ArcGIS Enterprise Jumpstart Summary

Prepared for:

Sacramento Area Council of Governments

300-1415 L Street

Sacramento, CA 95814

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Prepared By
Technical Lead: Margaret Jen
Project Coordinator: Mike Larrance

380 New York Street
Redlands, California 92373-8100 USA
T 909 793 2853

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Introduction

Through Esri Professional Services, Sacramento Area Council of Governments (SACOG) engaged Environmental Systems Research Institute, Inc. (Esri) to provide assistance with deploying ArcGIS Enterprise software and providing staff with knowledge transfer. The engagement was conducted from October 22, 2018 to October 24, 2018.

This document is a guide to your ArcGIS Enterprise deployment and record of Jumpstart activities. We hope you find it useful as a reference to aid in the ongoing management of your enterprise GIS. This documents includes:

- Summary of the activities that took place during the Jumpstart
- Recommendations for enhancement to your GIS
- Diagram of your ArcGIS Enterprise configuration
- Links to documentation and other resources

Scope of Services

The ArcGIS Enterprise Jumpstart – Basic services package provides up to 3 days of on-site installation and configuration support for an ArcGIS Enterprise implementation consisting of Portal for ArcGIS, one ArcGIS Server site and the ArcGIS Data Store on up to 4 customer provided physical, virtual, or cloud servers by 1 Esri Consultant based on a basic implementation and design plan developed prior to the onsite visit. After installation is complete the Esri Consultant will configure ArcGIS Enterprise settings including supported user authentication systems, federate the ArcGIS Server site with Portal for ArcGIS, and designate it as the hosting server. When installation and configuration are complete the Esri Consultant will focus the remaining time on knowledge transfer of standard ArcGIS Enterprise technology topics such as: ArcGIS Enterprise Administration; Creating, updating, configuring and administering Geodatabases; Creating and Working with Services; Sharing Imagery and Caching; Disaster Recovery; Configuring and using your ArcGIS Organization. Customers will first be provided a jumpstart questionnaire to review user requirements, collect inputs for server sizing, and determine any network, security, or environmental changes to be addressed. Following receipt of the questionnaire the Esri Consultant will arrange a follow-up call or webcast to answer questions and review additional information pertinent to the implementation. Using the information gathered up to this point the Esri consultant will develop a basic implementation and design plan including a platform diagram with basic sizing estimates and an implementation agenda to direct the onsite activities. Topics outside the scope of the ArcGIS Enterprise Jumpstart include but are not limited to: Migration of Databases and Applications, Systems Integration, System Architecture Design, Security Review, High Availability, Performance Tuning, and Application Development.

