

2011 OSG Summer School

A peek behind the scenes

The life of an OSG job

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Summary of past lessons

- HTC is maximizing CPU use over long periods
 - And getting lots of computation done
- DHTC is HTC over many sites
 - Using an overlay system makes life easier
- Each compute sites is independent
 - Local authentication and authorization
 - Local HTC systems
- Cloud similar to Grid in many ways

The Open Science Grid⁽¹⁾

- OSG is an umbrella organization
 - Does **not** write software
 - Does **not** own compute resources
- OSG negotiates between affected parties and sets standards:
 - x.509+VOMS for authentication and authorization
 - Globus GT2 for Grid CE technology
 - A standard software distribution



The Open Science Grid⁽²⁾

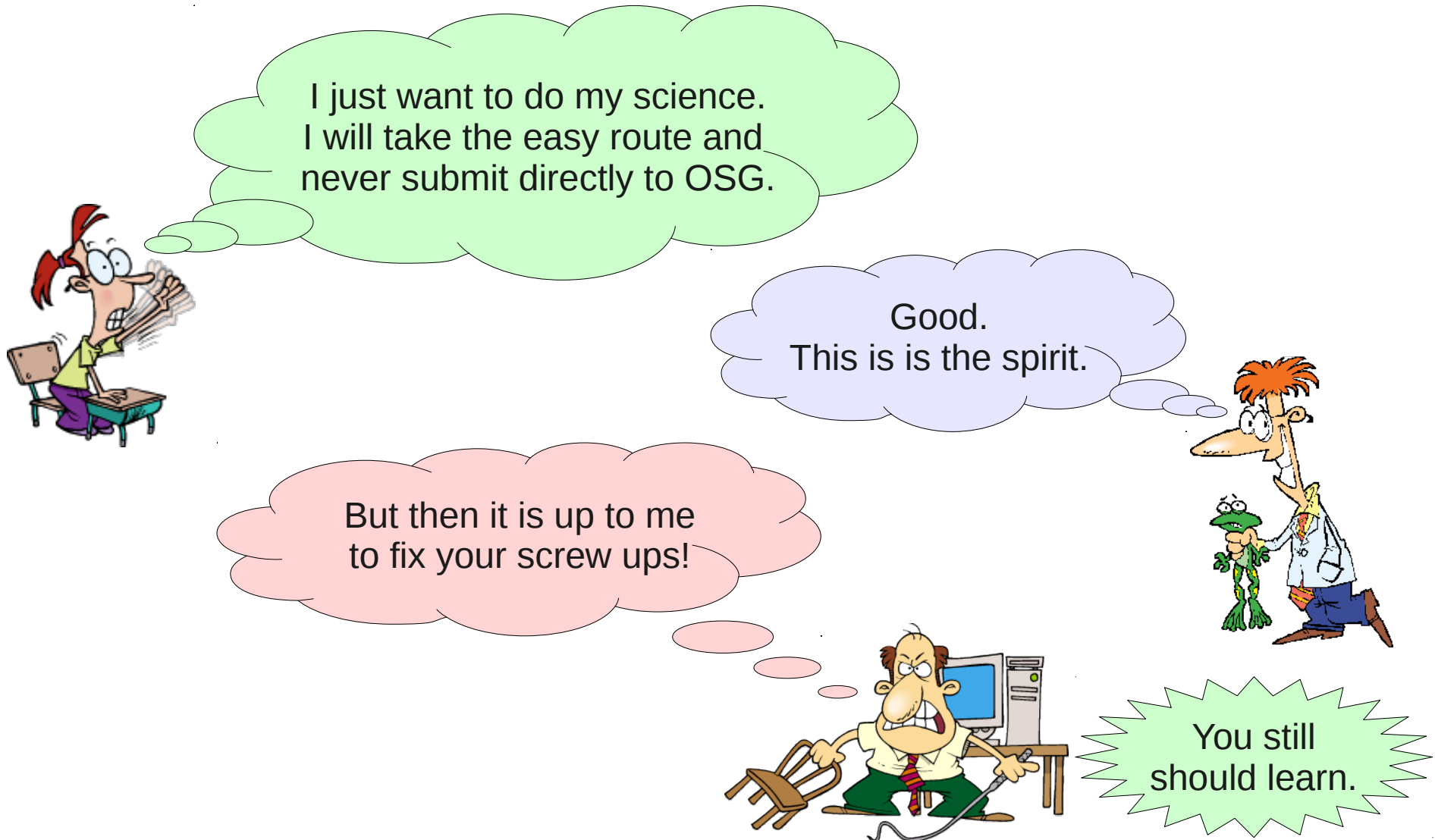
- OSG runs common services
 - Troubleshooting
 - Information services
 - Accounting services
 - A glidein factory



Running on OSG

- The easiest way is to join an existing OSG VO and use instructions they have
 - Most VOs quite mature at this point, with good procedures in place
- 2nd easiest thing is install a Condor overlay pool and hook up to the OSG glidein factory
 - Factory admins will do a large fraction of the Grid-related tasks for you
- But there is also the direct submission path
 - You may want to do something new

Are we done for the day?



