

Introduction: We built Artificial Intelligence Application and Data Platform (AIADP) in February 2018. The platform is composed of 48 computing nodes, 380 NVIDIA P100 GPUs, whose double-float performance is 1.8PF and the single-float performance is 3.6PF. At present, there are more than 200 users from a variety of disciplines and fields such as physics, materials, biology, and meteorology. In future, We will integrate massive computing resources to the platform and continue to provide RESTful APIs, Web Gateway, and Command Line Interface (CLI) for users.

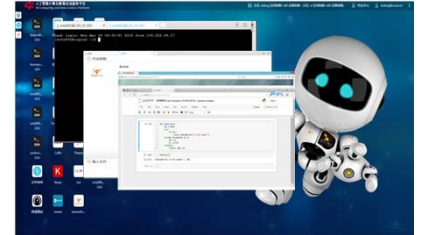


Fig. 1 different ways of use AIADP

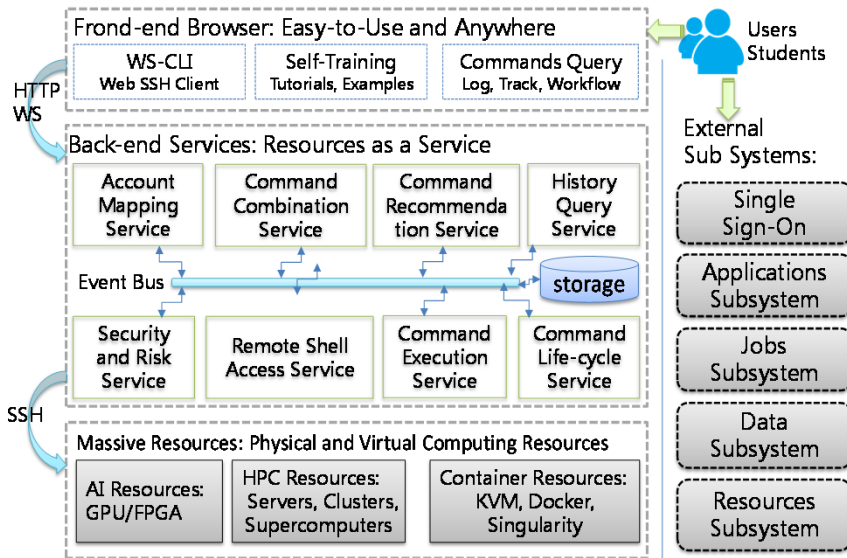


Fig. 2 architecture and functional models of WEBCLI

Key Issues: CLI is still a powerful and flexible tool today, but it has the sharp learning curve because: 1) it is not easy to install a shell client and configure runtime environment for VPN, security and so on; 2) it is difficult to learn and master lots of commands.

Overview: Based on web service and event bus technologies, we proposed a simple and effective solution to smooth the sharp learning curve of CLI and will finally provide an easy-to-use web CLI (WEBCLI) for beginners and professional users on AIADP. Based on WEBCLI, a user can login CLI to access heterogeneous resources, query history commands in detail, and track each step of a workflow in browser anytime and anywhere.

Primary Web Services: All web services in the backend of WEBCLI are designed on reactive pattern, and connected by event bus on which there are command events and status events to communicate between services and the frontend in browser.

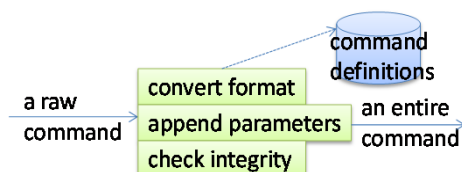


Fig. 3 command combination service

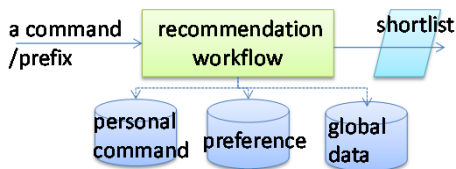


Fig. 4 command recommendation service

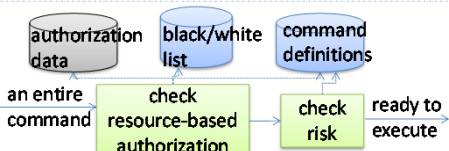


Fig. 5 security and risk service

Typical Scenarios: WEBCLI could be used to training for students, try for beginners, and daily use for users. For the first time, an account of WEBCLI is needed to be mapped to an account of the computing resource.

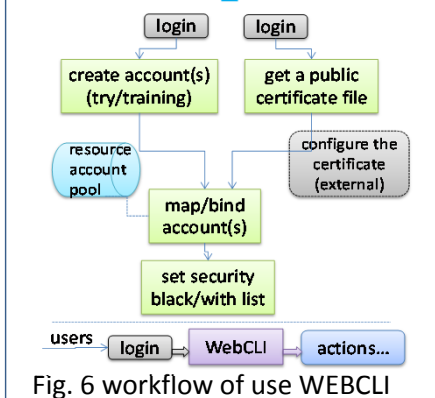


Fig. 6 workflow of use WEBCLI

Usability: Users can login and access heterogeneous computing resources via a shell embeded in browser without installing and configuring complicated runtime environment for a shell client. More importantly, WEBCLI could help users write and complete complicated commands, options and parameters.

Security: Each command is carefully checked whether it complies with syntax, exists possible risks, and has permission to execute in WEBCLI. In addition, WEBCLI also provides simple and sufficient logs for users to track what they did.

Conclusions: Based on Eclipse Vert.x and xterm.js, a prototype was implemented and deployed. It shows that WEBCLI is a simple and flexible toolkit that lowers barriers to use a shell. In future, we will continue to extend the prototype WEBCLI to a productive system on the AI platform.

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