



Open Science Grid

OSG Internal Review

March 14 2014

OSG Security Team

Mine Altunay



Our Mission

- Protecting OSG users and resources from security breaches
- Preventing loss of effort and resources due to security problems
- Making OSG resources easily accessible to users without compromising their security
- Being a security hub; disseminate security knowledge, best practices, and education



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Effort

Staff	Institution	Effort FTE
Anand Padmanabhan	NCSA	0.5
Kevin Hill	Fermilab	0.8
Igor Sfiligoi	UCSD	0.1
Mine Altunay	Fermilab	0.7
Total		2.1



Impact to Stakeholders

- Advances in identity and access control management. Impact on both NSF and DOE stakeholders.
- Transition of Certificate Service from DOEGrids CA to OSG CA. (DOE+NSF)
 - 5855 Host certificates
 - 1596 User certificates
 - OSG-Wide effort, drawn from operations, software, security teams, and more.
 - Big success!
 - OSG CA is in operation for almost a year now.



Impact to Stakeholders

- The biggest benefit of transitioning to OSG CA:
A thorough analysis of OSG infrastructure's access control needs and options.
 - Why do we need this many certificates?
 - Can we use a different, more user-friendly technology instead of certificates?
- Started two key projects:
 - Traceability of user jobs
 - Federated Identities



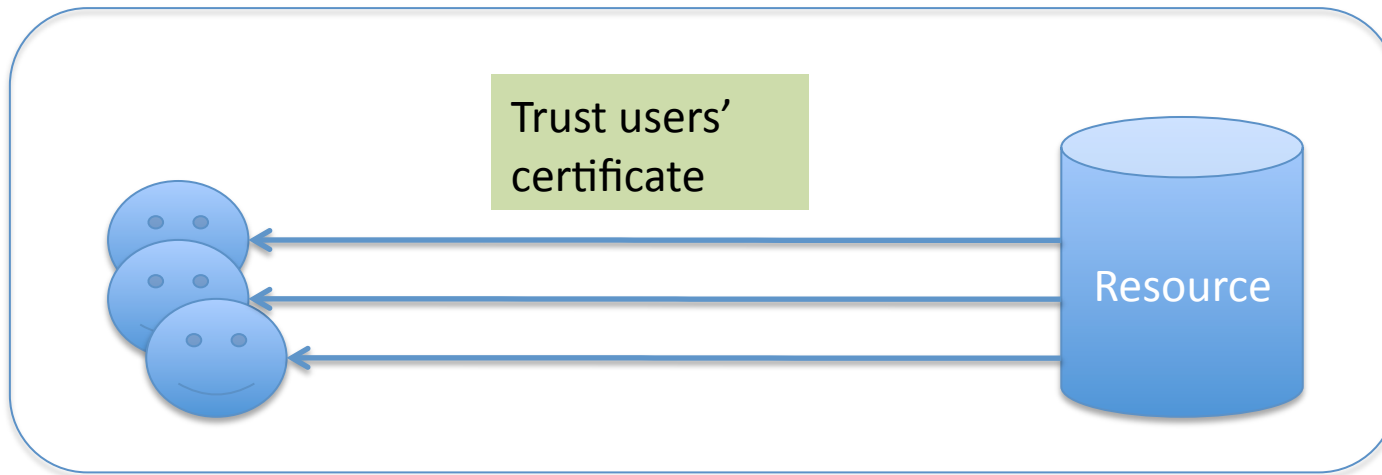
Traceability Project

- Traceability of User Jobs: Goal is eliminating end user certificates
 - Traceability = associating users with their jobs
 - Who owns this job? Can we answer this question without certificates?
 - Proved that GlideinWMS system can trace user jobs even without certificates.
 - OSG-XSEDE VO and GLOW VO are the first beneficiaries. Evaluated their user management practices and job submission systems

