Design and Implementation of Geo-spatial server for Web Services

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Abstract : Recent advance of Web service technology is bringing about new requirements that intend to serve complex and huge volume of geo-spatial information via Web environment. Over the past few years, there was a great deal of efforts to serve vector-typed map and satellite imagery map via wired and wireless network. However, there were nearly case studies that can serve huge volume of geo-spatial data so far, because of the performance problem of Web service technology.

So, this paper introduces newly designed geo-spatial server that has characteristics of efficient performance on wired and wireless network environment. When designing such geo-spatial server, we should consider two important things. One is the interoperability that accommodates the international standards, and the other is the performance that can quickly serve huge volume of geo-spatial data. Therefore, design of such geo-spatial server basically apply the implementation specifications of OpenGIS Consortium(OGC) in order to satisfy interoperability and extensibility on the geo-spatial services. And, we use main-memory based technique in order to meet the performance of the server. Actually, we basically implements WMS, WFS, and WCS for the geo-spatial server that can serve various kinds of geo-spatial data such as image map of JPG, vector map of GML, and coverage data of GeoTIFF. Additionally, when implementing the server, we focus on the main-memory based geo-spatial server that can give fast responses to clients by removing loading time of geo-spatial data and conversion time from raw data to GML data. The main advantage of this geo-spatial server is that it can efficiently provide the integrated services of various kinds of geo-spatial data by using OGC specifications, and it can give fast responses to clients by using the main-memory based technique.