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Bringing Legacy Visualization Software to Modern Computing Devices via Application Streaming

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Planning software compatibility across forthcoming generations of computing platforms is a problem commonly encountered in software engineering and development. While this problem can affect any class of software, data analysis and visualization programs are particularly vulnerable. This is due in part to their inherent dependency on specialized hardware and computing environments.

A number of strategies and tools have been designed to aid software engineers with this task. While generally embraced by developers at 'traditional' software companies, these methodologies are often dismissed by the scientific software community as unwieldy, inefficient and unnecessary. As a result, many important and storied scientific software packages can struggle to adapt to a new computing environment; for example, one in which much work is carried out on sub-laptop devices (such as tablets and smartphones). Rewriting these packages for a new platform often requires significant investment in terms of development time and developer expertise. In many cases, porting older software to modern devices is neither practical nor possible. As a result, replacement software must be developed from scratch, wasting resources better spent on other projects.

Enabled largely by the rapid rise and adoption of cloud computing platforms, 'Application Streaming' technologies allow legacy visualization and analysis software to be operated wholly from a client device (be it laptop, tablet or smartphone) while retaining full functionality and interactivity. It mitigates much of the developer effort required by other more traditional methods while simultaneously reducing the time it takes to bring the software to a new platform.

This work will provide an overview of Application Streaming and how it compares against other technologies which allow scientific visualization software to be executed from a remote computer. We will discuss the functionality and limitations of existing application streaming frameworks and how a developer might prepare their software for application streaming. We will also examine the secondary benefits realized by moving legacy software to the cloud. Finally, we will examine the process by which a legacy Java application, the Integrated Data Viewer (IDV), is to be adapted for tablet computing via Application Streaming.