The life of an OSG job

Using OSG directly

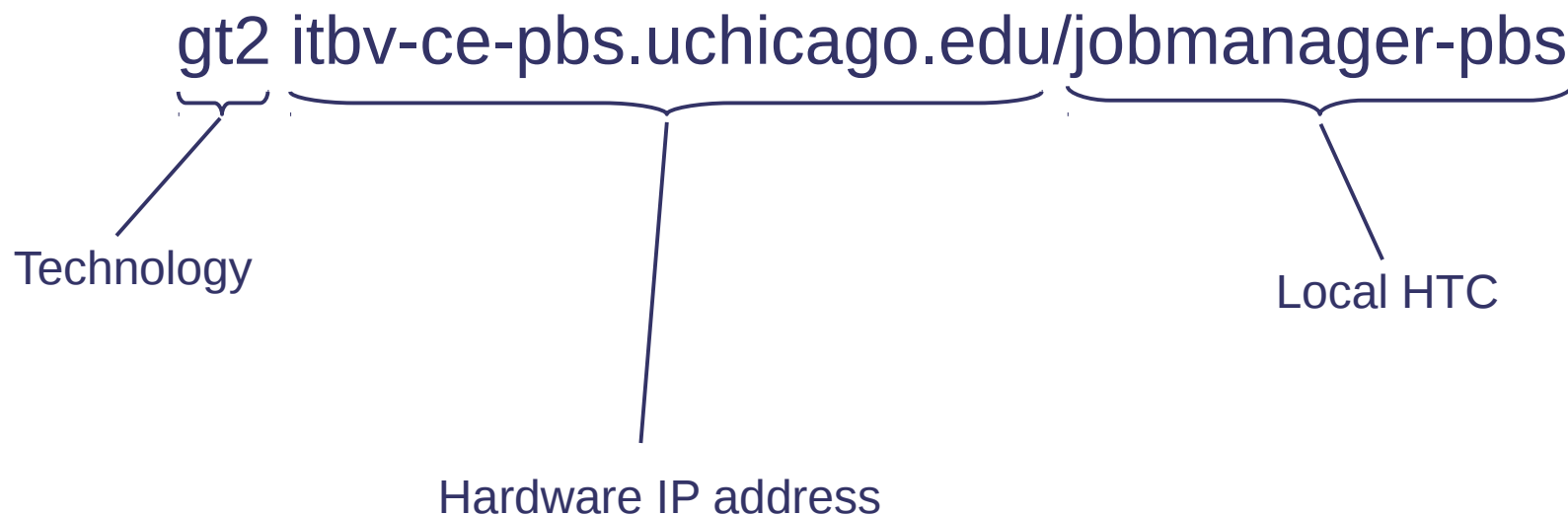
Because knowing the details
helps you make better decisions

OSG job basics

- Always use Condor-G
 - Direct use of Globus client tools not scalable
- Know how to discover which sites support your VO
 - Not everybody will let you in
- Know what to do when things go wrong
 - Within a large (D)HTC system, something will occasionally go wrong!

Using an OSG CE

- We have seen how to use Condor-G this morning



There are a few more knobs, but we can ignore them

The jobmanager


- Globus by default uses *jobmanager-fork*
 - Jobs run directly on the CE node
- Users must explicitly specify the proper jobmanager to get into the HTC system
- *jobmanager-fork* useful just for basic testing
 - e.g. if my proxy is authorized

Finding sites to use

- You should start with a couple friendly sites
 - They will tell you how to talk to them
 - Will help you debug the initial problems
- But when you want to go bigger, you need an information system that will tell you what is out there
 - OSG provides a BDII information system

OSG BDII

- LDAP based
<http://en.wikipedia.org/wiki/LDAP>
- The data is structured using the GLUE schema
<http://vdt.cs.wisc.edu/components/glue-schema.html>
- It will tell you which sites (claim to) support you, plus
 - CE URL
 - Site description



More in the
hands-on session.

Job errors

- Many possible error sources
 - Authentication/authorization
 - Jobs never start
 - Jobs fail without any output coming back
 - Wrong OS
 - Missing libraries (or other files)

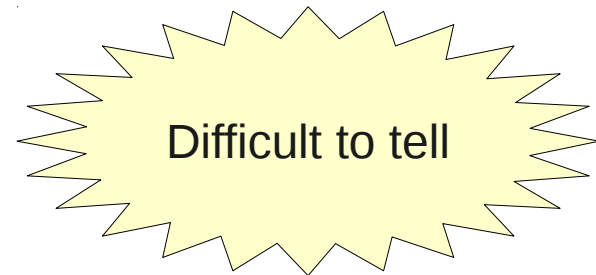


Auth errors

- Possible causes:
 - Site is not interested in supporting you
 - Misconfigured site
 - Expired proxy
- Difficult to debug
 - First rule of security is to give the attacker as little info as possible
 - Even if the “attacker” is a legitimate user!

Jobs never start

- Could be a legitimate situation
 - Other users just have higher priority than you!
 - Not completely unusual when you are an opportunistic user
- But can be a site problem
 - Misconfiguration
 - CE “forgets” about your job



Jobs failing without output

- Black hole effect
 - Typically a broken worker node (HW problems, misconfiguration, etc.)
 - Can “eat” hundred of jobs before being detected (and it may not be easy to detect!)
- Pilot paradigm helps here
 - Little damage if pilots are “eaten”

Wrong OS

- You may compile for a Red Hat Linux 5, but land on Ubuntu (or even Windows)
- Could be your fault
 - Site clearly advertised it was a Windows site
- But could be a site problem
 - Mistakenly re-installed a worker node from the wrong CD
- Pilot paradigm again can help
 - Pilot setup not site controlled

Missing libs/files

- Sites don't advertise what files you will find on a worker node
 - At best you can make a good guess
- Particularly problematic first time you use a site
 - Or have not used it for a while
 - But there are also the broken/missconfig. nodes
- Once again, pilots can help
 - Discover and publish what files are available

Troubleshooting

- Most of the time, you cannot fix the problem yourself
 - Some help from the site admin will be needed
- Too many sites to know all admins
 - Use the GOC (Grid Operations Center)
goc@opensciencegrid.org
<https://ticket.grid.iu.edu/goc/open>
 - They will route your request to the right people

Get your hands dirty

- This is all the theory I want you to know
- Exercise time
- Feel free to ask question

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