

# OASIS:

## OSG Application Software Installation Service

Brian Bockelman, Jose Caballero, John De Stefano,  
John Hover, Robert Quick, Scott Teige

# Rationale

Open Science Grid (OSG) Virtual Organizations need to distribute application software across the grid in an easy, reliable, traceable, and secure way.

New software updates needs to be installed via an atomic operation, resulting in identical software at all sites, preferably able to roll back.

VOs must be protected from each other. VO Software Manager should be protected from themselves.

Bookkeeping/monitoring is desirable.

# Rationale

The traditional mechanism (site-by-site installation jobs which write to a site-provided shared area) has weaknesses:

- Requires significant VO infrastructure to install, test, and track status site-by-site.
- No logging, traceability
- Sites may end up inconsistent
- Installations may fail, leaving incomplete software at a site.

# Rationale

CvmFS has proven to be a robust distributed read-only filesystem. But its' design does not focus on the content-addition process:

- Requires a knowledgable user to add content.
- Requires access management. Local login.
- No safety net.

OASIS is a job installation management system surrounding CvmFS.

## OASIS: current service

Current OASIS hosted by OSG Grid Operations Center at Indiana University.

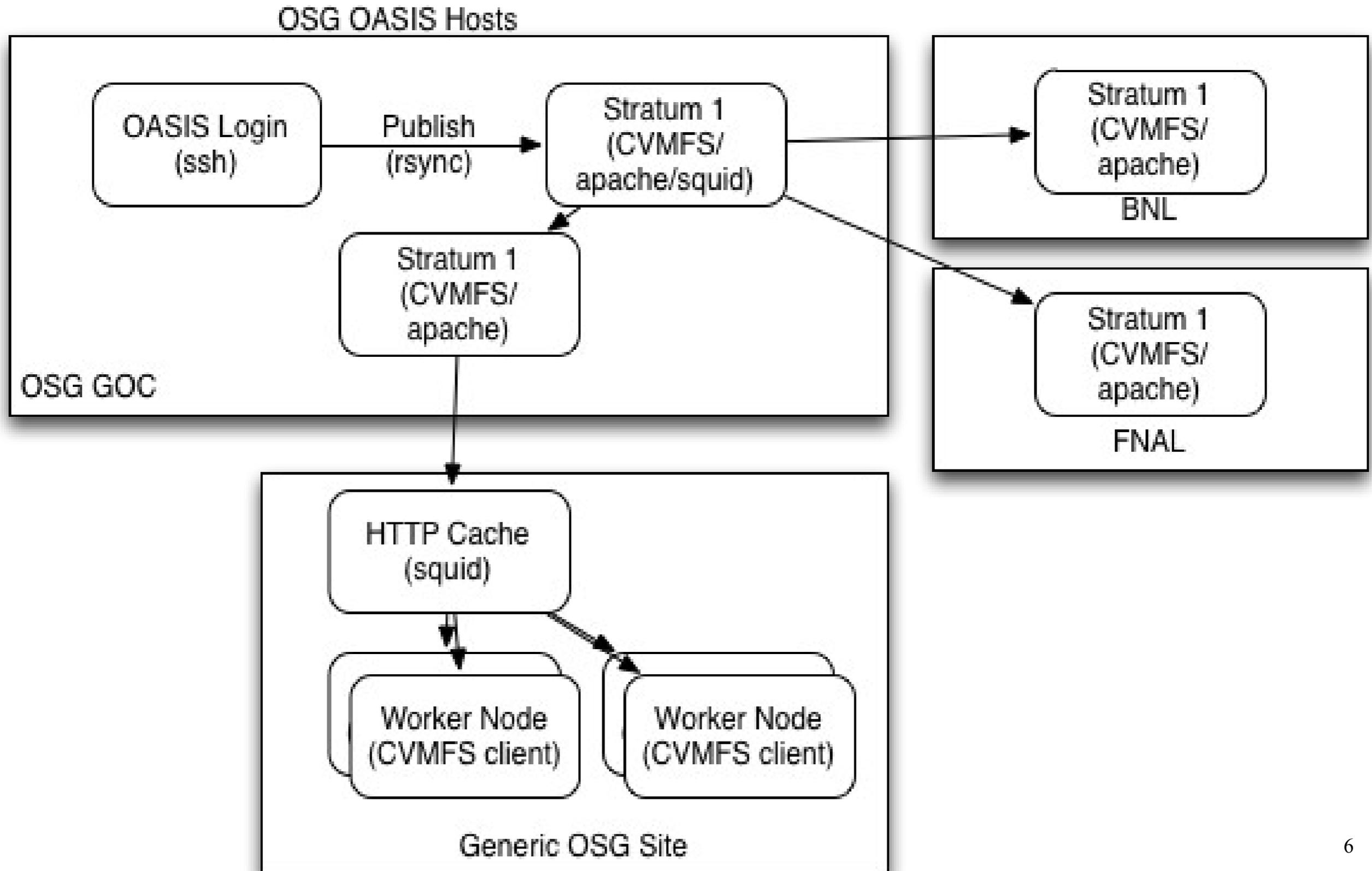
VOs are granted GSISSH login to a dedicated host. Access list (by DN) is managed by VOs in OIM.