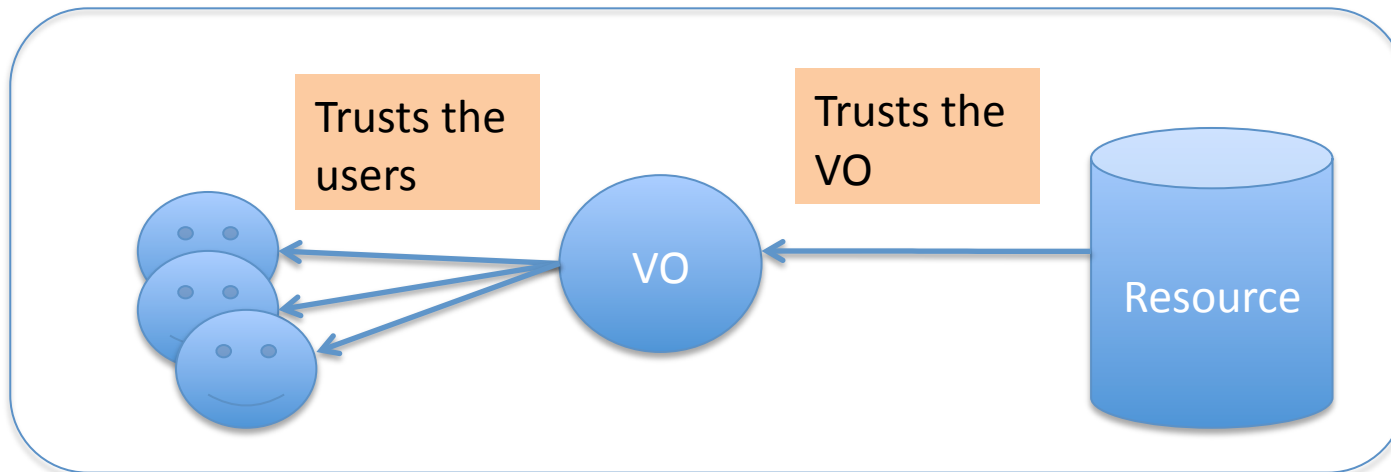


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Traceability Project: Changing Trust Relationships



