

# Local Region Caching to Support Object-Centered Constraints

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## Abstract

Object-centered constraints are a computationally practical type of constraint that can be defined on any network of data. If a current-element in the database can be identified, a local region about the current element can be cached so that the constraint violation detection algorithm used to incrementally enforce object-centered constraints will only access elements stored in the cache. Depending on the access pattern which determines the current element, the boundary of the current cache may be useful in determining what elements need to be added to the cache and what elements from the cache can be retired when the current element changes. The caching approach used here can support any application that uses a local region of a database and can reduce the time needed to support object-centered constraints.

**Keywords:** Cache, Constraints, Efficiency.

## 1 Motivation

Though incremental enforcement of object-centered constraints does not require global searches of a database, it may still require many page accesses and significant network traffic. A caching policy can be defined in such a way that all the data accesses for incremental constraint enforcement are against that cache. If a significant part of this cache can be kept in memory, this should significantly reduce the time needed for constraint enforcement.

This caching policy is to cache a local region based on adjacency from a current element. This policy is very effective not only for supporting object-centered constraints, but also for any operations that require a local region of data about a current-element. In this context, a current-element is the element which is being operated on. This definition is taken from both the areas of hypermedia and network databases. Such problems include fish-eye views in hypermedia and showing the local area of a map in GIS.