Fast Track to the Cloud
Design Patterns for 12-Factor Earth Sciences Applications

As expanding service offerings and decreasing prices make the cloud increasingly attractive to Earth Science applications, there are nontrivial practical considerations which can hinder its meaningful use. In this talk, we will discuss architectural recommendations and lessons learned while working on EOSDIS’ cloud efforts, particularly the NASA-compliant General Application Platform (NGAP) and its associated applications. Prominent in our findings is the importance of 12-factor design patterns and the powerful “wins” they enable in the cloud. We will share our strategies for “fast-tracking” applications to the cloud -- whether they be legacy, planned for the future, or somewhere in between.

Key patterns we will discuss that have significant effect on the ability to effectively onboard existing applications to a cloud platform include:

**Codebase:** All code for an application should be in revision control.

**Config:** Store all of the application’s configuration in the environment rather than in static configuration files.

**Disposability:** Startups and shutdowns should be graceful (even when unexpected) and as fast as possible.

**Processes:** All application processes should be stateless, and nothing is shared. Data is either completely transient or stored in a data store.

**Dev/Prod Parity:** Code deployed to a dev. environment should be deployable to operations with only configuration changes.

**Optimizer Application Workflow:**

This material is based upon work supported by the National Aeronautics and Space Administration under Contract Number NNG15HZ39C

NASA Official: Christopher S. Lynnes | Christopher.S.Lynnes@nasa.gov

https://ntrs.nasa.gov/search.jsp?R=20160014647 2020-04-27T09:19:35+00:00Z