



# **Tier-3 in a box**

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# **In this talk T3 stands for site with no dedicated IT personell to support LHC computing.**

**There are no small T2s in the US.  
We want to reach all clusters at all Universities in the US  
that have LHC groups.**

**There's roughly ~80 such institutions.  
~50 of them have received NSF funding within the last few years  
to upgrade their networking.  
Many of them have shared University clusters of O(10k) cores or so.**



Open Science Grid

# **T3 must be supportable by University IT with no special LHC skills**



- We want T3s to have all the functionality they need.
- We want local people to benefit from all the local IT resources their University provides.
- We don't want to waste post-docs & graduate students on IT operations.

**Operating T3 should require only skills typical sysadmin has.  
“WLCG” services ought to be operated by “WLCG” people.**

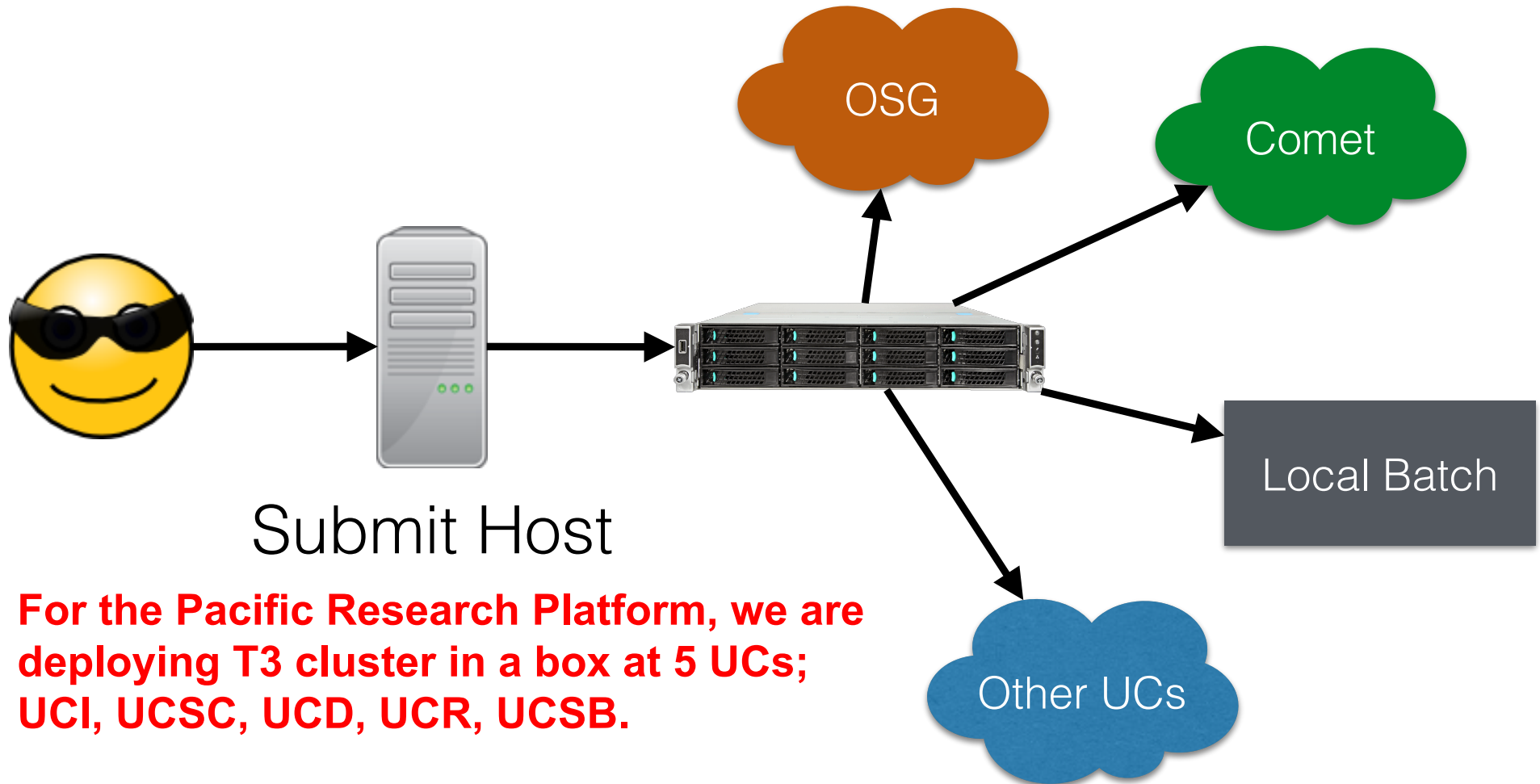


# Services a T3 needs



- Submit host to submit jobs to “batch system”
  - connected up to local and global resources
  - At UC this is also connected to SDSC Supercomputer
- CVMFS to have experiment software.
- Xrootd cache to cache files from experiment.
- Xrootd server to export private analysis ntuples.
  - server and cache connected up to global federation of the experiment supported at the site.

# T3 Cluster in a box



**For the Pacific Research Platform, we are deploying T3 cluster in a box at 5 UCs; UCI, UCSC, UCD, UCR, UCSB.**

**Experts operate the OS & services from remote. Local IT operates hardware & user accounts.**

# \$10k hardware we shipped

(aka the “brick”)



## Hardware:

- 40 cores
- 12 x 4TB data disks
- 128 GB ram
- 2 x 10 gbit network interface

## Software:

- Full HTCondor pool
- XRootD server, redirector, and proxy cache
- cvmfs w/ optional Squid

**Work with recipients on integrating the brick into the rest of their campus IT**



**Questions?**