VO software managers log in, install software, and issue ***osg-oasis***-\* wrapper scripts provided to insulate user from CvmFS commands.

Installation host separate from CvmFS host for functional isolation.

9 VOs are using the service at the time or writing this.

# Oasis: current service



# OASIS: new service

## Version 1 issues:

- V.1 publication is synchronous. Publishing failure can lock out other VOs. No per-VO rollback.
- Auth system independent from VOMS
- Not usable by VOs with automated installation frameworks.

## V.2 Features Rationale(s):

- VO separation: Multiple repos insulates VO from VO.
- Enable existing job-based (CE) installs to work unchanged, allowing existing VOs to directly switch to OASIS.
- Additional user insulation from underlying mechanism, via...
- Expandable fault-checking, installation processing.

# OASIS: new service

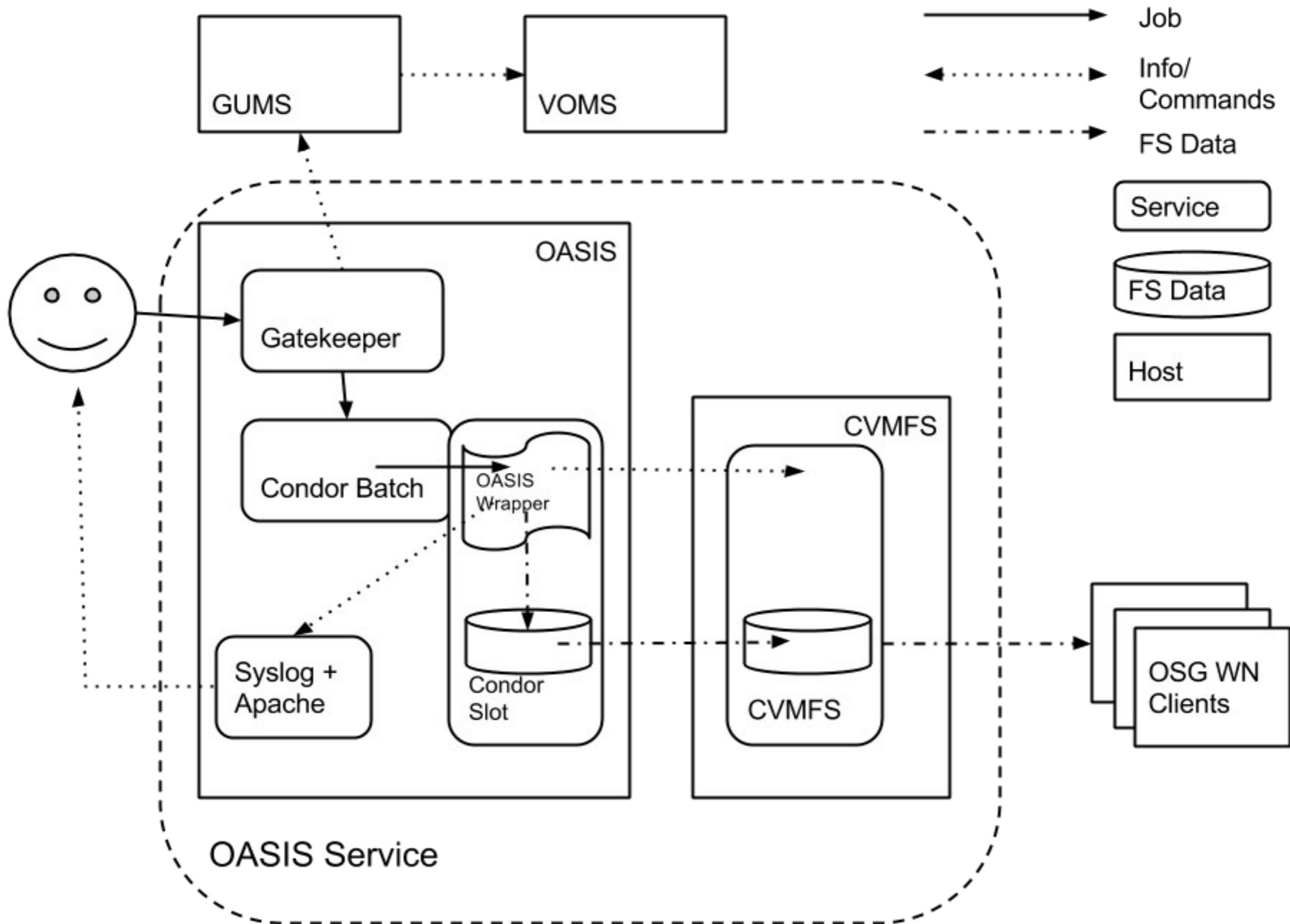
A prototype of the new version is currently deployed and working at BNL.

When/if deployed, new service will work alongside the current login-based one in production.

