

Esri Petroleum GIS Conference

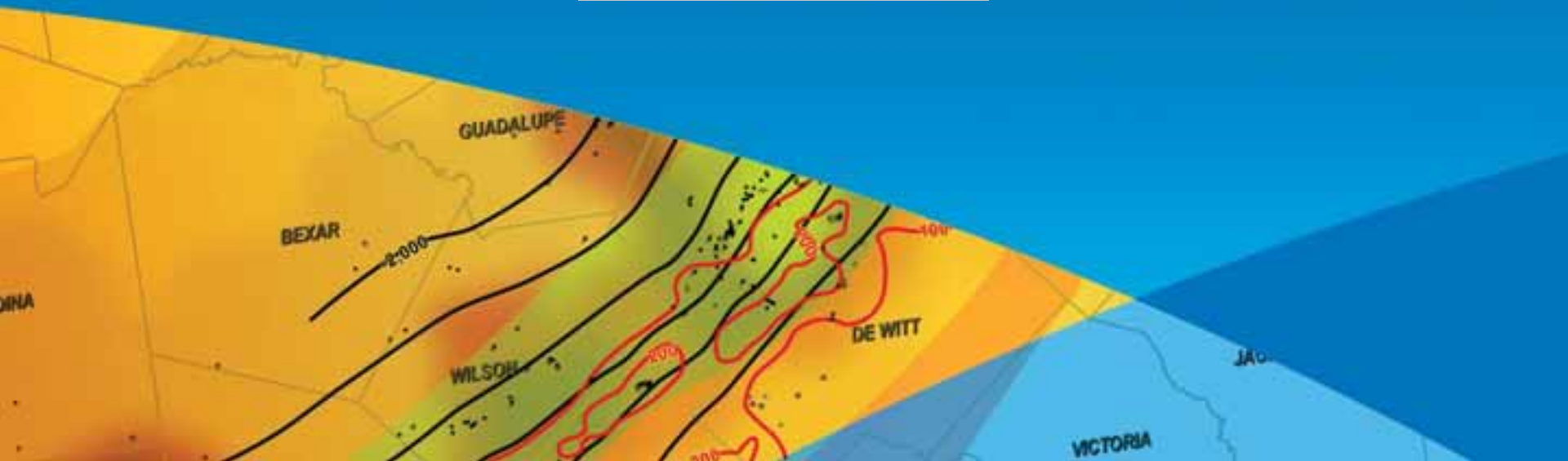
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ArcGIS for Server – Administration