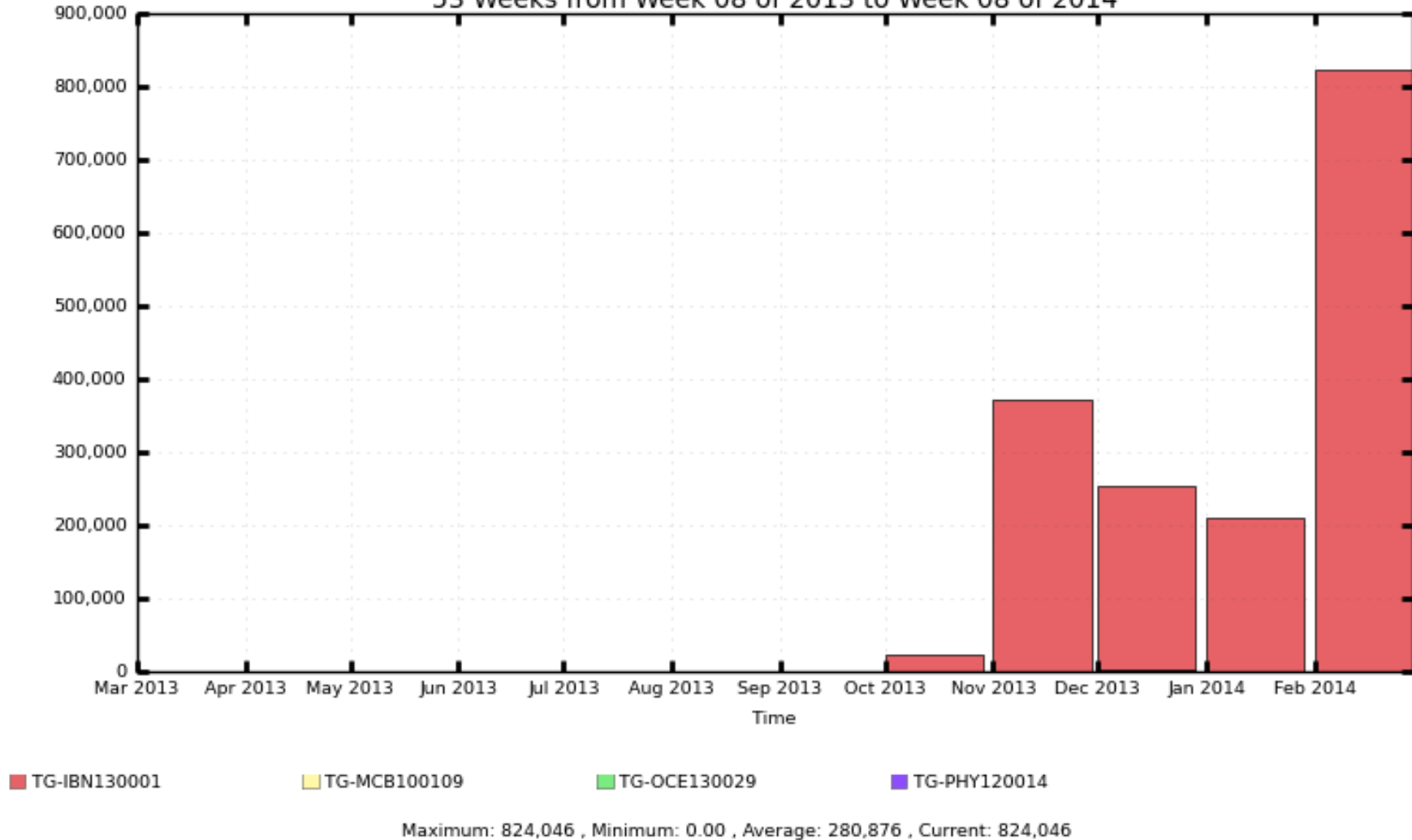
OLD
MODEL



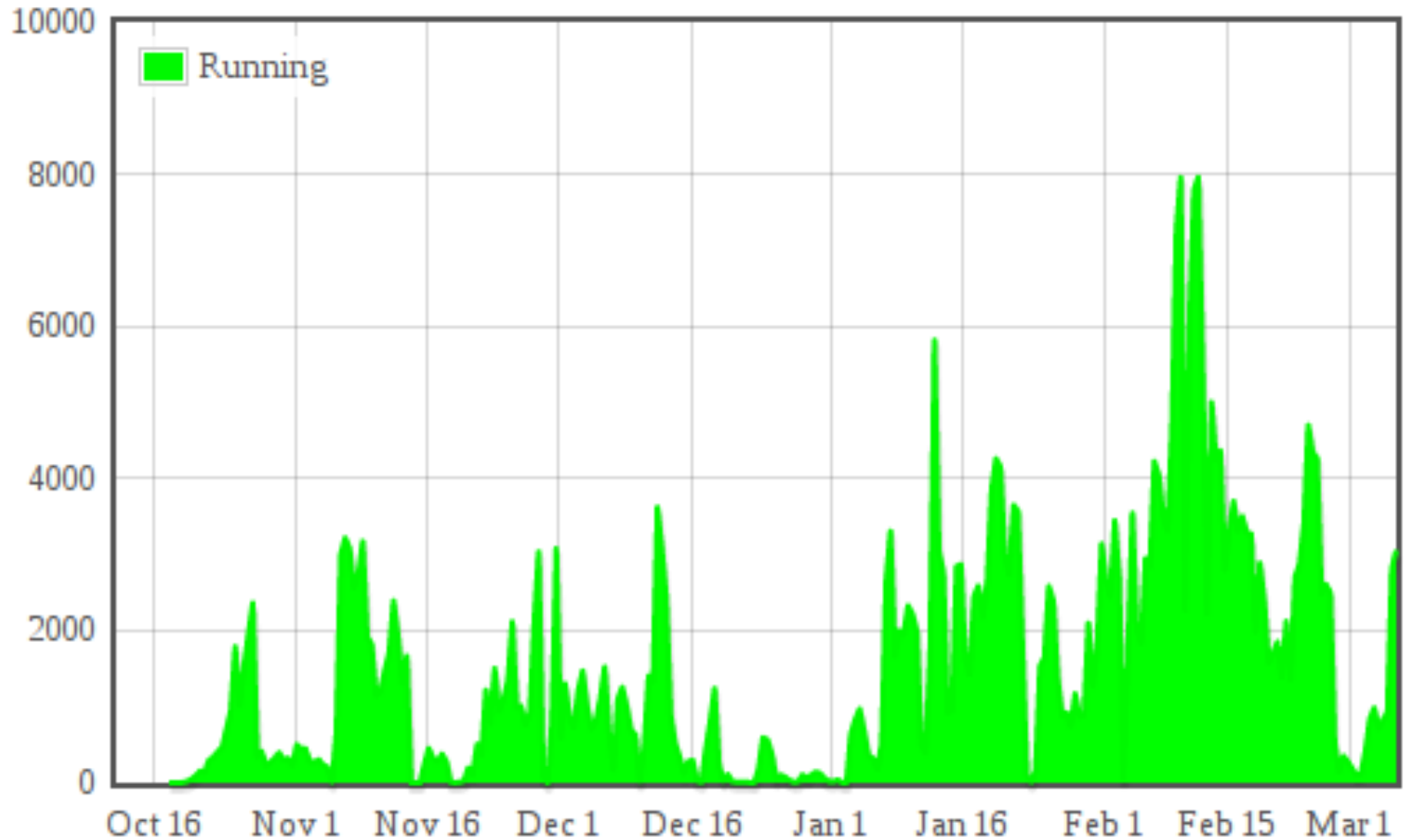
NEW
MODEL

Monthly Wall Hours per Project

53 Weeks from Week 08 of 2013 to Week 08 of 2014



Traceability project took effect in October for OSG-XSEDE
Sharp increase in computing usage after October 2013.



- Number of jobs from OSG VO including XSEDE project.