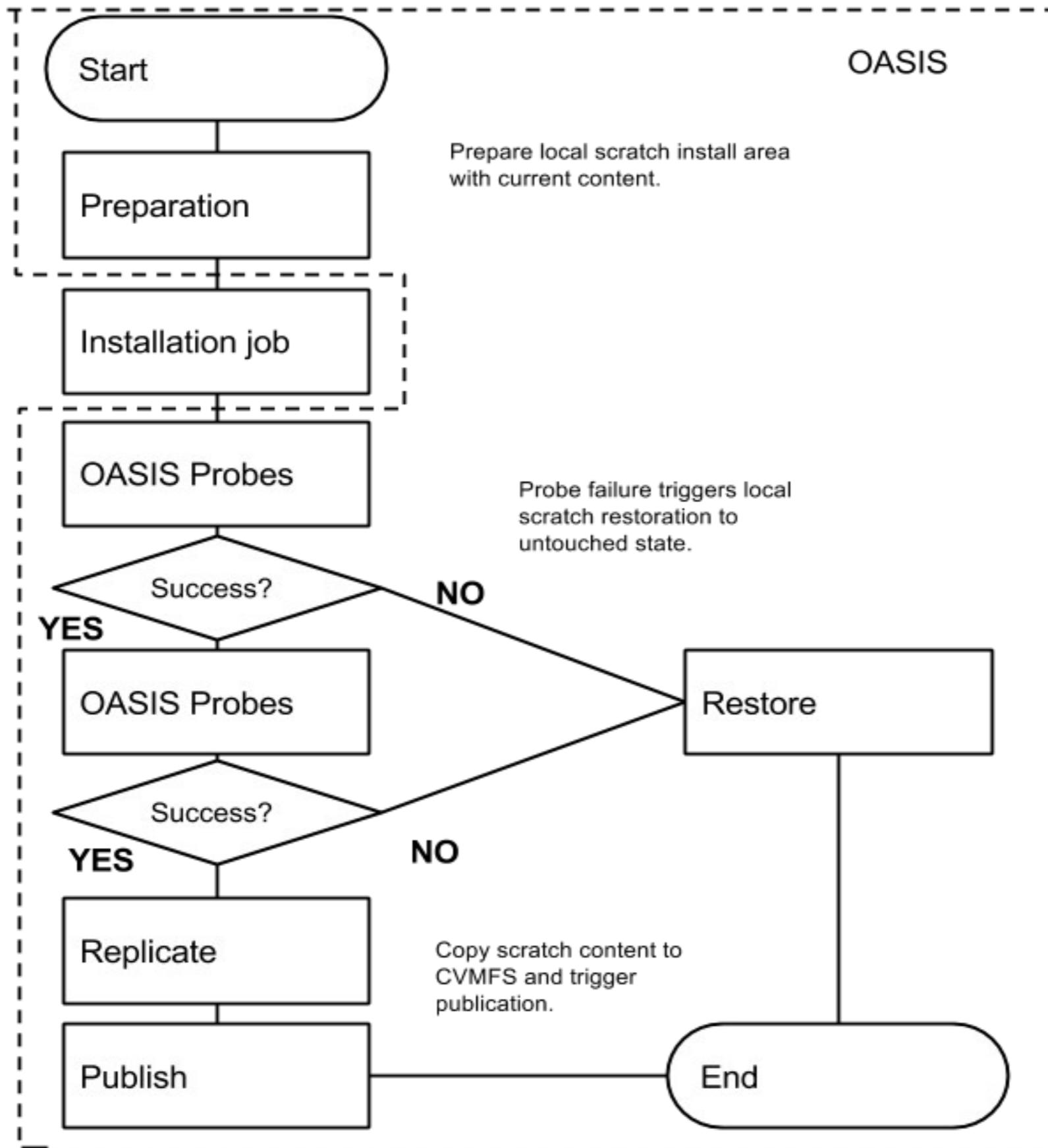
Main differences are:

- Supports standard grid installation jobs via CE
- Underlying technology (CVMFS) is fully hidden from users
- User actions are wrapped to allow preparatory and post-install actions to be taken.
- General purpose and VO-provided probes (sanity checks) must be passed before publishing is done.

# Oasis: new service deployment layout



# Oasis: new service functional flow



# Probes

Probes can raise a **WARNING** or can **ABORT**.

Only after passing all probes, both generic and VO specific, is the new content published.

Probes can simply inspect the new content, ***or***

They can take actions and modify new content prior to publication.

Any arbitrary policy can be implemented. Relatively easy thanks to a plug-in probe architecture.

# Examples of probes

- overquota

Checks after new content is added the VO does not go over quota.

- catalogsize

Checks the size of the CvmFS catalog(s), and creates sub-catalogs if needed.

- filesize

No file is smaller than *minsize* or larger than *maxsize*. It could accept exceptions.

# Examples of probes

- nodeletion

Checks if any existing file has been deleted.

- norewrite

Checks if any existing file has been modified.

It could accept exceptions (i.e. a CHANGELOG).

- notarball

Checks no .tar.gz file is included.

- relocatable

Ensure all binaries are relocatable, and not linked to hardcoded paths missing on the WNs.

# Key features

VO isolation, user protection

Extensible, thanks to the plug-ins architecture.

Full bookkeeping via logs. Web monitor.

Easy deployment via RPM. Several options:

- OSG-run VO repository
- VO-run OASIS and CvmFS repo, added to OSG client configuration.