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Target audience

- **Administrators (GIS, DBA, System)**
- **Architects**
- **Developers**

- **Level: Intermediate**

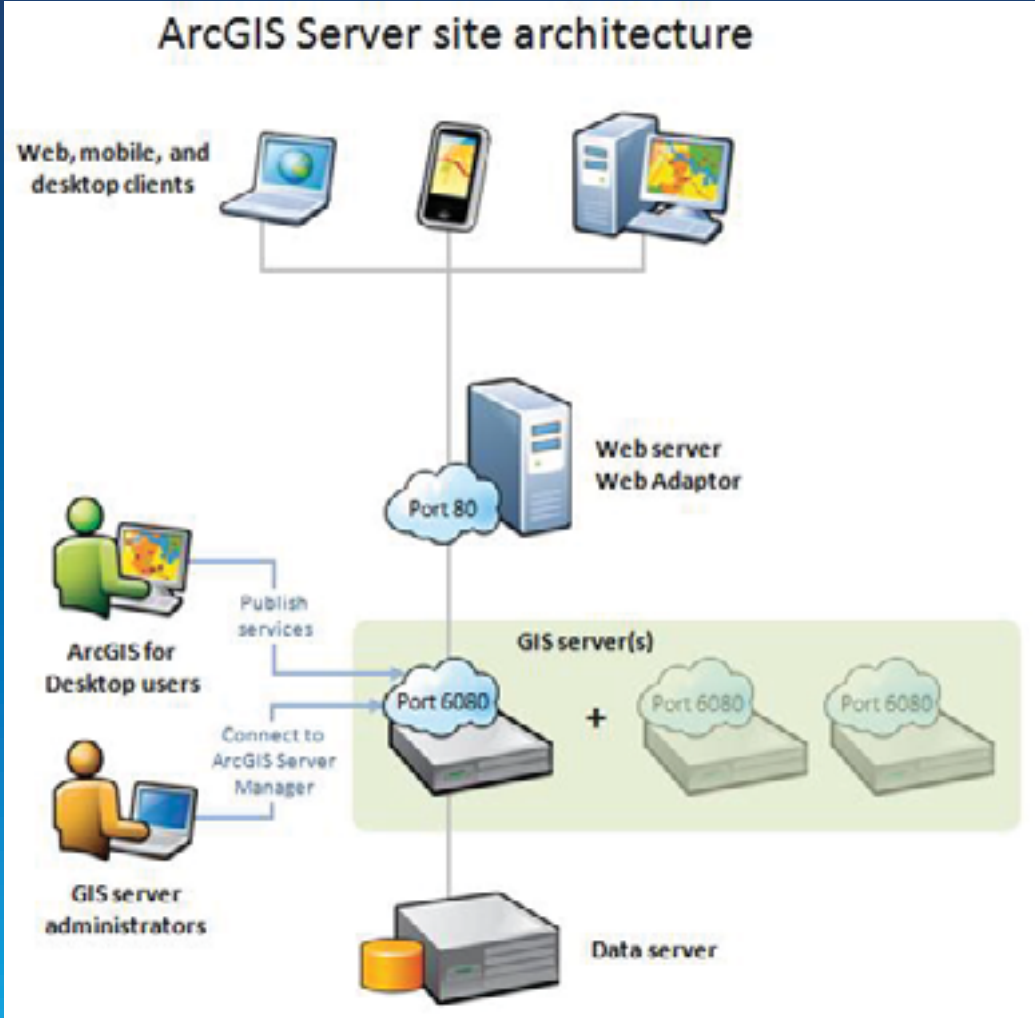
Outline

Key administrative functions

- **Configuring**
- **Publishing**
- **Caching**
- **Monitoring**

Configuring

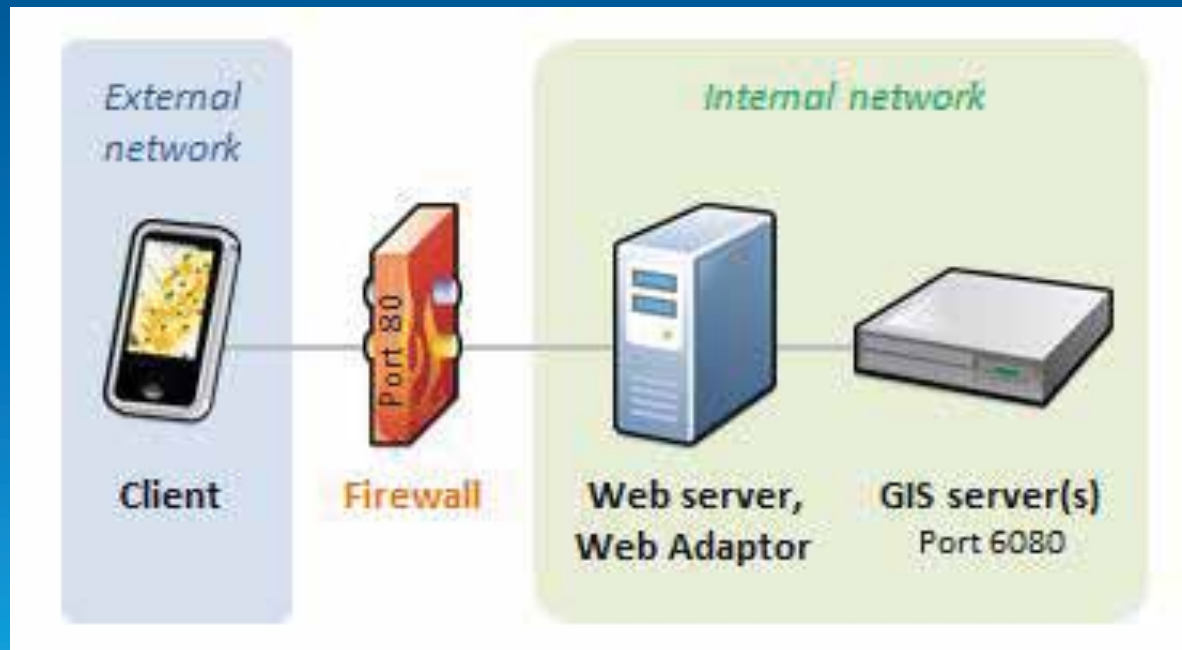
Architecture



ArcGIS Server 10.1 security architecture

Single firewall

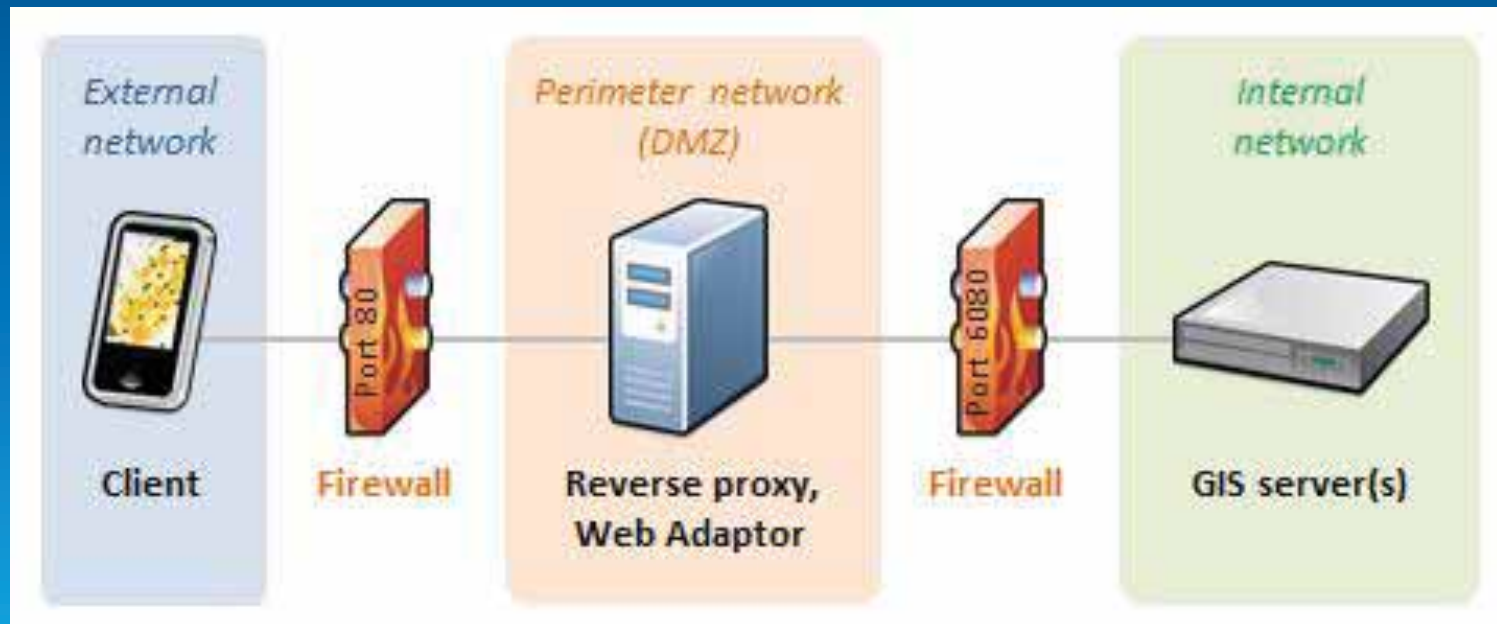
- Port 80 opened
- GIS and data server reside in the secure internal network



