Data Store Management Best Practices

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Session Agenda

1. Overview
2. Installation and Configuration
3. Backing up the data store
4. Restoring the data store
5. Moving data store to a new machine
6. Upgrading
7. Questions
Overview
ArcGIS Enterprise = ArcGIS Web Adaptor + Portal for ArcGIS + ArcGIS Server + ArcGIS Data Store
ArcGIS Enterprise = ArcGIS Web Adaptor + Portal for ArcGIS + ArcGIS Server + ArcGIS Data Store
Web GIS Deployment Patterns

Begin with ArcGIS Online & SaaS

ArcGIS Enterprise

Customer Managed Infrastructure
- On-premises
- Private Cloud
- Public Cloud
  (AWS, Azure, others)
- Managed Services

Begin with ArcGIS Enterprise & Software

ArcGIS Online

Basemaps & Content Services
Understanding Data Stores

• **ArcGIS Server data store concept**
  - Valid location that contains data used for web services
  - Read/write by the ArcGIS Server service account
  - Two types: Folders and Databases
  - Define via ArcGIS Server Manager or Desktop

• **ArcGIS Data Store**
  - Separate software installation; available since 10.3
  - Used to configure and deploy a hosting server configuration with Portal for ArcGIS
ArcGIS Data Store Types

- **Relational Data Store**
  - Hosted feature services, managed by Portal and ArcGIS Server

- **Tile Cache Data Store**
  - Publish scene layers, not Hosted tile services

- **Spatiotemporal Big Data Store**
  - Archive observation data streamed when using ArcGIS GeoEvent Server.
  - Stores output from GeoAnalytics Server tools
## Functionality ArcGIS Data Store provides

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Data store type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publish scene layers</td>
<td>Tile cache and relational data store</td>
</tr>
<tr>
<td>Editor tracking, ownership-based access control</td>
<td>Relational data store</td>
</tr>
<tr>
<td>Enable or disable attachments</td>
<td>Relational data store</td>
</tr>
<tr>
<td>Publish an empty hosted feature layer</td>
<td>Relational data store</td>
</tr>
<tr>
<td>Publish thousands of hosted feature layers</td>
<td>Relational data store</td>
</tr>
<tr>
<td>Create feature templates</td>
<td>Relational data store</td>
</tr>
<tr>
<td>Calculate values for a field</td>
<td>Relational data store</td>
</tr>
<tr>
<td>Publish a hosted tile layer</td>
<td>Relational data store</td>
</tr>
<tr>
<td>Archive observation data streamed when using ArcGIS GeoEvent Server.</td>
<td>Spatiotemporal big data store</td>
</tr>
<tr>
<td>Feature analysis tools</td>
<td>Relational data store</td>
</tr>
<tr>
<td>GeoAnalytics Tools</td>
<td>Spatiotemporal big data store and relational data store</td>
</tr>
<tr>
<td>Raster analysis tools</td>
<td>Relational data store</td>
</tr>
</tbody>
</table>

Apps that utilize the ArcGIS Data store include Insights for ArcGIS, Survey 123 for ArcGIS, Geoplanner for ArcGIS, Workforce for ArcGIS
Installation and Configuration
Starting at 10.4, ArcGIS Data Store installs using an OS or Domain service account.

In a distributed server environment, the ArcGIS Data Store should be installed with fast network access to ArcGIS Server. Portal for ArcGIS does not communicate directly with the ArcGIS Data Store; only ArcGIS for Server does.

ArcGIS Data Store Ports: 2443 (HTTPS), 9876 (TCP)
- Tile cache data store: 29080 (HTTP), 29081 (HTTPS)
- Spatiotemporal big data store: 9220, 9320

Configure with ArcGIS Server via web browser or a command line utility

Supports availability via a Primary and Standby node
Installation and Configuration

- Estimate amount of disk space to account for installation, configuration, and data
  - Minimum requirement for one empty data store type is 13 GB of available disk space
    - This does not include data
    - ReadOnly mode threshold - Data stores placed in read-only mode or stopped when machine disk space drops below threshold

- Data stores by their nature store large volumes of data
  - Install on drive with plenty of free space

- Spatiotemporal big data store
  - Should be installed on dedicated machines
  - Install on robust machines with significant amounts of available RAM
    - By default consumes 50 percent of available memory

- Create a Domain service account in advance of installation to support network backup operations
Ability to configure all data store types from Data Store Wizard
Data Store Configuration Wizard

- Option to configure additional data store types later

Configuration Summary

Your ArcGIS Data Store configuration is ready to be completed.

GIS Server URL: https://data0135.esri.com/6443
Content Directory: C:\arcsdis\data STORE
High Availability Role (Relational): Primary
High Availability Role (Tile Cache): Primary

Click Finish to create the ArcGIS Data Store and configure it with your ArcGIS Server site.

Configuration Status

The following component(s) of ArcGIS Data Store are configured with ArcGIS Server site(s).
- Relational
- Tile Cache

To complete the configuration process, you must now federate the ArcGIS Server site with your Portal and set it as the hosting server.

Please sign in to your Portal as an administrator and navigate to My Organization > Edit Settings > Servers. Use the Add Server option to federate the site. Then set the site as the hosting server and click Save.

