Enabling the Creation of Dynamic Globus Endpoints on AWS via CloudyCluster

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Motivation

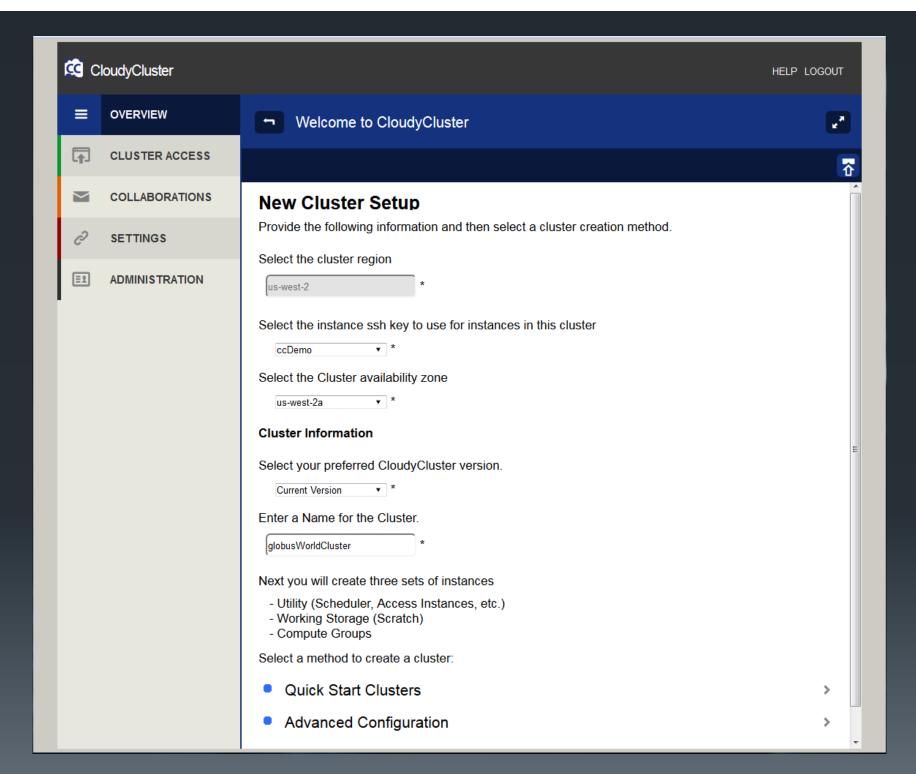
- Many researchers do not have adequate access to HPC resources exactly when they need it
- Steep learning curve associated with Cloud Providers researchers do not have time to learn how to use these services
- Data transfer to Cloud Provider Resources can be complex for researchers with little system administration experience