ArcGIS Server 10.1 security architecture

Multiple firewall

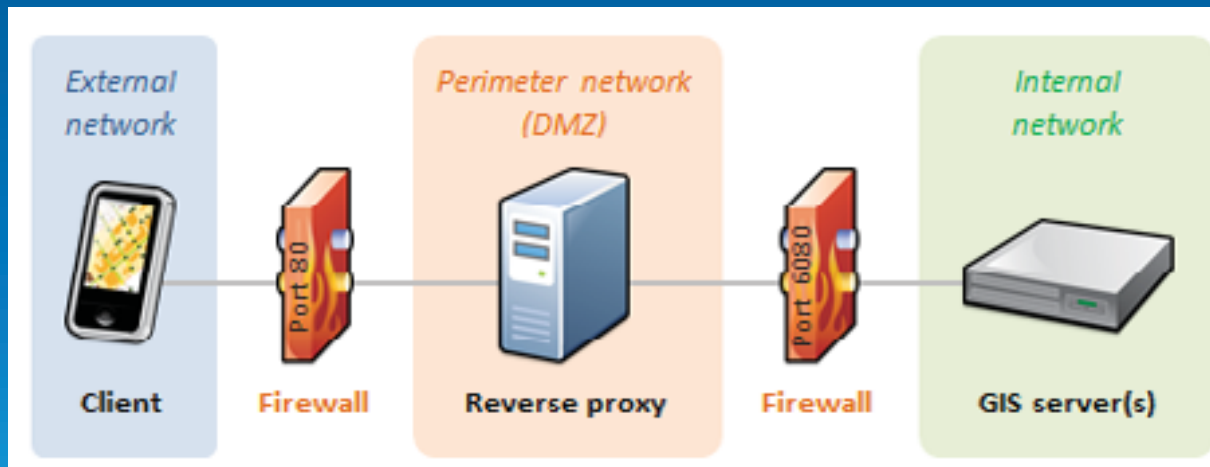
- Port 80 and 6080
- Web adapter acts as reverse proxy
- GIS and data server reside in the secure internal network



ArcGIS Server 10.1 security architecture

Integrating an existing proxy

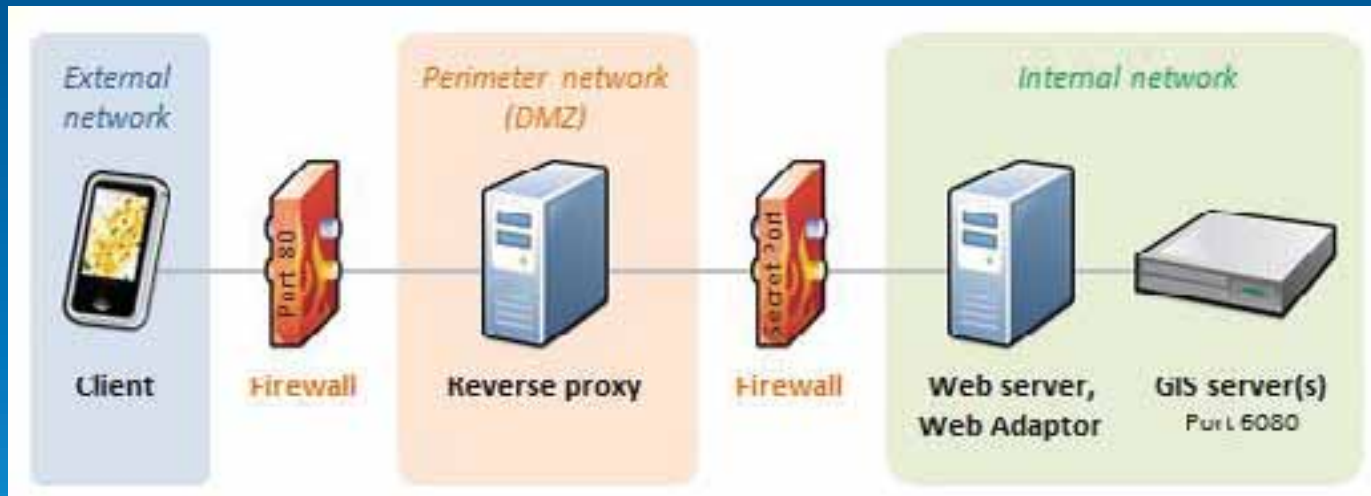
- Add your ArcGIS Server site to proxy directives, e.g. apache httpd.conf
 - ProxyPass /arcgis http://myserver:6080/arcgis
 - ProxyPassReverse /arcgis http://myserver:6080/arcgis



ArcGIS Server 10.1 security architecture

Integrating an existing proxy

- To select your port, install the Web Adaptor on another web server



ArcGIS Server's built-in store

Roles

arcgis.com | [Resource Center](#) | [Sign Out](#) | [Help](#)

ArcGIS Server Manager Services Site **Security** Logs

Settings Users **Roles**

[Help](#)

Roles in the Identity Store

A role is a set of users related by function, title, or some other attribute. When the built-in store is used to manage roles, click the New Role button to add a role. To locate a specific role, enter the first few letters of the role name in the Find Role field.

Find Role:

Role name:	Description	Role type:	
testAdmin	testAdmin	Administrator	/ x
testPublisher	testPublisher	Publisher	/ x
testUser	testUser	User	/ x

ArcGIS Server's built-in store



Backup ArcGIS Server site configuration

10.2

- `python.exe "C:\Program Files\ArcGIS\Server\tools\admin\`
- `backup.py -u admin -p admin -s http://myserver:6080 -f "d:\mybackups`
- `restore.py -u admin -p admin -s http://myserver:6080 -f d:\mybackups\Jan-24-2013`

Add ArcGIS Server capacity

Think ArcGIS Server instances as toll booths

- Resource(s) limiting the performance or capacity



Low load



High load

Think of:

- CPU processor as Lanes
- ArcGIS Server instances as toll booths
- Map requests as cars

Adding more servers

- **Requirements**

- **read and write to the site's configuration store and server directories**
- **the same ArcGIS Server account**
- **communicate with all the other GIS servers**

Setting higher instances

- Max Instance = Total instance / number of servers
- Concurrent usage: 1 Instance / CPU core



The screenshot shows the ArcGIS Server Manager interface. The top navigation bar includes 'Services', 'Site', 'Security', and 'Logs'. Below this, there are tabs for 'Manage Services', 'OGC Services', 'KML Network Links', and 'Sharing'. The main content area is titled 'Editing: Site (root) > World_Street_Map'. On the left, a sidebar contains a list of configuration categories: 'General', 'Parameters', 'Capabilities', 'Pooling', 'Processes', 'Caching', and 'Item Description'. The 'Pooling' category is currently selected. The main area displays two sections: 'Specify Number of Instances' and 'Specify Service Timeouts'. The 'Specify Number of Instances' section has two input fields: 'Minimum number of instances per machine:' with a value of 1, and 'Maximum number of instances per machine:' with a value of 2. The 'Specify Service Timeouts' section has three input fields: 'The maximum time a client can use a service:' with a value of 600 seconds, 'The maximum time a client will wait to get a service:' with a value of 60 seconds, and 'The maximum time an idle instance can be kept running:' with a value of 1800 seconds. At the top right of the main area, there are buttons for 'Help', 'Save and Restart', and 'Cancel'.