- Spike in # of jobs after Traceability project took effect.



Traceability Project

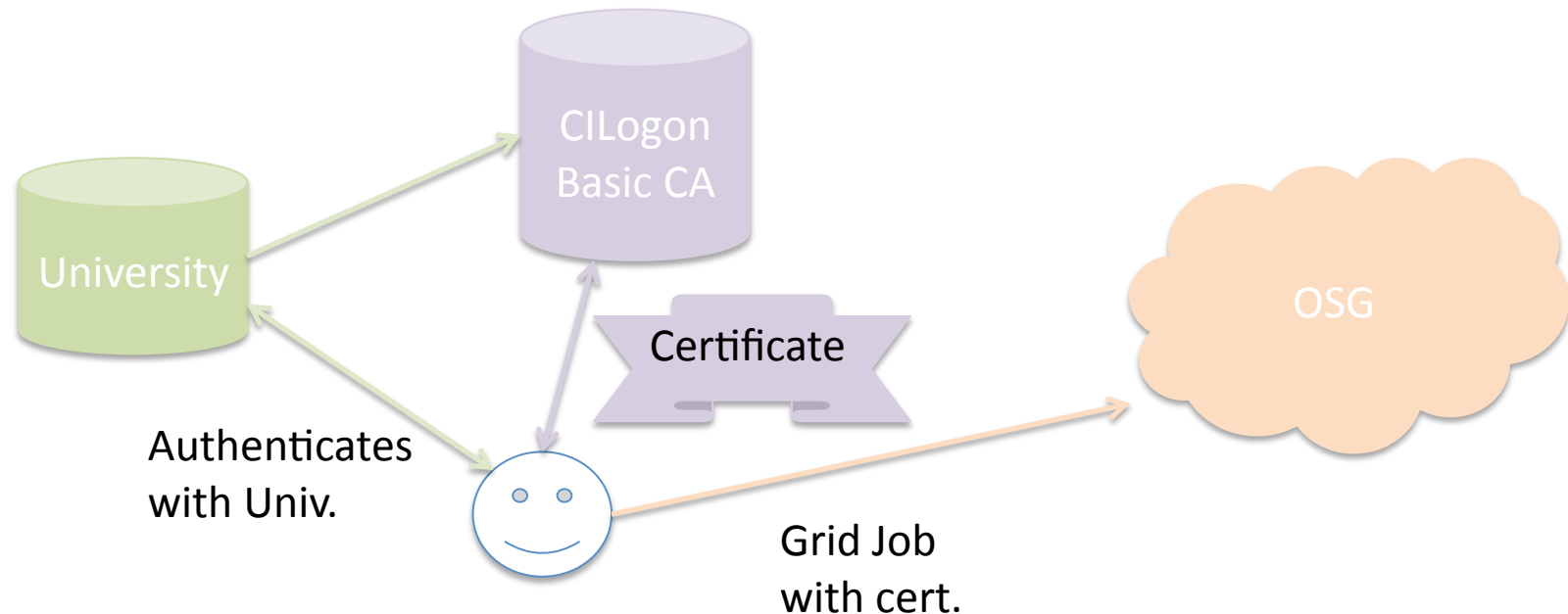
- GLOW VO will start submitting jobs without certificates to OSG, too.
- 607 users will start getting access to resources they could not get to before.
- Significant increase in computing availability.
- New VOs are signing up it.



