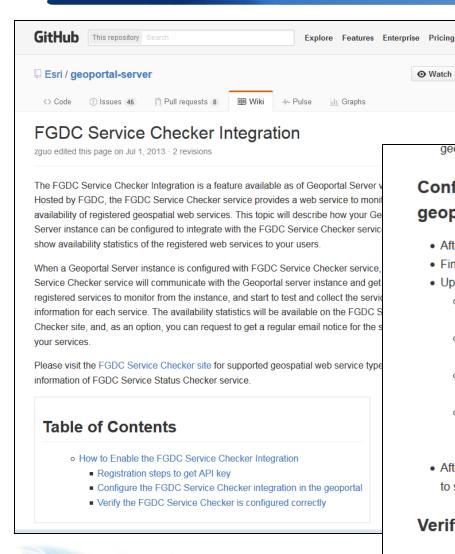


## Developer API: Request & Response

 $http://registry.fgdc.gov/statuschecker/api/v2/results?auth=a0599fdc5ec14c35773c40259fbfbf8\&type=wms\&id=\{64BEC4F2-8350-540C-A2A7-EA78D80EBD82\}$ 

```
apiVersion: "2.0",
 method: "results.get",
 URequestID: "IP216.128.241.23T1336659328",
 sortedBy: "name, date",
 sortOrder: "asc,asc",
 limit: 1000,
- data: [
   - {
        date: "2012-05-10 05:49:20",
        name: "USGS Streamflow Stations",
        id: "{64BEC4F2-8350-540C-A2A7-EA78D80EBD82}",
        type: "wms",
      - summary: {
          - providedURL: {
               value: http://rmgsc.cr.usgs.gov/wmsconnector/com.esri.wms.Esrimap/streamgages?request=getcapabilities&version=1.1.1&service=wms,
               type: "getCapabilities",
               validity: 1
           },
          - scoredTest: {
               type: "getMap",
               currentSpeed: -99.99,
               currentScore: -99.99
        },
       - tests: {
          - httpServer: {
               type: "httpServer",
               URL: http://rmgsc.cr.usgs.gov,
               success: 1
          - qetCapabilities:
               type: "getCapabilities",
               URL: http://rmgsc.cr.usgs.gov/wmsconnector/com.esri.wms.Esrimap/streamgages?request=getcapabilities&version=1.1.1&service=wms,
               success: 0
           },
          - generatedGetCapabilities: {
               type: "generatedGetCapabilities",
               URL: http://rmgsc.cr.usgs.gov/wmsconnector/com.esri.wms.Esrimap/streamgages?SERVICE=WMS&REQUEST=GetCapabilities,
               success: 0
          - qetMap: {
               type: "getMap",
                                                                                                                                             37
               URL: "",
               success: -99.99
```

## ESRI Geoportal Server Integration



geoportal.

#### Configure the FGDC Service Checker integration in the geoportal

- After receiving the API key, open the \\geoportal\WEB-INF\classes\gpt\config\gpt.xml file.
- Find the section for the FGDC Service Checker services.

Sign in

ÿ Fork 117

- Update the parameters in that section as desired:
  - servicechecker.enabled: designates that the service checker functionality is enabled. Set to "true" to enable
  - servicechecker.token: the FGDC token provided when you contacted the FGDC Status Checker website
  - servicechecker.checkUrl: Set this to the service checker URL. For the FGDC Service Checker, the URL is http://registry.fgdc.gov/statuschecker/api/v2/results
  - o servicechecker.infoUrl: Set this to the service checker information display URL. For the FGDC Service Checker, the URL is http://registry.fgdc.gov/statuschecker /ServiceDetail.php.
- After changing these settings, save the gpt.xml file and restart your geoportal web application to see the changes take effect.

#### Verify the FGDC Service Checker is configured correctly

- Do a search on live map services within geoportal.
- Verify the existence of a status icon for these services in the search result page.
- Click on the status icon and verify it show the status and statistics of the service 39



## **Next Steps**

- 2016-2017 SDI Implementations
  - U.S. GeoPlatform
  - **■** GEOSS
- Version 2 Release
  - Laravel Framework
  - MVC Architectural Pattern
- Implement new service types
  - REST, KML, RSS/Atom feeds, WPS
- Implementation with Catalog Software?
  - GeoNetwork, CKAN
- Collect & report service attributes
  - Supported projections
  - Published file types



#### Summary



#### Service Health

- SSC Supports discovery and accessibility of GIS
- Monitors a variety of services
- Supports service providers, developers, users
- Improvements in usability, performance and expandability
- Many Success Stories
- Future development and prototypes to add additional platforms and service monitoring types

Http://statuschecker.fgdc.gov

**Questions?** 



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