ArcGIS Server Manager

Services Site Security Logs

Manage Services OGC Services KML Network Links Sharing

Editing: [Site \(root\)](#) > World_Street_Map [Help](#) [Save and Restart](#) [Cancel](#)

General

Parameters

Capabilities

Pooling

Processes

Caching

Item Description

Specify Number of Instances

Minimum number of instances per machine:

Maximum number of instances per machine:

Specify Service Timeouts

The maximum time a client can use a service: seconds

The maximum time a client will wait to get a service: seconds

The maximum time an idle instance can be kept running: seconds

Publishing services

Handling high number of services

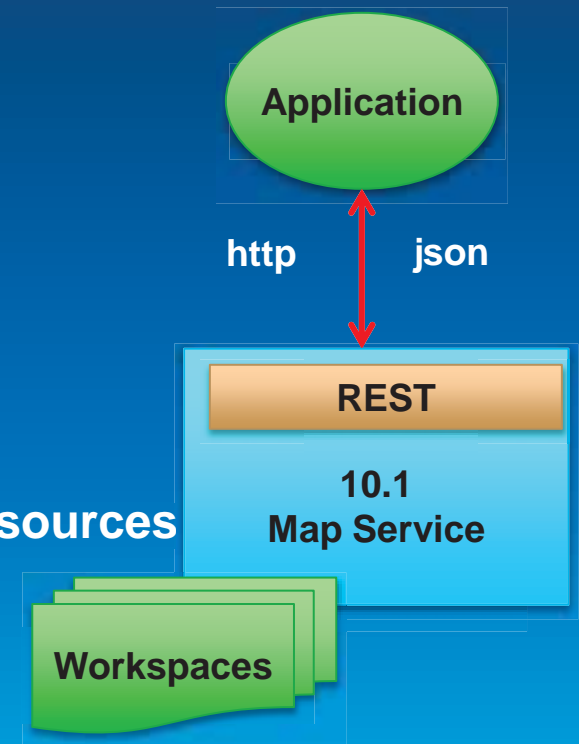
Challenges with Memory

- **Min instance=0**
- **Reduce number of services with dynamic layers**

Item	Low	High	Delta
Dynamic Map	50 MB	500 MB	900%
Image Service	20 MB	1,024 MB	5,020%
Geoprocessing Service	100 MB	2,000 MB	1,900%

Dynamic Layers: The Concept

- **Capability with the map service that allows for per-request changes to the map**
 - Optional capability of map services
- **Allows for:**
 - Updating renderers and symbols
 - Removing and reordering layers
 - Changing layer data sources
 - Adding new layers from registered data sources



Thematic mapping

- **Special case of dynamic layers supported via**
 - **Ability to change renderer**
 - **Ability to change data sources – including joins**
 - **New map server API for constructing renderer classes**
- **Generate renderer operation**
 - **Supports class breaks and unique value class generation**
 - **Popular classification types from ArcGIS Desktop**

Enabling dynamic layers

The screenshot displays the ArcGIS Server Manager interface for editing a service named 'Counties2'. The 'Mapping' tab is active, showing the REST URL: `http://tanu9:6080/arcgis/rest/services/Counties2/MapServer`. The 'Capabilities' section is selected in the left-hand menu, and the 'Dynamic Workspaces' section is highlighted in the main content area. The 'Allow per request modification of layer order and symbology' checkbox is checked and highlighted with a red box. Below this, a table lists the workspace configurations.

Editing: Site (root) > Counties

Select and configure capabilities:

- Mapping (always enabled)
- WMS
- Schematics
- WCS
- Feature Access
- Mobile Data Access

Operations Allowed:

- Map
- Query
- Data

Dynamic Workspaces:

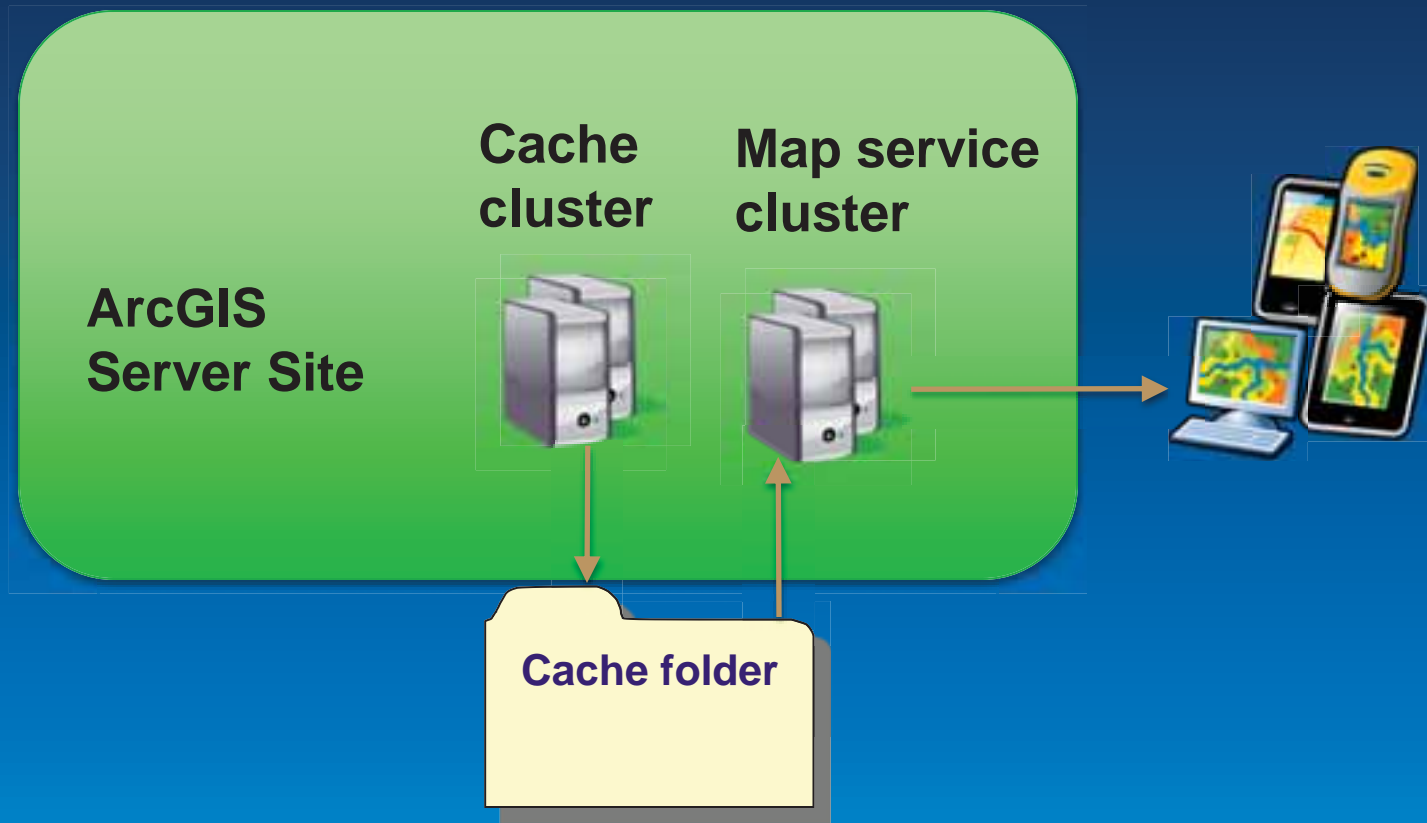
- Allow per request modification of layer order and symbology