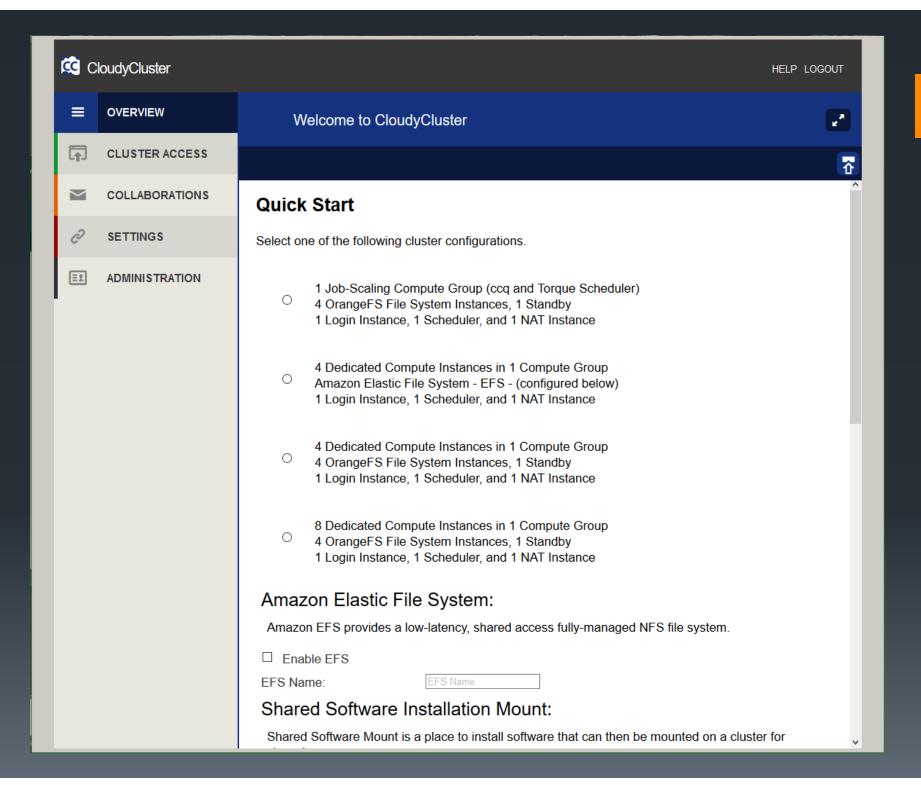
Amazon Web Services (AWS) Overview

- Amazon Web Services (AWS) are a collection of services that allow users to allocate resources within the Amazon cloud
- Provide a number of different computing services such as database systems, virtual servers, identity and access management, data storage, and many others
- Pay-as-you-go services so that the user only pays for what they use
- Most services are charged on an hourly basis

CloudyCluster Overview

- Simple Web Based UI for creating dynamic fully operational HPC Clusters on demand within AWS without in depth knowledge of AWS
- Medium size clusters can be created within 20 minutes
- Standard suite of HPC Software pre-configured and installed
- Automated Globus Endpoint Creation for easy data transfer to and from the Cluster
- High availability OrangeFS Parallel Filesystem and/or a Scratch
 Filesystem preconfigured and automatically mounted





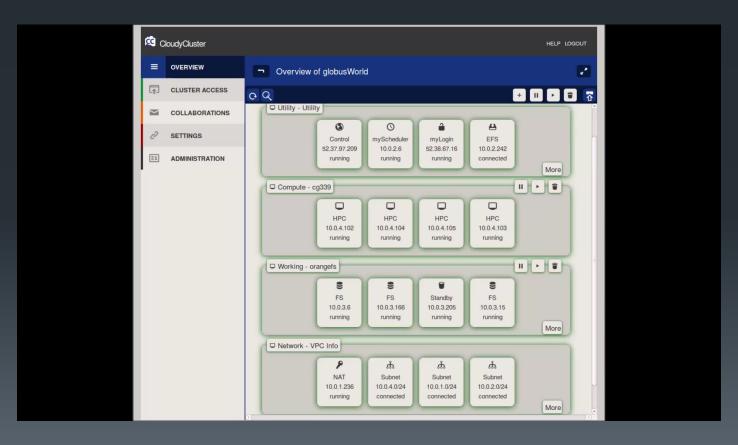
Dynamic Globus Endpoint Creation

- Ul driven Dynamic Globus Endpoint Creation
- All the user has to do is enter their Globus credentials in the CloudyCluster UI and activate the endpoint in Globus
- Endpoints are created within 3-5 minutes
- Allows transfer of data directly to the Cluster's shared filesystem(s)
- Allows researchers with little Globus administration experience to utilize all of the Globus features on their own Cluster

Dynamic Globus Endpoint Creation

- Globus Endpoints are created on a per Cluster basis
- Extra Globus transfer nodes can be added for faster parallel transfers
- All AWS Security Group and firewall entries are created dynamically
- Utilizes OAuth for Globus Endpoint Activation and all authentication is done locally on the Cluster

Demo



Conclusion

- Allow researchers access to on demand HPC clusters exactly when they need it
- Clusters and Globus Endpoints are available in minutes
- Minimal AWS knowledge required for creating HPC Clusters within AWS
- Dynamic Globus Endpoint Generation allows for easy data transfer to and from the Cluster
- Researchers can now focus more on their research instead of how to obtain the HPC environment that they need

Questions?

Thank you!
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