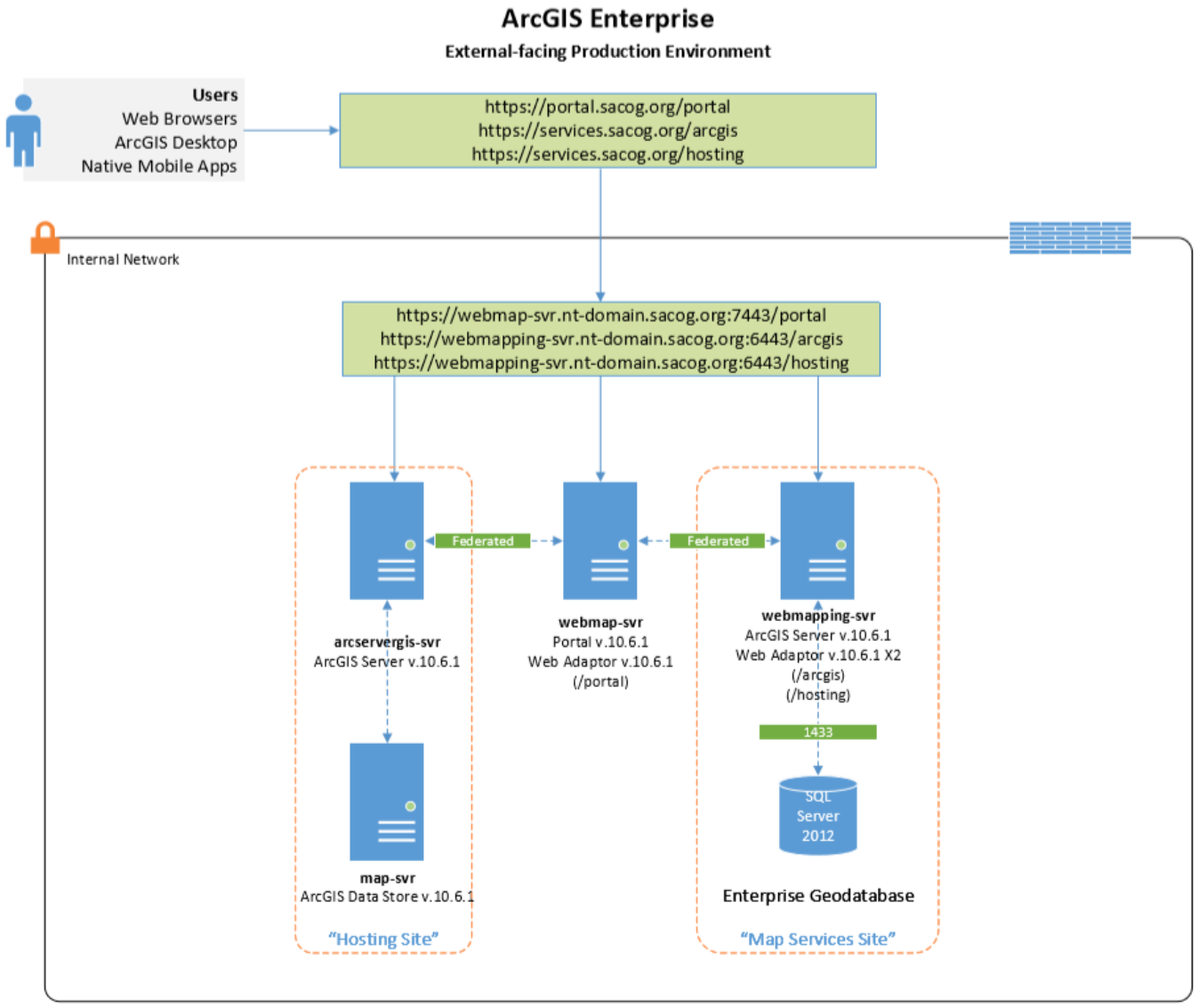
Onsite Summary

Installation – A new installation of Portal for ArcGIS 10.5 was federated with an existing ArcGIS Server 10.5 site which will be the mapping server. Both components were upgraded to 10.6.1. A second ArcGIS Server 10.6.1 site was installed and configured with a new installation of ArcGIS Data 10.6.1. This second site was federated with Portal 10.6.1 and designated as the hosting server. All relevant patches were applied as of October 24, 2018.

User Access Configuration – Built-in authentication was configured with Portal for ArcGIS federated with ArcGIS Servers. Roles defined in Portal for ArcGIS determine user capabilities (Viewer, User, Publisher, Administrator) and groups defined in the portal determine access to content.

Testing – Connections were established from client machines and sample services were published. Common Portal tasks were performed to test full functionality of the enterprise configuration.

System Diagram



ArcGIS Enterprise Configuration Details

Server Information

Fully-Qualified Domain Name	ArcGIS Component(s)
webmap-svr.nt-domain.sacog.org	Portal for ArcGIS 10.6.1 ArcGIS Web Adaptor 10.6.1 (portal)
arcservergis-svr.nt-domain.sacog.org	ArcGIS Server 10.6.1
map-svr.nt-domain.sacog.org	ArcGIS Data Store 10.6.1
webmapping-svr.nt-domain.sacog.org	ArcGIS Server 10.6.1 ArcGIS Web Adaptor 10.6.1 (arcgis) ArcGIS Web Adaptor 10.6.1 (hosting)

Usernames and Passwords

	Username	Password
Service Account for ArcGIS Components (Server, Portal, Data Store)	nt-domain\arcgis	
ArcGIS Server Primary Site Administrator	siteadmin	SACOG-sever
Portal for ArcGIS Initial Administrator account	portaladmin	SACOG-portal6

URLs – Portal for ArcGIS

Portal for ArcGIS	URL
Portal for ArcGIS (HTTPS via Web Adaptor)	https://portal.sacog.org/portal
Portal for ArcGIS (HTTPS via port, direct to server)	https://webmap-svr.nt-domain.sacog.org:7443/arcgis
Portal Home Page	https://portal.sacog.org/portal/home
Portal Admin API	https://portal.sacog.org/portal/portaladmin
Portal Sharing API	https://portal.sacog.org/portal/sharing/rest

