ArcGIS Enterprise: Migrate using WebGISDR

Prepared By:

Noe Diaz

Document Release: Version 0.1

August 1, 2024

Obtaining Copies or Requesting Changes

If you need copies of this document or would like to request changes, send an email message to **noediaz88@gmail.com**

Revision History

The table that follows summarizes the revision history of this document.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Release | Summary of Revisions | Date | Author(s) | Approver |
| Draft 0.1 | Draft content created | 10/24/2024 | Noe Diaz | N/A |
| Draft 0.2 | Technical edit and formatting |  |  | N/A |
| Draft 0.3 | Updated draft |  |  | N/A |
| Draft 0.4 | Technical edits from peer review |  |  | N/A |
| Draft 0.5 | Content edits |  |  | N/A |
| Draft 0.6 | Content corrections |  |  | N/A |
| Draft 0.7 | Quality assurance review |  |  | N/A |
| Final 1.0 | Accepted edits and baselined the document |  |  | N/A |

Contents

[Introduction 1](#_Toc181018380)

[Purpose 1](#_Toc181018381)

[Scope 1](#_Toc181018382)

[Document Conventions 1](#_Toc181018383)

[About This Guide 2](#_Toc181018384)

[Migration Using WebGIS DR Utility 3](#_Toc181018385)

[Introduction 3](#_Toc181018386)

[Prerequisites 3](#_Toc181018387)

[Preparation 3](#_Toc181018388)

[Guide/Checklist 4](#_Toc181018389)

[Executing The Migration 7](#_Toc181018390)

[Provision Servers 8](#_Toc181018391)

[Configure Web Server 10](#_Toc181018392)

[Install ArcGIS Enterprise Components 11](#_Toc181018393)

[Configure Components 11](#_Toc181018394)

[Prepare for Import 11](#_Toc181018395)

[Prep the Origin System 11](#_Toc181018396)

[Restore to Destination 11](#_Toc181018397)

[Final Testing and Validation 13](#_Toc181018398)

[Redirect DNS 13](#_Toc181018399)

[Decommission Origin 13](#_Toc181018400)

[References 1](#_Toc181018401)

# Introduction

## Purpose

This document outlines the step-by-step procedure for migrating ArcGIS Enterprise to a new machine or set of machines using the WebGIS DR tool. This migration process ensures minimal disruption to the production environment and allows for thorough testing before final deployment.

## Scope

This guide is intended for IT professionals and system administrators responsible for maintaining and upgrading ArcGIS Enterprise environments. It covers the prerequisites, preparation, execution, and validation of the migration process.

* The scope of this document includes:
* Prerequisites and preparations for migration.
* Step-by-step instructions for executing the migration.
* Testing and validation procedures post-migration.
* Final steps for decommissioning the old environment.

## Document Conventions

Table 1‑1 describes the conventions used in this documentation.

Table 1‑1: Document Conventions

| Convention | Meaning |
| --- | --- |
| **🛈** | Indicates a note that supplements the information in the current section or about the procedure. |
| ! | Indicates an important note related to the current section or procedure. |
|  | Indicates that a section or procedure needs to be repeated. |
| Text > Text > Text | The arrow symbol (>) is used for navigation paths (e.g., **Start** > **Programs** > **Adlib** > **Express** > **Express Server**). All navigation paths in this document assume that Windows is set to display Classic View. |

# About This Guide

This guide follows the process documented by Esri and incorporates recommendations for introducing a separate web server to support subsequent scaling of the platform. References to specific Esri documentation are provided for further details.

# Migration Using WebGIS DR Utility

This SOP outlines the detailed procedure for migrating ArcGIS Enterprise to a new infrastructure using the WebGIS DR tool. The process ensures minimal downtime and disruption to the production environment by leveraging backup and replication strategies. This guide is essential for IT professionals and system administrators tasked with upgrading or migrating ArcGIS Enterprise environments.

## Introduction

The WebGIS DR Utility, included with Portal, serves two primary purposes:

1. **Backup Creation:** To restore ArcGIS Enterprise in case of failure.
2. **Disaster Recovery:** To maintain a replicated standby environment.
3. **Benefits:**

* Minimal disruption to production.
* Testing of content on the new system before making it live.
* Flexibility to separate web adaptors for future scalability.

## Prerequisites

The following settings must be identical between the original and new environments:

1. **Public URL:** The URL through which users access the ArcGIS Enterprise portal.
2. **External Services URLs:** URLs used to federate ArcGIS Server sites with the portal.
3. **Hostname Resolution:**

* Modify the etc\hosts file on destination machines to map the new web server IP address to the public domain.

### Preparation

**Hostname Resolution**

Modify the etc\hosts file to manage hostname resolution until the new system is tested and the DNS can be updated. This prevents DNS lookups and directs requests to the destination web server.

The hosts file is a plain text file located under C:\Windows\System32\drivers\etc on Windows systems which maps hostnames to IP addresses. In this situation, the public URL/domain is found in the hosts file and a DNS lookup is not performed. In that way the system can re-direct to the specified machine: the destination web server.