Configure Additional Data Stores
Data Store Configuration Wizard

- Configuring the spatiotemporal big data store
Installing a standby relational and tile cache data store for high availability

- Validate ports are open to second server
- Install ArcGIS Data Store on second server using same Domain Account as Primary Data Store
- Configure ArcGIS Data Store to same ArcGIS Server site
- Verify the Configuration Summary knows that this is a Standby Data Store
Sample Highly Available ArcGIS Server Hosting Site

Network Load Balancer

Web Servers with ArcGIS Web Adaptor

ArcGIS Server Hosting Site

Network File Share for site Config-Store

Spatiotemporal Big Data Store

Primary ArcGIS Relational Data Store

Standby ArcGIS Relational Data Store

Network File Share for Data Store Backups
Backing up the data store
Backups can be taken for all data store types at 10.5 and 10.5.1
- Backups grow and consume disk space over time
- Configure backup location to a shared drive
  - Ensure ArcGIS Data Store account has permissions on shared drive

Usage: configurebackuplocation --location <backup-location> [configure-backup-location-options]
Supported configure-backup-location-options:
  [--operation <change | register | unregister>]
  [--store <relational | tileCache | spatiotemporal>]
  [--prompt <yes|no>]

Usage: backupdatastore [backup-name] [--store <relational|tileCache|spatiotemporal>]
  [--prompt <yes|no>]

Backing up the data store

Memanagement of ESRI ArcGIS Data Store backups.
**Backing up the data store**

- Backup schedule and retain days
- Default values at 10.5.1
  - retain days 7, backup schedule every 4 days

Usage: `updatebackupretainedays <num-of-days>`

Usage: `updatebackupschedule [--store relational| tileCache| spatiotemporal]`  
<--frequency num-of-days> [--starttime HH:MM:SS]
**Backing up the data store**

- Considerations for enabling / disabling point-in-time recovery for relational data store
  - Less disk space required if disabled
    - Disabled by default at 10.5.1
  - Point-in-time needed for WebGISDr tool

Usage: `changedbproperties --store <relational|tileCache|spatiotemporal> [configure-options]`

Supported configure-options:

- `--disk-threshold-readonly <disk-threshold-readonly>`
- `--max-connections <max-connection-number>`
- `--pitr <enable|disable>`
- `--heap-size <heap-size-in-MB>`
- `--rebalance <true|false>`
- `--max-rebalance-off <time-in-minutes>`
- `--allocation <true|false>`
- `--prompt <yes|no>`
Exports and backups

- Advantages and differences prior to 10.5.1
- 10.5.1 default behavior

Usage: exportmanageddb <destination> <backupName> [backup-options]

Supported backup-options:

|--stores [relational], [tileCache]
|--include-tilecache <true|false>
|--prompt <yes|no>
Restoring the data store
Restoring the data store

- Restoring options
  - Restoreddatastore
  - importmanageddb (prior to 10.5.10)

Usage: restoredatastore[restore-options]
Supported restore-options (Time need be in UTC):

- `[--store relational|tileCache|spatiotemporal]`
- `[--target most-recent|yyyy-mm-dd-hh:mm:ss|source-backup-name]`
- `[--source-loc <source-backup-loc>]`
- `[--bound <true|false>]`
- `[--data-dir <data_dir>]`
- `[--server-url <server_url>]`
- `[--server-admin <admin_user>]`
- `[--server-password <admin_password>]`
- `[--loaddata true|false]`
- `[--prompt <yes|no>]`
Moving to the data store to a new machine
Moving ArcGIS Data Store to a different server

- There are times when organizations may need to move the ArcGIS Data Store content to a different server, such as a server hardware upgrade.

- Steps
  - Install ArcGIS Data Store on new server
  - Configure relational ArcGIS data store to ArcGIS Server site as standby Data Store
  - Once configured and data is fully replicated, promote the standby Data Store to primary
  - Remove the standby data store from the site (the original primary)
  - Uninstall Data Store software from original server; decommission.
Demo

Command Line Utilities
Upgrading
Considerations Before Upgrading

- ArcGIS Server must be upgraded before ArcGIS Data Store
- Stop service and copy entire content directory to a safe location
- Generate an export via exportmanageddb command line utility
  Usage: exportmanagedb <destination> <backupName> [backup-options]
  Supported backup-options:
  [--stores [relational],[,][tileCache]
  [--include-tilecache <true|false>]
  [--prompt <yes|no>]

- For relational and tile cache, upgrade primary before standby
- For spatiotemporal
  - Stop all but one spatiotemporal data store, upgrade, and then subsequently start and upgrade the rest one-by-one
• Content directory is detected and greyed out
Data Store types to be upgraded are detected from configuration.
• Configuration summary and status provided

Configuration Summary

Your ArcGIS Data Store configuration is ready to be completed.

GIS Server URL: https://monterey7.esri.com
Content Directory: Shared\datastore
High Availability Role (Relational): Primary
High Availability Role (Tile Cache): Primary

Click Finish to create the ArcGIS Data Store and configure it with your Server site.

Configuration Status

The following component(s) of ArcGIS Data Store are configured with ArcGIS Server site(s):
- Relational
- Tile Cache

To complete the configuration process, you must now federate the ArcGIS Server site with your Portal and set it as the hosting server.

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Configure Additional Data Stores
After Upgrading

- Run describedatastore command
- Validate data stores
  - https://gisserver.domain.com:6443/arcgis/admin/
- Verify services still work
QUESTIONS?
Want to learn more?

- ArcGIS Enterprise Showcase Area – Data Store topics
- ArcGIS Enterprise: Architecture Best Practices
  - Tuesday 10:30am
- High Availability and Disaster Recovery for ArcGIS Enterprise
  - Tuesday 8:30am, Thursday 3:15pm
- Web GIS: Architectural Patterns and Practices
  - Tuesday 10:15am, Thursday 10:15am
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