To register a database, file geodatabase, shapefile or raster workspace, click Add

Workspace ID	Type	Connection String
fgdb_county	FileGDB	Show Connection String

Caching

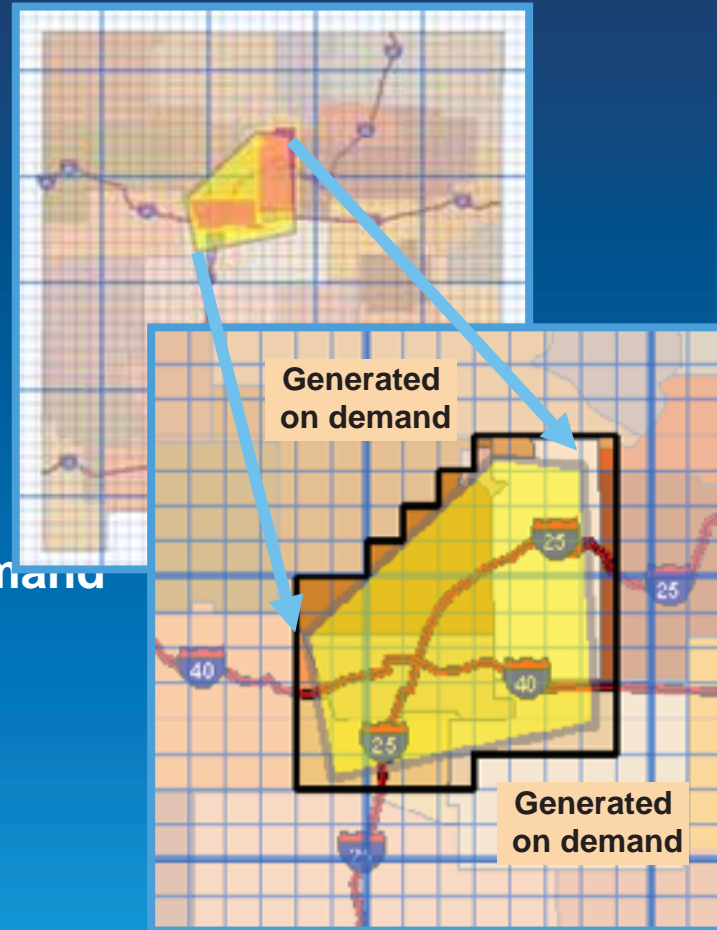
Clusters allow you to isolate cache creation



Cache cluster can scale out while the cache job is running

Pre-create coupled with cache on demand

- **Pre-create high use areas**
 - Population centers
 - Parks, roads, attractions
- **Features**
 - Cover popular extent
 - Generate key tiles
 - All others generated on demand



What is image service caching

- **Fast access to images as a tiled service**
 - Out performs / scales mosaic dataset and raster dataset
 - Imagery is not processed on the fly
- **Uses image extension**



Caching in ArcGIS Online

- ArcGIS Online subscription allows for caching
- No need to worry about capacity
- Charged by tile creation and storage
- Two approaches
 - Upload data to AGOL
 - Build and store cache with AGOL
 - Upload tile package to AGOL
 - Build cache on premise but store with AGOL
- Understanding credit usage:
<http://www.esri.com/software/arcgis/arcgisonline/credits>

Why create a tile package?

- **Local cache for Desktop and Runtime applications**
- **Transport a map cache**
- **Upload a map cache to ArcGIS Online**