You will “spoof” the Public URL/DNS using the etc/hosts file on your **destination** servers until after the migration has been completed and the new system is fully tested. This is accomplished by adding an entry to the etc/hosts file on **each server** in the destination. This entry maps the IP address of the web server to the Public URL/DNS of the **origin**. This host’s file entry must be added to ALL servers in the destination (2019 servers) configuration. Hosts file entries for components on the destination (2019 servers) will look like this:

**Example hosts Entries:**

* **Enterprise Components Servers:**

#    127.0.0.1 localhost  
#    ::1      localhost  
10.0.0.0    geo.gis.com

### Guide/Checklist

**1. Verify SSL Certificates Between Prod and destination environment**

* **Description:**Review and compare SSL certificates between the production environment and the destination environment. If discrepancies are found, export and reload the necessary self-signed or issued certificates. Certificates need to be loaded into the appropriate trust stores: Self-Signed and USDOS go to the Enterprise Trust, while MSS goes to Intermediate certificate folders. Export any certs needed from the Admin APIs.
* **Estimated Hours:**.5 hour

**2. Update SSL Certificate on Prod for Target Environment Servers**

* **Description:**Update the SSL certificate that has the destination servers on it. Ensure proper certificate propagation and validate that SSL communication is working correctly post-update.
* **Estimated Hours:**1 hour

**3. Test Functionality on Target Environment Before and After Restore**

* **Description:**Perform tests on the target environment to validate the functionality both before and after the restore, regardless of success or failure. Ensure key services and configurations are operating correctly.
* **Estimated Hours:**1 hour

**4. Verify Web Context for Image on Target Environment**

* **Description:**Ensure the web context for images is configured correctly on the destination environment. Also includes adding the web context to images on production as a scheduled task.
* **Estimated Hours:**.5 hour

**5. Review Enterprise Reports for Prod and Target Environment**

* **Description:**Analyze the enterprise reports for both production and destination environments to identify any discrepancies or anomalies that may affect the restore process.
* **Estimated Hours:**1 hours

**6. Check destination Logs for Anomalies**

* **Description:**Review the destination logs to detect anomalies or issues that may cause or have caused failures in the restore process.
* **Estimated Hours:**2 hours

**7. Synchronize Server Settings**

* **Description:**Use the ArcGIS Admin API to manually synchronize administrative settings across federated servers, ensuring consistent configurations.
* **Estimated Hours:**.5 hour

**8. Verify Firewall Rules**

* **Description:**Validate that firewall rules are configured correctly to allow necessary communication between servers in the destination environment.
* **Estimated Hours:**.5 hours

**9. Check Admin URL Access**

* **Description:**Confirm that the admin URL can be reached directly via browser or ping test, ensuring the administration interface is accessible.
* **Estimated Hours:**.5 hours

**10. Ensure Backup Directories Have Correct Permissions**

* **Description:**Verify that directories where WebGISDR backups are stored have the correct read/write permissions to allow successful backup and restore operations on the destination servers.
* **Estimated Hours:**.5 hours

**11. Revalidate Web Adaptor Configuration**

* **Description:**Double-check the configuration of the Web Adaptors for the image server on both production and destination environments to ensure they are correctly set up.
* **Estimated Hours:**.5 hours

**12. Set Logging Level to “Debug” and Review Logs**

* **Description:**Temporarily set the logging level to “Debug” to capture detailed logs for troubleshooting federation, user access, and service communication issues.
* **Estimated Hours:**.5 hours

**13. Check Service Account Permissions in destination environment**

* **Description:**Verify that the service accounts used within destination environment have the appropriate permissions for all required tasks, including restores, backup operations, and accessing required services.
* **Estimated Hours:**.5 hours

**14. Validate Federation**

* **Description:**Verify that all federated servers are reachable and fully functional in the destination environment. Ensure each federated server is assigned its proper role in the portal's Federation settings.
* **Estimated Hours:**.5 hours

NOTE: **You must make sure the rest of the Enterprise is a 1 for 1 match. This is very important, as the restore won’t recognize the new environment.**

* You will want to schedule an outage on the weekend to perform the restore and turn off prod during that time as its possible during the migration, both environments could crosstalk (although extremely unlikely).
* Make sure you have the same amount of DataStore connections. Go to Server Manager in Image and Hosting Server and note down the connections and make the same connections in Target Environment.
* Rest Endpoints needs to be the same, Go to IIS and make sure the site names match the target destination. Example, geo.com/image = geo.com/image~~server~~
* Security, Webcontext, Identity configuration in Portal needs to match.
* I used Site Export/ Import as a test to see if the migration would work. I only did the site export/import for Portal, SVR, Image SVR. I did not do the Database import, as I was only testing the migration. I wanted to execute the full migration with WebGISDR. I tried testing with the Database, however it kept changing the database properties, and then my datastore wouldn’t connect to portal. So I would have to delete the connection in server manager, delete the folders, then uninstall the DataStore and reinstall again. Additionally, the site import provided different errors than the webgisdr. I believe the biggest cultprit to our migration not going smoothly recently was certificates. Make sure each system matches with Prod.
* Take full advantage of using GIS Reporter Tool on both environments (read the excelogram report), to see configuration differences.
* I noticed that after the webgisdr migration, the IWA wasn’t working correctly as it kept asking me to sign into portal. Just stop and restart the default web site in the IIS.

