Unidata's Vision for Transforming Geoscience by Moving Data Services and Software to the Cloud

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Universities are facing many challenges: shrinking budgets, rapidly evolving information technologies, exploding data volumes, multidisciplinary science requirements, and high expectations from students who have grown up with smartphones and tablets. These changes are upending traditional approaches to accessing and using data and software.

Unidata recognizes that its products and services must evolve to support new approaches to research and education. After years of hype and ambiguity, cloud computing is maturing in usability in many areas of science and education, bringing the benefits of virtualized and elastic remote services to infrastructure, software, computation, and data. Cloud environments reduce the amount of time and money spent to procure, install, and maintain new hardware and software, and reduce costs through resource pooling and shared infrastructure. Cloud services aimed at providing any resource, at any time, from any place, using any device are increasingly being embraced by all types of organizations.

Given this trend and the enormous potential of cloud-based services, Unidata is taking moving to augment its products, services, data delivery mechanisms and applications to align with the cloud-computing paradigm. Specifically, Unidata is working toward establishing a community-based development environment that supports the creation and use of software services to build end-to-end data workflows. The design encourages the creation of services that can be broken into small, independent chunks that provide simple capabilities. Chunks could be used individually to perform a task, or chained into simple or elaborate workflows. The services will also be portable in the form of downloadable Unidata-in-a-box virtual images, allowing their use in researchers' own cloud-based computing environments.

In this talk, we present a vision for Unidata's future in a cloud-enabled data services and discuss our ongoing efforts to deploy a suite of Unidata data services and tools in the Amazon EC2 and Microsoft Azure cloud environments, including the transfer of real-time meteorological data into its cloud instances, product generation using those data, and the deployment of TDS, McIDAS ADDE and AWIPS II data servers and the Integrated Data Server visualization tool.