URLs – ArcGIS *Hosting* Server

Server	URL
ArcGIS Server (HTTPS via Web Adaptor)	https://services.sacog.org/hosting
ArcGIS Server (HTTPS via port, direct to server)	https://arcservergis-svr.nt-domain.sacog.org:6443/arcgis
ArcGIS REST Services Directory	https://services.sacog.org/hosting/rest/services
ArcGIS Server Manager	Either of the first two Server URLs + /manager
ArcGIS Server Admin API	Either of the first two Server URLs + /admin

URLs – ArcGIS *Mapping* Server

Server	URL
ArcGIS Server (HTTPS via Web Adaptor)	https://services.sacog.org/arcgis
ArcGIS Server (HTTPS via port, direct to server)	https://webmapping-svr.nt-domain.sacog.org:6443/arcgis
ArcGIS REST Services Directory	https://services.sacog.org/arcgis/rest/services
ArcGIS Server Manager	Either of the first two Server URLs + /manager
ArcGIS Server Admin API	Either of the first two Server URLs + /admin

Activity Notes

Day 1 (October 22, 2018):

- Confirmed existing environment:
    - Portal for ArcGIS 10.5 (webmap-svr)
        - Insights 1.2.1
    - ArcGIS Server 10.5 (webmapping-svr)
        - Advanced
        - Network Analyst server extension
    - ArcGIS Data Store 10.5 (map-svr)
        - Relational and Tile Cache
- IT reset password for the ArcGIS service account (nt-domain\arcgis)

- Noticed that the formatting for the service account (SA) username was not consistent between different services (ie. nt-domain\arcgis vs arcgis@nt-domain.sacog.org)
    - To keep things consistent, we went with nt-domain\arcgis because Portal will error out if the SA username is longer than 20 characters
- Created a full ArcGIS Enterprise backup using webgisdr tool
    - WebGIS backup location: \\data-svr\GIS\ESRI_Upgrade
- Started Portal for ArcGIS upgrade but it failed with the following error:
    - Failed to upgrade PostgreSQL from 9.3.12 to 9.6.8. Error while copying relation "pg_toast.pg_toast_17506" ("C:\arcgisportal\db1540239485044/base/16384/17509" to "C:\arcgisportal\db/base/16400/17509"): No such file or directory
- Portal upgrade troubleshooting:
    - Confirmed the SA had full control to C:\arcgisportal and C:\Program Files\ArcGIS\Portal
    - Compared the 16400 folder with a working Portal 10.5 installation and confirmed file 17509 and several other files were missing from the directory listed in the error message
    - Added the SA account to local admin group
    - Restarted the Portal for ArcGIS service
    - Restarted the Portal machine

Day 2 (October 23, 2018):

- Continued Portal upgrade troubleshooting:
    - Windows Event Viewer confirmed that C:/arcgisportal/db/postmaster.pid does not exist which means Portal's internal Postgres database is not running
    - Confirmed Portal is listening on port 54432
    - Temporarily disabled Windows Defender and Sophos anti-virus
    - Portal for ArcGIS product team discovered an extra schema had been added to the Postgres database and that default ArcGIS schemas were corrupt
- Decided to uninstall Portal 10.6.1 and reinstall a new Portal 10.5
- Portal 10.5 installation on webmap-svr:
    - Extracted to: C:\users\admin\Documents\ArcGIS 10.5
    - Installed to: C:\Program Files\ArcGIS\Portal
    - Directories: C:\arcgisportal
    - Authorized with:
        - Level 1 (30): ECP712536657

        - Level 2 (50): ECP129856632
    - Created initial admin account:
        - Username: portaladmin
        - Password: SACOG-portal6
    - Confirmed the installation was not missing any files
    - Confirmed C:/arcgisportal/db/postmaster.pid existed and the internal Postgres database was running
- Updated ArcGIS Server security to use built-in, thus breaking federation to the old Portal site
- Federated ArcGIS Server (webmapping-svr) with new Portal site
    - Services URL: https://services.sacog.org/arcgis
    - Admin URL: https://services.sacog.org/arcgis
    - Federation was done with Pete's built-in Portal login which means all ArcGIS Server services have been added as items to Pete's Portal content
- Updated webcontextURL in Portal Admin to help construct the correct URLs on all resources it sends to the end user
    - {"WebContextURL": "https://portal.sacog.org/portal"}

Day 3 (October 24, 2018):

