Market Requirements Document

Feature Name: Scalable Associations

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Description of the Problem

Background

Associations (also known as Relationships in Objectivity for Java) are currently implemented using a single logical slot (VArray) to hold the links from one object to others.

Problem

The whole of a VArray has to be read into memory before any element can be accessed. This has several problems:

1) If there is insufficient virtual memory (RAM plus swap space) the operation will fail.
2) Adding a new link to the end of a large VArray involves reading in the whole slot first. It may occupy many physical pages, considerably slowing the operation.
3) Iterating through a high cardinality association cannot start until the whole VArray has been read in.

Description of the Requested Feature

1. An option to automatically change the underlying array from a VArray to a Large VArray (LVArray), which can be accessed in segments of a designated size or number of entries. Directly indexing to the Nth entry would compute the location of the appropriate segment and read it in before accessing the entry.
2. The ability to add a new association link by reading and updating only the tail segment of the LVArray.
3. The ability to specify a streaming mode for accessing the LVArray, where the current segment is replaced by the next segment (from first to last, or head to tail), as an iterator moves forward through the link entries.

Part of an existing feature or does it require another feature, if so, which one?

1. Ideally, the current ooLVArray would be enhanced to support the above functionality, as originally intended, and the scalable association would simply use the above functionality.

How is this problem being solved now, and why isn't that acceptable?

Users are writing their own scalable associations or using scalable collections.

What languages must support this capability?

- All APIs, starting with C++, Java and .Net for C#.

Which platforms must be supported?

- All platforms.

Do any competitors already have this feature?

- ObjectStore can directly represent arrays of objects.

Customers who require this feature

- VLDB customers.
- Any application that has high cardinality associations.

Revenue at risk, or which could be won

- This is primarily a matter of improving the advertised scalability of the product

When is this required?

- Post Release 10.

Additional Notes

1. We will also need:

    - Marketing collateral, including promotional material and a special area on our web site.
    - Technical Publications.

- New QA material to prove that the API works and is interoperable with other platform and language combinations.