Creating a tile package

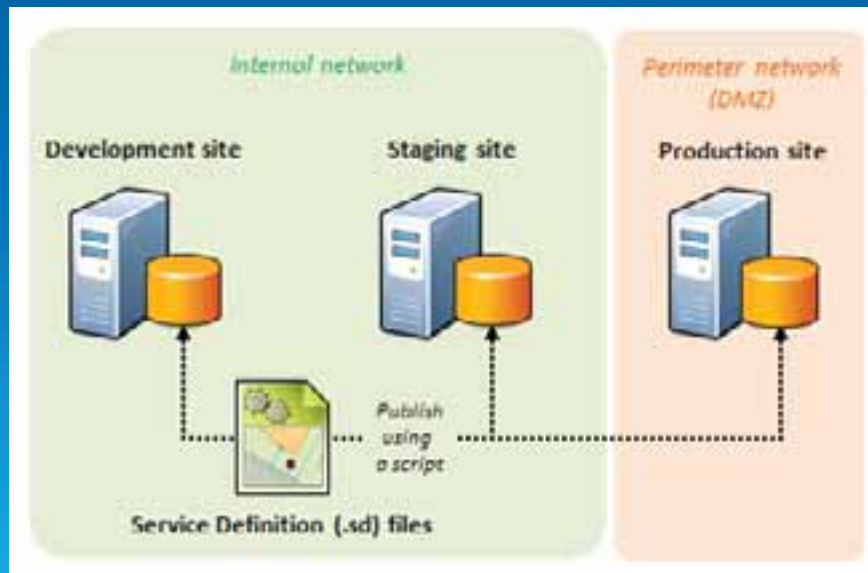
- **ArcMap Options > Sharing > Enable ArcGIS Runtime tools**
- **Two options for creation**
 - **Create tile package within ArcMap**
 - **Single processor**
 - **File > Share As > Tile Package**
 - **Create cache with server**
 - **Tile Cache > Export Tile Cache**
 - **Uses Parallel Processing Factor Geoprocessing Environment setting**

Service Definition (.sd)

- **New file format for publishing starting at 10.1**
 - Replaces .msd
- **Contains everything required to create a service**
- **Uploaded to the server when publishing**
- **Can be saved and published later**
 - Using Catalog or Server Manager

Development, Staging, Production environments

- Update services
 - delete the service and publish the updated SD
- Update applications
 - copy the application files
 - update any web service URLs in your code to the new site



