Geo-CDN Helps Enhance GIS Service Access Efficiency

CDN (Content Delivery Network) technology is often used to address website access quality problems caused by lack of network bandwidth, physical distances and other factors. In fact, in the GIS industry, we will also encounter similar problems. How to solve these problems?

One method that has been widely used by web maps is the direct application of generic CDN in GIS application systems. However, this approach has its limitations to GIS services considering the characteristics of GIS services. Is there a better solution?

SuperMap GIS introduced a more efficient and professional solution--Geo-CDN! You will be surprised by the acceleration effects and enhanced experience of GIS services when you employ this solution.

Then what is Geo-CDN? Why do we need it? What can it do?

GIS Application Status

1. Massive data quantity & special data formats including fundamental geographic information data, satellite imagery, 3D terrain, etc.

2. Deployment structure of GIS application currently employed can easily cause network traffic and low access quality

3. There are some limitations if we apply generic CDN to GIS:
   - From the aspect of tile delivery, generic CND can only deliver tiles by pages, causing trouble for tile resource management.
   - From the aspect of delivery content, generic CDN technology can only cache and deliver static webpages and pictures. For GIS, we still need to cache and deliver 3D contents, query and analysis results, etc., where generic CDN absolutely cannot satisfy all the requirements of cloud GIS center.

How to solve these problems?

Geo-CDN

Geo-CND is the delivery technology with geographic information as content. It is CDN technology that can directionally deliver map tiles in batch and can cache query and analysis results.

One Geo-CDN system is often composed of a central node and multiple delivery nodes. Central node is responsible for global management and control. Delivery node is responsible for responding to the requests of users. Delivery nodes are often large
in number and geographically distributed. Delivery nodes can provide contents for nearby users.

Geo-CDN employed special GIS delivery servers to proxy and cache GIS services, therefore, accelerating GIS service access.

Why do we need Geo-CDN?

Geo-CDN is more professional in the acceleration mechanism. Compared to generic CDN, it is more suitable for GIS because it can be employed to accelerate map, 3D, query, analysis GIS services.

Geo-CDN is more intelligent in cache delivery mechanism. Geo-CDN can push contents to delivery nodes from central node or delivery nodes can pull contents from central node. Contents can be delivered according to time and region. More than that, cache stored in relational database or distributed database can be delivered.
Support for accelerating asynchronous systems. Geo-CDN node servers can proxy and publish services and tiles of multiple standards, and can also publish proxy services as services of multiple standards for various platforms.

Support for publishing services after aggregation. Geo-CDN node servers can aggregate GIS services of multiple sources and publish them as a new GIS service.

How can Geo-CDN handle GIS service request from users for speeding?

① The browser sends a domain parsing request to Geo-CDN dedicated DNS server.

② DNS server sends back the IP address of the load balancing device to the browser as parsing results.

③ The browser sends a content request to the load balancing device.

④ After receiving the request, the load balancing device will select the optimal delivery server according to multiple strategies and redirect the request to the selected server.
⑤ The optimal server will respond to the request and send the results back to the load balancing device.

⑥ The load balancing device sends back the results to the browser.

Construct Geo-CDN based on SuperMap iExpress

As a professional GIS delivery server, SuperMap iExpress can proxy multiple types of GIS services and cache map resources from various sources, providing intelligent cache delivery and update strategy and bringing clients with efficient GIS services any time.

1. Intelligent Tile Delivery and Update Strategy

   --Cache Delivery

   ◆ **Nodes**, supports manually setting to deliver tiles to delivery nodes of specified area.

   ◆ **Time**, supports automatic delivery of tiles at specified time, allowing users to assign idle time as delivery time.

   ◆ **Tiles**, supports deliver tiles for specified maps, tile package sources, scales, geographic bounds or area.

   --Cache Update

   ◆ **Manually push and update tiles**

   ◆ **Automatic tile update**, which allows users to set periodic and regular update at GIS central server.

   ◆ **Active child node update**, regenerates cache tiles for updated data on Geo-CDN delivery servers directly.

2. Full Strategy Cache Acceleration
What Values can Geo-CDN bring to us?

**For GIS users:**
- Accelerated GIS service access
- Enhanced GIS service access quality

**For GIS service suppliers:**
- Self-constructed Geo-CDN with low cost
- Controllable Self-management

**For GIS industry:**
- Effective solution to enhance GIS service access efficiency