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Federated Identities

- Federated Identities for access
 - For those users, who still need certificates
 - Providing certificates via their home organization
 - No need to get vetted by OSG to get a cert, users utilize their university accounts





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Federated Identities

- CILogon Basic CA is accepted at 6 OSG sites, Fermilab, Nebraska, UCSD and more, representing 40% of total wall clock hours available in OSG.
- Goal is to reach out to more sites.
- The challenges are that
 - CILogon Basic CA is not an accredited CA
 - It has a slightly different risk model
- So, sites are slower to adopt this CA and the federated identities represented by that.
- Helping sites by explaining the new risk model behind CILogon Basic CA.



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Operational Security

- Operational Security
 - Conducted incident drills that tested job submission systems (GlideinWMS) and personnel readiness
 - WLCG Security Drill
 - 10 CMS Tier-2s, GlideinWMS factory and submit host participated
 - All passed the test. Sites did well, GlideinWMS service operators did even better
 - Learned a lot about our capability to trace pilot jobs and regular jobs. Asked service operators to document how to trace jobs under different scenarios. Published the documentation on the twiki.
 - GlideinWMS is well equipped to trace and manage user jobs. Wished we had similar capabilities with regular job submission.



Operational Security

- Conducted security drills with OSG-XSEDE and GLOW VO to understand if they can give up using user certificates.
 - Both VOs proved that their policies and admins can trace users and up to the challenge



Operational Security

	Incidents	Vulnerabilities	Announcements	VO training
2012	1 incident on OSG systems	40 evaluated, not all directly related to grid sw.	11	N/A
2013	3 incidents all external to OSG reported by XSEDE	17 evaluated, not all directly related to grid sw.	8	6



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Findings

- Traceability project had the biggest impact on our community.
 - Eliminating certificates significantly increased user satisfaction and opened up new resources for the users.
 - We will continue and transition more VOs into this mode of operation.
- OSG CA transition was very useful to understand our infrastructure
 - Understood some users can completely get rid of certs
 - For other users, we pushed for federated ids.



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Findings

- Operational security has no problems
 - Getting prepared for our new certificate-free mode of operation.
 - Getting prepared for a slightly higher number of incidents
 - Working with the VO staff to take precautions.



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Challenges/ What Lies Ahead

- Goal is to shield users from certificates and offer more user friendly access control technologies.
- Certificate-free jobs was a big success, we want to repeat it for accessing storage
- Get more VOs to submit jobs without certificates
- Campus grid and federated identities. Utilize campus identities seamlessly in OSG.
- Further reducing the number of host certificates. Optimizations on osg software stack.
 - Can we completely get rid of them?