Sharing as Services

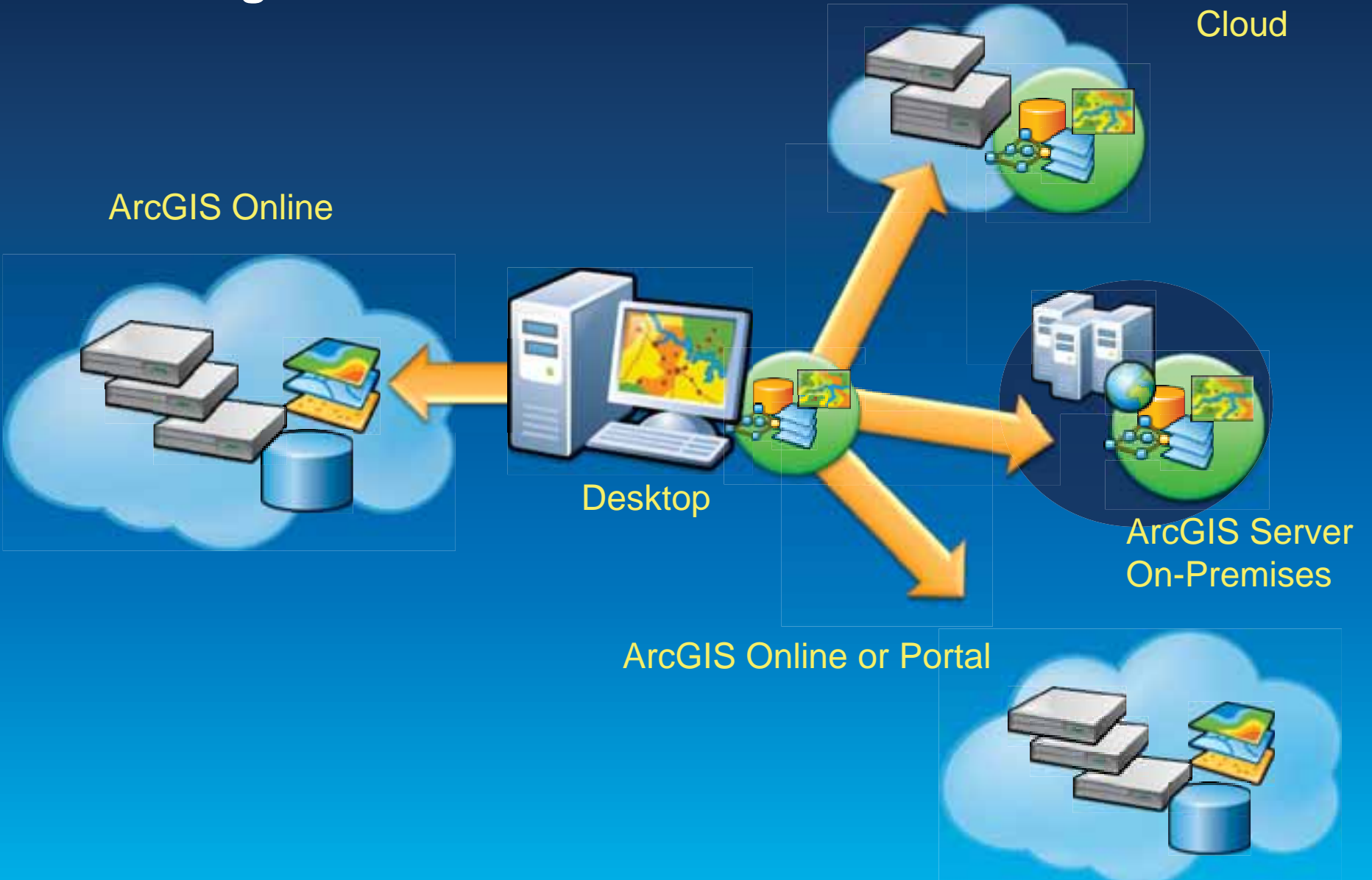
ArcGIS Server Cloud

ArcGIS Online

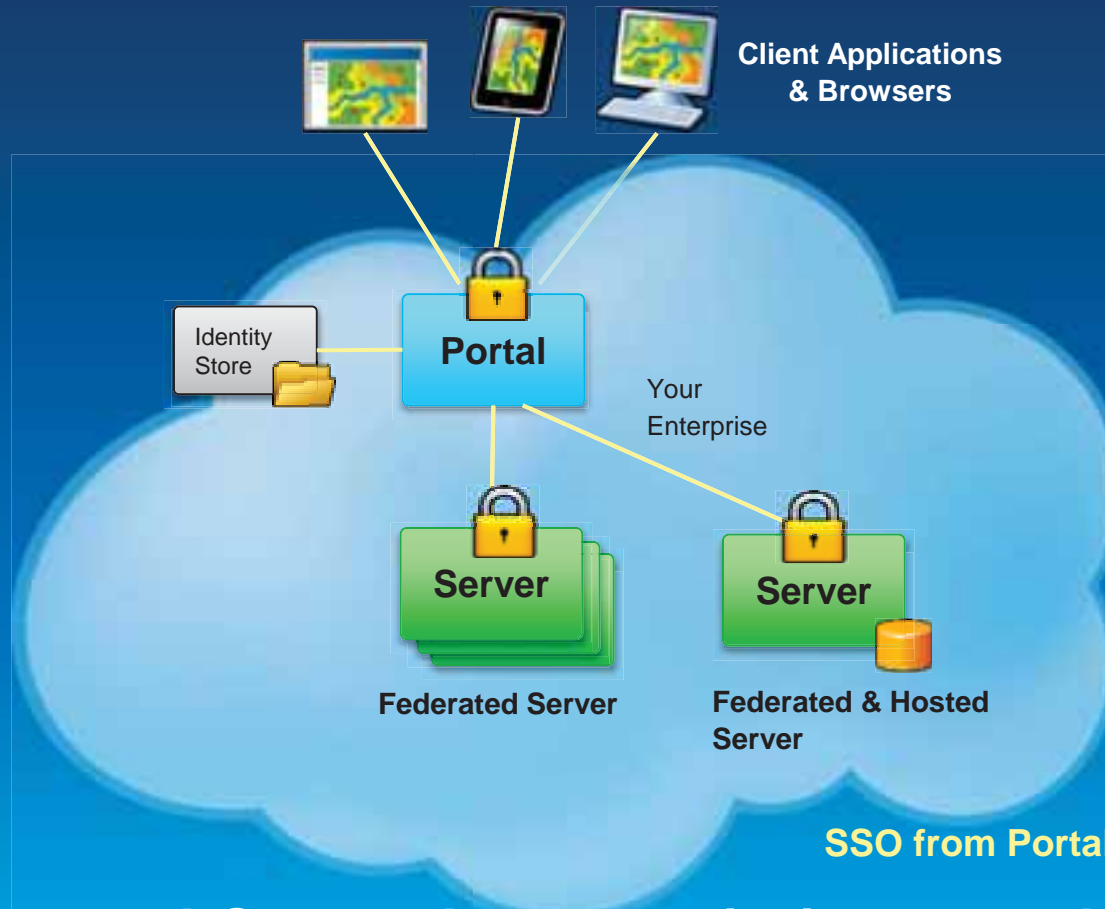
Desktop

ArcGIS Server On-Premises

ArcGIS Online or Portal



Portal and Server Federation

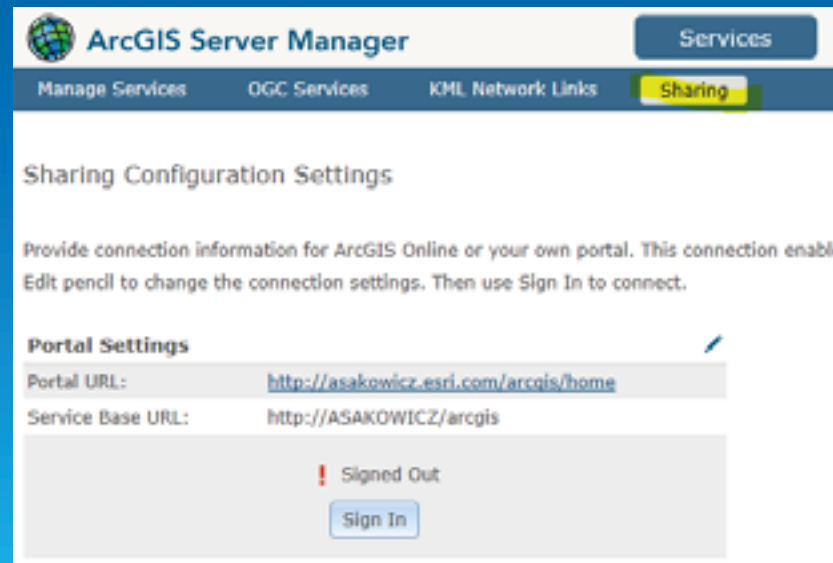


Federated Server – A Server whose security is managed by the Portal

Using your server with Portal for ArcGIS

10.2

- Same logins for the server and the portal
- Publish services to your portal
- Use printing, geocoding, geometry, and route services in portal
- Discover, consume, and share your services