- Portal upgrade from 10.5 to 10.6.1
    - Authorized with:
        - Level 1 (300): ECP432720946
        - Level 2 (50): ECP757341477
    - Ran full reindex of Portal
- Unregistered and uninstalled 10.5 Web Adaptor named 'portal'
- Installed and configured 10.6.1 Web Adaptor named 'portal'
- ArcGIS Server (webmapping-svr) upgrade from 10.5 to 10.6.1
    - Authorized with ECP677036263 (ArcGIS Server Advanced license) and ECP007447237 (Network Analyst Server)
    - Directories remained on D:\arcgisserver
    - This is the mapping server
- Unregistered and uninstalled 10.5 Web Adaptor named 'arcgis'
- Installed and configured 10.6.1 Web Adaptor named 'arcgis'
- Installed ArcGIS Server 10.6.1 on arcservergis-svr
    - Extracted to: C:\Users\Admin\Documents\ArcGIS 10.6.1
    - Install to C:\Program Files\ArcGIS\Server
    - Directories: C:\arcgisserver

    - C:\Python27
    - This will be the hosting server
- Installed 10.6.1 Web Adaptor named ‘hosting’ on webmapping-svr
- Configured 10.6.1 Web Adaptor name ‘hosting’ with arcservergis-svr
- Decided to uninstall ArcGIS Data Store 10.5 since it was not being used
- Performed a clean install of ArcGIS Data Store 10.6.1 on map-svr
    - Relational
    - Tile Cache
- Federated arcservergis-svr with Portal
- Designated arcservergis-svr as the hosting server
- Installed Workforce for ArcGIS 18.0.2 and Insights 3.0
- Added Workforce to Portal’s app launcher
- Installed Portal patches:
    - Insights for ArcGIS Public Sharing patch
    - Pop-up Selected Feature Display patch
- Installed ArcGIS Server patches:
    - Buffering Degenerated Polygon patch
    - Export from Hosted Layer to File Geodatabase patch
    - Geoprocessing Service patch
    - JPEG NoData patch
- Installed SQL Server 64 bit Native Client on arcservergis-svr
- Registered SQL Server database with arcservergis-svr
- Overview of Distributed Collaboration
- Overview of ArcGIS Hub
    - Confirmed it is possible to download datasets from ArcGIS Server services where the data source is coming from a registered geodatabase

Recommendations

Next Steps

- Enable HTTPS only for Portal when it is determined this would not affected third-party software
- Once HTTPS only is enabled, configure portal to use Windows Active Directory
- Upgrade SQL Server 2012 to a newer version. 2012 is the oldest version of SQL Server supported with ArcGIS 10.6.1

Follow-on Esri Services or Activities

- Build out Maps and Apps
  - Web GIS Launch Kit – A collaborative engagement to empower your organization with knowledge and workflows to manage your web GIS, build high quality content, and create focused information products. 3-5 days onsite.
- Estimate Future Infrastructure Requirements
  - Capacity Planning – A review of your current and anticipated GIS services, workflows, data sources, user workload, and application architecture by an Esri Enterprise consultant to create a Capacity Report detailing the anticipated future workload, the server hardware (Number of CPUs, Processor type and speed, Disk storage size and speed, RAM requirement), and the network capacities required to support it.
- Setup System Monitoring
  - Enterprise GIS Health Check – An engagement to proactively review and assess current GIS servers and web services. Installation of Esri System Monitor tool to Monitor, test, and review configuration and operations with early detection and evaluation of potential issues.
- Design Flagship App(s)
  - UI/UX Design – A highly collaborative engagement that takes a user-centered approach to app design. This is a start to finish effort, from user workflows and wireframes to full graphic design and coding. Optionally, review your current app(s) and provide recommendations for improvement.
- Data transfer/conversion
  - Geodata Engineering – An expert-led engagement to design your enterprise geodatabase and populate it with your essential data. This includes efforts to convert from other data formats and sources.

Training

Training and Professional Services go hand and hand with each enhancing the effectiveness of the other. It is our opinion that even a small investment in training can reinforce the knowledge transfer that occurred during the Jumpstart and providing the foundation for proper operations and maintenance of your GIS for years to come. For the best results contact your account manager and start a discussion with your training services representative to create a custom training plan for your organization. You can also visit https://www.esri.com/training/ for a complete list of Esri training courses. For context some of the most commonly recommended courses that compliment an ArcGIS Enterprise Jumpstart are listed below.

