FarSight: Application for Remote Visualization
Svetlana Shasharina, Robert Eger, John Cary
Tech-X Corporation
5541 Central Avenue, Suite 135, Boulder, CO 80301

Visualization is increasingly important for understanding the large 3D data sets produced by high-performance computing. Such data sets are easily multiple gigabytes per slice. Transferring such files is problematic in terms of data transfer speed and also in data storage. In this situation, remote visualization is needed.

Our application FarSight addresses this need. FarSight is a CORBA-based client/server application designed to allow scientists to perform analysis and visualization of data on remote hosts and manipulate the results locally. FarSight is very user-friendly: it completely hides the complexity of the CORBA middleware and provides an intuitive graphical user interface to its full functionality.

The application’s C++ server provides a mechanism for running data analysis and visualization tools that are collocated with the server, such as IDL and OpenDX, and maintains connections with multiple clients. Using standard CORBA mechanisms, the analysis and visualization scripts are transferred from the clients to the server, get executed there and create visualization objects. These objects, rather than the original large datasets, are then transferred to the client sites using scp, which provides the needed level of security (as opposed to http).

The client is a Java application, which provides an interface for local creation and editing of the visualization scripts and remote execution of them on the server, as well as viewing the images output by them.

Currently, the output visualization objects can be exported as VRML files. After transferring to the clients, these files are stored on their local machine for viewing via an integrated VRML viewer. Viewing and manipulating VRML objects located on remote sites via X is very slow, to the point of being unusable. Transfer of the file to a local machine gives fast response to user clicks and mouse manipulations of the image.

Another feature of FarSight is the ability to start and shut down the server remotely from within the client application via a friendly graphical interface. This is accomplished by logging into the remote host via ssh with the user’s login and password, then remotely executing the startup script. This functionality is not typical for CORBA applications but is needed here, as it eliminates the need for the server to be running on the remote host all the time, as well as the need for the user to login using a separate ssh window to start the server. Server output is displayed in a dialog window for the user to see.

We will present the status of the FarSight project and demo its capabilities.