Portal – Working with Services

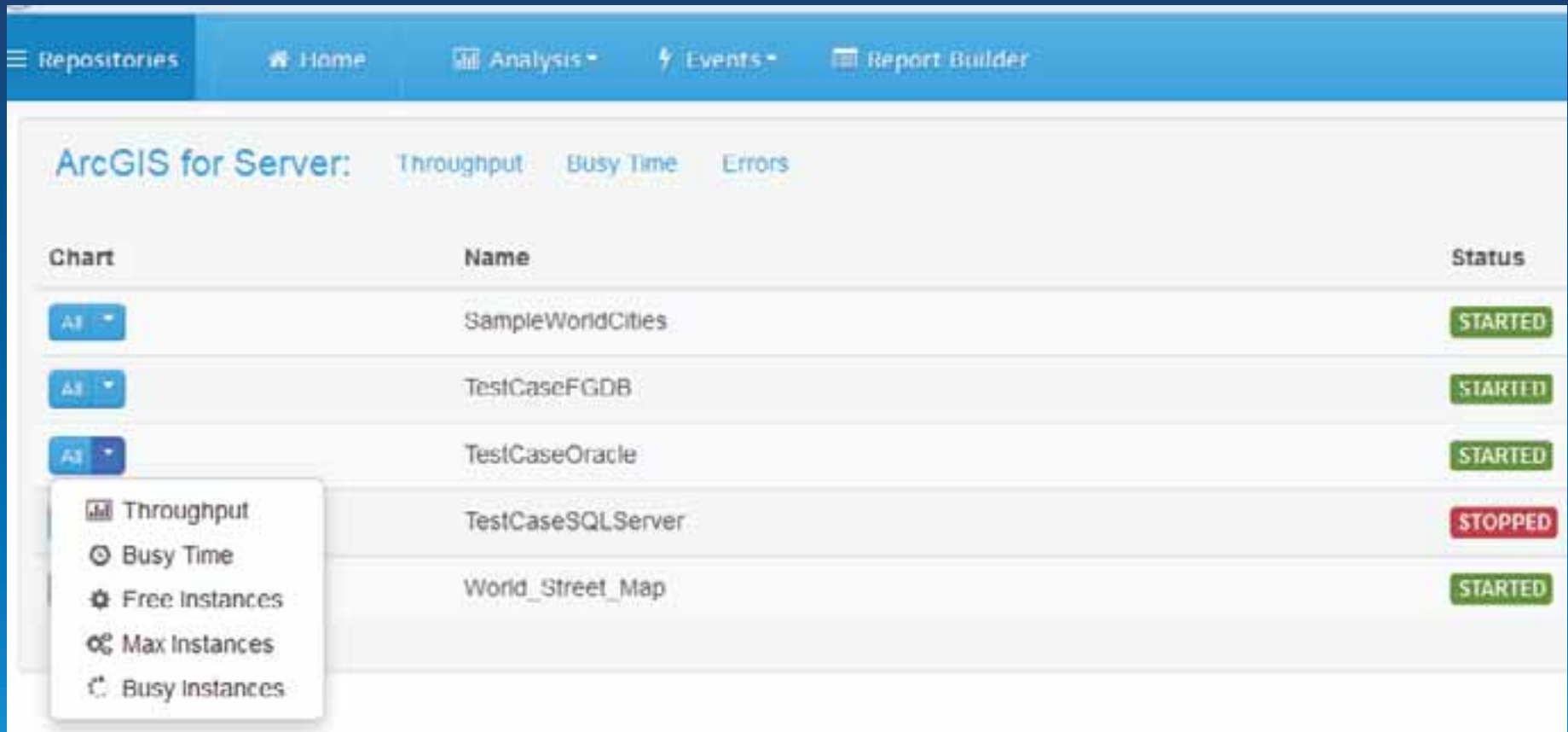
10.2

- **Publish Services to the Federated Server**
 - Servers within the organization can be federated with the Portal.
 - All Services published to the Federated Server will be automatically registered with the Portal.
- **Register Services with the Portal**
 - Services can come from any server within or outside the organization. These can be registered with the Portal.
- **Publish Services to the Portal - hosted services**
 - Portal users can publish services to the Portal.
Upload content to portal and have the Portal spin up a service using that content.

Monitoring

Trend Analysis

ArcGIS Server statistics



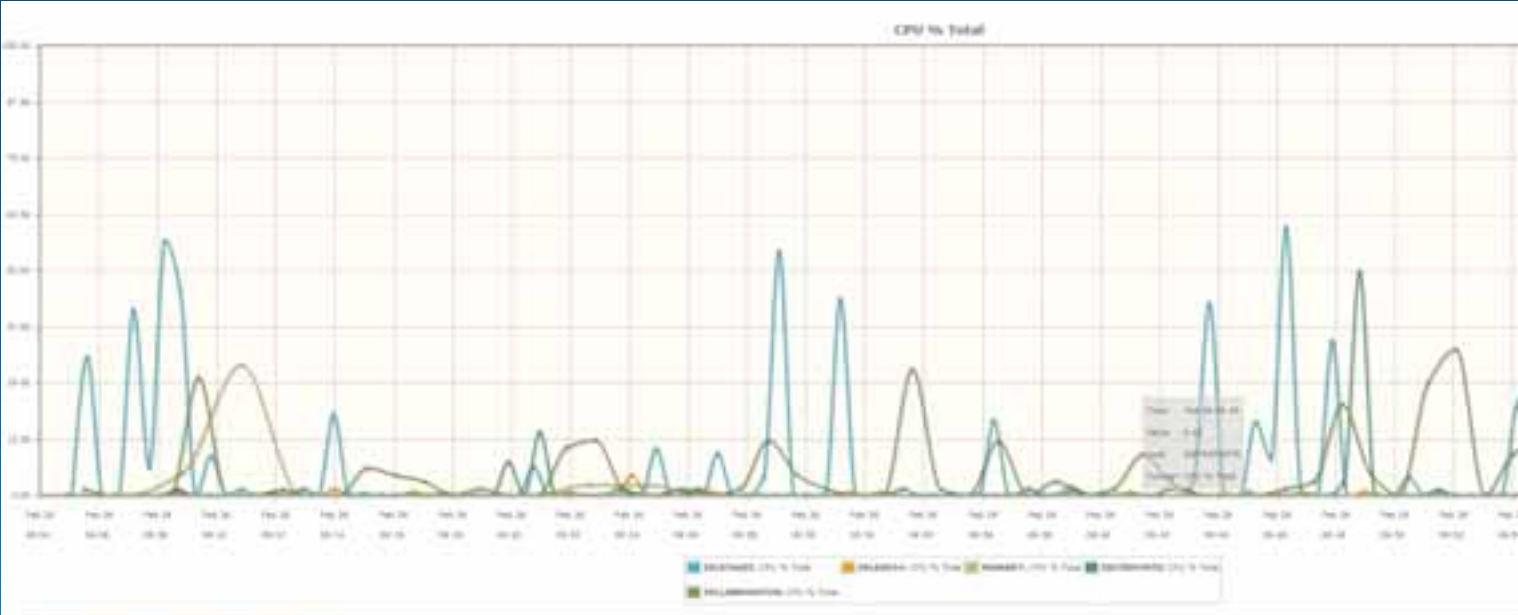
System Monitor (Beta)

<http://www.arcgis.com/home/item.html?id=848f48b0f88e4de7a036377197453efe>

Trend Analysis

System Metrics

System Metrics: CPU Disk Memory Network



CPU % Total Average Status by Time Period

Agent	Counter	Average	Sample Period Start	Sample Period End
ESLSR03	CPU % Total	5.82	2015-2-25 09:00:00	2015-2-26 10:04:01
ESLSR04	CPU % Total	0.16	2015-2-25 09:00:01	2015-2-26 10:04:02
FRANDT	CPU % Total	1.25	2015-2-26 08:04:06	2015-2-26 10:03:40

Questions?

Thank you.

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Understanding our world.