Data in ArcGIS: User Managed and ArcGIS Managed (article)

ArcGIS 4: Sharing Content on the Web (3 days)

ArcGIS for Server: Site Configuration & Administration (3 days)

Building Geodatabases (2 days)

Deploying and Maintaining a Multiuser Geodatabase (2 days)

Implementing Versioned Workflows in a Multiuser Geodatabase (3 days)

Distributing Data Using Geodatabase Replication (2 days)

ArcGIS Enterprise Resources

The following links contain information often related to the topics in an ArcGIS Enterprise Jumpstart.

ArcGIS Enterprise Installation and Configuration

ArcGIS Enterprise installation guides: http://server.arcgis.com/en/documentation/install/
ArcGIS Security Best Practices: http://doc.arcgis.com/en/trust/security/arcgis-server-best-practices.htm
Configuring a Secure Environment: http://server.arcgis.com/en/server/latest/administer/windows/best-practices-for-configuring-a-secure-environment.htm
Configuring ArcGIS Server security: http://server.arcgis.com/en/server/latest/administer/windows/securing-your-arcgis-server-site.htm
Configuring Portal for ArcGIS security: http://server.arcgis.com/en/portal/latest/administer/windows/about-securing-your-portal.htm
ArcGIS Enterprise Functionality Matrix 10.5: http://www.esri.com/library/brochures/pdfs/arcgis-enterprise-functionality-matrix.pdf

ArcGIS Enterprise Administration and Management *(full documentation)*

Managing users, groups, and content: http://server.arcgis.com/en/portal/latest/administer/windows/managing-access-to-your-portal.htm
Configuring Portal Website: http://server.arcgis.com/en/portal/latest/administer/windows/about-configuring-the-portal-website.htm
Components of ArcGIS URLs: http://server.arcgis.com/en/server/latest/administer/windows/components-of-arcgis-urls.htm
Common problems and solutions: http://server.arcgis.com/en/portal/latest/administer/windows/common-problems-and-solutions.htm
Printing in web applications: http://server.arcgis.com/en/server/latest/create-web-apps/windows/printing-in-web-applications.htm
Using nested groups in a Windows Active Directory identity store: http://server.arcgis.com/en/server/latest/administer/windows/using-nested-groups-in-a-windows-active-directory-identity-store.htm

Enterprise Geodatabases

Geodatabase Administration: http://desktop.arcgis.com/en/arcmap/latest/manage-data/administer-gdb-intro/geodatabase-administration.htm
SQL Server: http://desktop.arcgis.com/en/arcmap/latest/manage-data/gdbs-in-sql-server/overview-geodatabases-sqlserver.htm
Oracle: http://desktop.arcgis.com/en/arcmap/latest/manage-data/gdbs-in-oracle/overview-geodatabases-oracle.htm
PostgreSQL: http://desktop.arcgis.com/en/arcmap/latest/manage-data/gdbs-in-postgresql/overview-geodatabases-postgresql.htm
IBM DB2: http://desktop.arcgis.com/en/arcmap/latest/manage-data/gdbs-in-db2/overview-geodatabases-db2.htm
IBM Informix: http://desktop.arcgis.com/en/arcmap/latest/manage-data/gdbs-in-informix/overview-geodatabases-informix.htm
Geodatabase Essentials: http://desktop.arcgis.com/en/arcmap/latest/manage-data/geodatabases/essential-readings-about-the-geodatabase.htm

Esri Documentation & Help
Solutions: http://solutions.arcgis.com/
Trust http://trust.arcgis.com
Desktop: http://desktop.arcgis.com/en/documentation/
ArcGIS Online: https://doc.arcgis.com/en/arcgis-online/
Esri Apps: http://www.esri.com/software/apps

- Collector for ArcGIS: http://doc.arcgis.com/en/collector/
- Esri Maps for Office: http://doc.arcgis.com/en/maps-for-office/
- Operations Dashboarar http://doc.arcgis.com/en/operations-dashboard/
- Web AppBuilder: http://doc.arcgis.com/en/web-appbuilder/
- Story Maps: http://storymaps.arcgis.com/en/
- ArcGIS Earth: http://doc.arcgis.com/en/arcgis-earth/
- Survey 123: https://doc.arcgis.com/en/survey123/

Open Data: http://opendata.arcgis.com/about
ArcGIS for Developers: https://developers.arcgis.com/
Free Tutorials and Lessons: https://learn.arcgis.com/en/gallery/
Esri Events: http://www.esri.com/events
Annual User Conference in San Diego, CA: http://www.esri.com/events/user-conference