## Executing The Migration

The WebGIS DR Utility, which is included with the installation of Portal, can be used to migrate ArcGIS Enterprise to another machine or set of machines. This utility serves two purposes:

* Create backups of ArcGIS Enterprise for restore in the event of a failure
* Maintain a replicated standby environment for disaster recovery

The benefit to using the WebGISDr tool to migrate ArcGIS Enterprise is that the new or destination system can be built and populated without making any changes to production. Content can be tested to verify success before switching over to the new environment. This approach also provides the flexibility to move web adaptors that have been deployed on Enterprise components to a separate web server, which simplifies future scaling.

The WebGISDr utility **requires** **certain prerequisites** for use in migrating from one set of machines to another. Those details are laid out in the ***Must this item or setting be identical across deployments when running the webgisdr utility?* table found** [in the documentation](https://enterprise.arcgis.com/en/portal/10.8/administer/windows/overview-disaster-recovery-replication.htm).

A screenshot of a computer

Description automatically generated

The **primary** settings that must be **identical between the original environment and the new environment** are the ***public URL*** through which users access the ArcGIS Enterprise portal, and the external ***services URLs used to federate ArcGIS Server sites with the portal*.** These are typically addressed through a single DNS.

Although this image is outdated, the logic remains the same.

### Provision Servers

* Set up servers for the web server, portal, ArcGIS server, and data store.
* Add necessary entries to the etc/hosts file on each server**.**
* You essentially put the WebAdaptor machine IP address, followed by tab, followed by the domain.
* Click save as 🡪 place on desktop 🡪 it will save as .txt - edit the name and get rid of the file extension 🡪 place back in the host file location and override original file.
* You will have to do these steps for every machine in the enterprise.

**When the Public URL/DNS is encountered on any of the destination components, the request is routed to the destination web server via the hosts file instead of doing a DNS lookup and finding the Origin system.**

**To test the destination after upgrade, access must occur the destination servers or from a machine that has the entry in the etc/hosts file.**

**To further illustrate, the following graphics represents Origin and Destination systems:**

A white and blue poster with text and icons

Description automatically generated with medium confidence

A diagram of a computer server

Description automatically generated

### Configure Web Server

* Acquire and install certificates.
* The certificate must include the servers fdqn of the migration destination.
* Bind certificates to port 443.
* Install and configure web adaptors.
* Add antivirus / firewall exceptions for ArcGIS components.
* Whitelist ArcGIS online for portal and server machines

### Install ArcGIS Enterprise Components

* Ensure directory names and locations match the original setup.
* Install necessary binaries, patches, and additional components.
* Install DBMS client on server
* Install Insights on portal and server
* Upload zipped database client to server via admin console for insights

### Configure Components

* Install and configure certificates on all machines.
* Register data stores and federate the hosting server with the portal.
* Configure the portal for Integrated Windows Authentication.

### Prepare for Import

* Create locations for backup and intermediate files.
* Ensure permissions and accessibility via UNC path.
* Configure WebGIS DR properties for import.

### Prep the Origin System

Ensure read-only is turn on the Portal. Turning on read-only mode ensures that the state of content within a deployment (or origin) system is frozen at a point in time during which the backup is created. This backup is then used to migrate content to the destination system.

Read-only mode prohibits anyone (including administrators!) from creating, modifying, or deleting content within the deployment, or making any administrative changes. Read more about read-only mode here.

* Remove improperly federated servers and clean up unnecessary services.
* Set the origin portal to read-only mode.
* Back up the origin using the WebGIS DR utility.

### Restore to Destination

* Move the backup to a shared location on the destination.
* Restore using the WebGIS DR utility.

A diagram of a computer system

Description automatically generated

## Final Testing and Validation

### Redirect DNS

* Remove hosts file entries from destination machines.
* Redirect DNS from the origin to the destination.

### Decommission Origin

* Decommission the original system after successful migration and DNS redirection.

A blue and grey paper with text

Description automatically generated with medium confidence

Subsequently, new components can be added to the migrated system

A diagram of a computer server

Description automatically generated

###### References

**Migration Blog**

[Migrate to a new machine in ArcGIS Enterprise using the WebGIS DR tool (esri.com)](https://www.esri.com/arcgis-blog/products/arcgis-enterprise/administration/migrate-to-a-new-machine-in-arcgis-enterprise-two/)

**Disaster and Recovery**

https://enterprise.arcgis.com/en/portal/10.8/administer/windows/overview-disaster-recovery-replication.htm