Purpose

The Purpose of this document is to guide publishers in establishing capabilities for a web service that would accompany a Geospatial Commons Resource, such as this dataset, which could be utilized in web applications in order to reduce unnecessary duplication of data on systems. It is intended to reflect the general needs of the Minnesota geospatial community in making maps, reports, and cartographic products that use data from publishers on the Geospatial Commons. It is **not** intended as a "standard", but only as general guidance for publishers: if a service is delivered alongside a dataset (which itself is not required), please consider meeting these capabilities on behalf of the community.

Service Capabilities

General Description

In general, when an "average" or "typical" GIS or IT professional requests to have data available "in a service", this typically means the following technical capabilities:

- Web accessible
- Discoverable and/or usable in desktop or web (SAAS) clients
- Minimum of Map/Query capabilities
- Feature-level access desirable if possible

These users are often leveraging SAAS GIS platforms such as ArcGIS Online (AGOL), or desktop clients such as ArcGIS Desktop and QGIS. In some cases, they are application developers that need spatial services such as "point in poly" lookups or general data overlays for web maps.

This is a general, but not all-encompassing definition. Additional assumptions about these uses are detailed in subsequent sections.

Scope

The following services are considered "in scope" for this document:

- Services that deliver geospatial data over the web for mapping, querying, and other capabilities. In other words, an extension of *data* resources.

The following services are considered "out of scope" for this project:

- Services that deliver non-spatial data over the web
- Services that provide other spatial capabilities, such as geocoding or geoprocessing (such services, if published, would likely be published under their own resource). These types of service may of course be published on the Commons, but are out of scope for this particular document.
- Basemap or Imagery services (which are widely accessible from a large variety of sources – and could also be their own resource if published). Typically these services are well-defined by the publisher and user needs are simpler.

While the above three instances are considered "services", they are not what the typical user is seeking in the applicable use cases. Geoprocessing and basemap services are also inherently "better defined" given the capabilities they support.

Recommended Capabilities

The Geospatial Commons Team recommends the following capabilities and protocols for such a service:

- Capabilities
    - Mapping, including Operations of:
        - Map: "display" or export map image (GetMap in WMS terms)
        - Query: "identify" by geometry (GetFeatureInfo in WMS terms)
        - Data: "find" or select by attributes (GetFeature in WFS terms)
    - Description (GetCapabilities in WMS terms)
- Request Protocols
    - REST or SOAP

Notes on Publishing Methods:

Any method that can produce a service that meets the recommendations is acceptable. For example, publishers should be able to meet the recommendations with a variety of software such as Esri ArcGIS Server, MN MapServer, or GeoServer. (For the purposes of this guidance, producing a WMS service with GeoServer will be considered a "RESTful service", meeting the required request protocols – even though a WMS is different than what users expect with an Esri REST service.)

Note also that if using technology like GeoServer, the publisher needs to enable both WMS and WFS to meet the minimum recommendation. In contrast, ArcGIS Server can meet the minimum with only "Map Services", keeping "Feature services" optional (see below).

Optional Capabilities

The following capabilities and delivery methods are considered optional for these services:

- Capabilities

    - Feature access. Map and Query access by itself is preferable to no service-level access at all. Additional feature-level access can then be driven by customer needs and/or publisher willingness to bear the potential additional costs.[1]
    - Downloads "solely from the service" (downloads from the Commons should cover this use case)
    - KML support
- Delivery/Rendering
    - Caching
    - Vector Tiles

Unsupported Capabilities

The following capabilities are considered out of scope for the purposes of this document:

- **Secure Access.** Any service containing sensitive data and therefore requiring secure access via authentication mechanisms[2] may be *discoverable* (via metadata) on the Commons, but is generally not *directly linked from* the Commons due to publisher expectations. "Secure services" typically require more detailed requirements and are out of scope for this project.
- **Dedicated access and support.** Applications requiring service level authorization (SLA) agreements on uptime, recovery, and other metrics are out of scope for this project. These requirements are instead intended to describe "use at own risk", general access services for individuals to use with non-critical applications such as analysis and exploration.

Related Information

See also:

- Naming Convention Guidance
- Best Practices and Naming Conventions Document

[1] When assessing the costs of a typical service, feature access should probably be included or itemized, since this capability is likely to be frequently requested by users.
[2] "Secure", for the purposes of this document, means requiring authentication via login. In contrast, HTTPS access by default is certainly acceptable – and often expected – with these services. But delivery over HTTPS does not always require a login, hence the distinction.