GlideinWMS Overview

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- Why GlideinWMS?
- GlideinWMS Architecture
- Summary

U.S. DEPARTMENT OF ENERGY

Fermilab

Why GlideinWMS?

Running Application Workflows -

- Local Computing Facilities -- Accessible but LIMITED RESOURCES
  - Familiar setup & interface -- Commonly, Condor Batch System
  - In case of problems, assistance easily accessible
    … BUT …
  - Local clusters maybe limited & busy when you need them
- Grid Computing -- WILD WILD WEST but Virtually Infinite Resources
  - Different administrative boundaries
  - Heterogeneous Resources
  - Some sites maintained well compared to others
    … BUT …
  - Large number of opportunistic computing cycles available for use
- Computing Clouds -- NEW KID IN TOWN
  - Similar to Grid Sites but well maintained
  - NOT FREE

GlideinWMS

- Pilot-based WMS that creates *on demand* a *dynamically-sized overlay condor batch system* on Grid & Cloud resources to address the complex needs of VOs in running application workflows

GlideinWMS Architecture

Components

1. Glidein Factory & WMS Pool
2. VO Frontend
3. Condor Central Manager & Scheduler

GlideinWMS in Action

On Demand

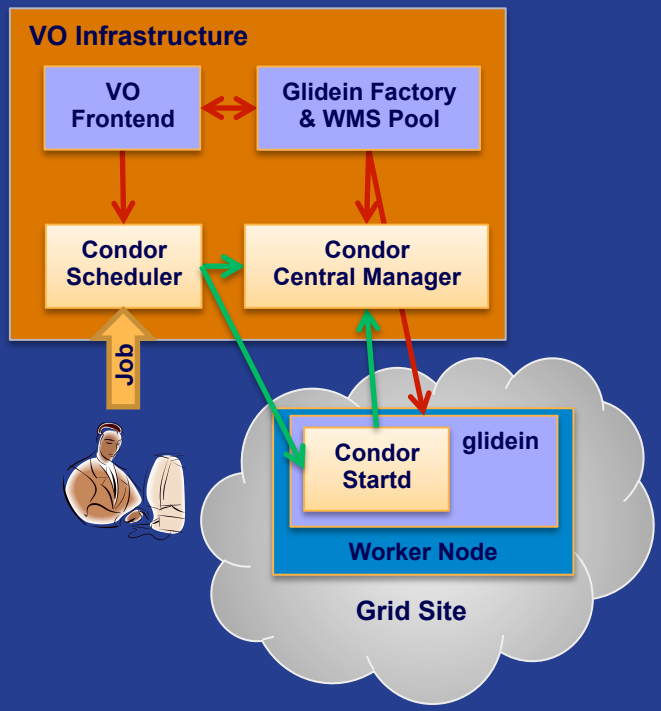
1. User submits a job
2. VO Frontend periodically queries the condor pool and requests factory to submit glideins

Dynamically Sized

3. Factory looks up the requests and submits glideins to WMS Pool
4. Glidein starts running on a worker node at a Grid site
5. Glidein performs the required validation and on success starts condor startd

Overlay Condor Batch System

6. Condor startd reports to collector
7. Job runs on this resource as any other Condor batch job
8. On job completion, glidein exits and relinquishes the worker node



Simplifying Grids & Clouds for Users

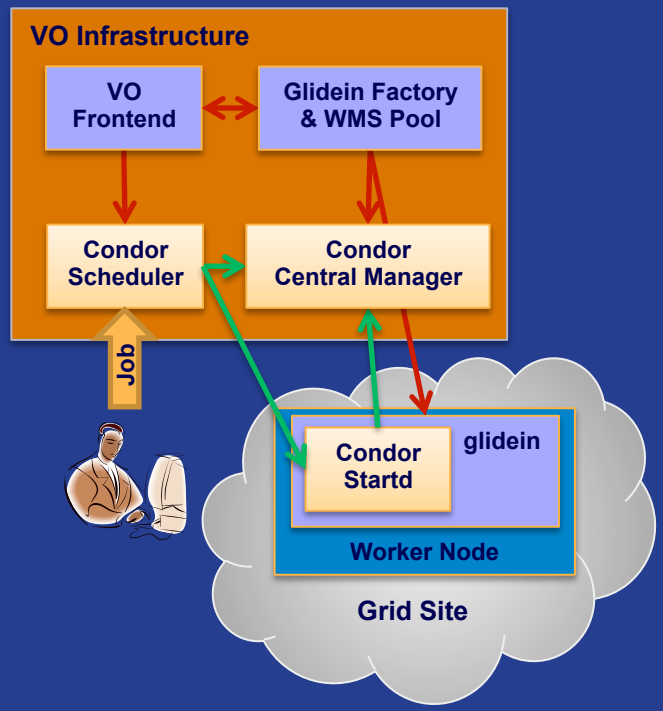
From the User's point of view –

- Users interface to Condor batch system
- Users with existing Condor-ready jobs can submit them to the grid sites and clouds with no or minimal changes
- GlideinWMS shields the user from interfacing directly with the grid sites and clouds
- Glidein validates the node before running a user job; reducing the failure rate of user jobs

From VO's point of view –

- Can prioritize jobs from different users
- Operate VO Frontend service & the Condor Pool (and optionally Glidein Factory + WMS Pool)
- Can use existing Glidein Factories operated by REX@FNAL or OSG

Users focus on Science while operations team support the operations !



User Community and Releases

- Big user community
  - CMS
  - Run II Experiments : CDF & DZero
  - Intensity Frontier Experiments
  - Cosmic Frontier Experiments
  - Several OSG VOs
    - Centrally administered OSG Glidein factories at UCSD & GOC each supporting 180+ entries
- Releases: Stable and Development Series
  - Production/Stable Series: v2.7 series (Latest release - 2.7.1)
    - Major performance and scaling improvements for the factory to scale with increasing number of entries
  - Development Series: 3.0
    - Releases are *stable but bleeding edge*
    - Version 3.1 to be released ***soon*** ™
      - Beta testing
      - Includes features up to v2.7.1
      - Several enhancements and improved support for Cloud

Summary

- GlideinWMS
  - Pilot-based WMS
  - Creates on demand & dynamically-sized overlay condor batch system on Grid & Cloud resources
  - Shields users from interfacing directly with the grid sites and clouds by providing condor batch system like interface to the grid/cloud
- Support Mailing list: glideinwms-support@fnal.gov
- http://www.uscms.org/SoftwareComputing/Grid/WMS/glideinWMS/