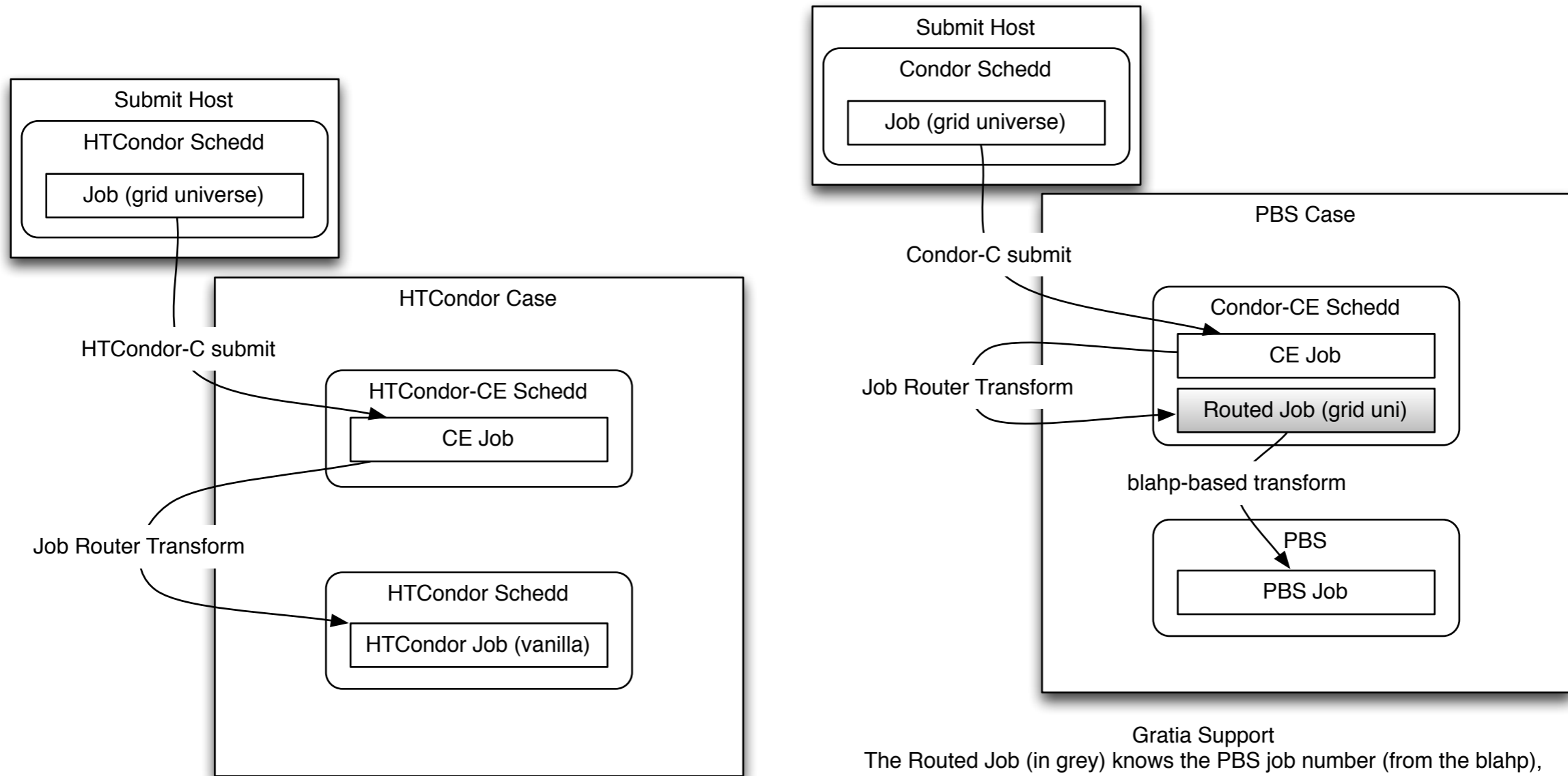


# What's Next for HTCondor-CE?

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OSG AHM 2015

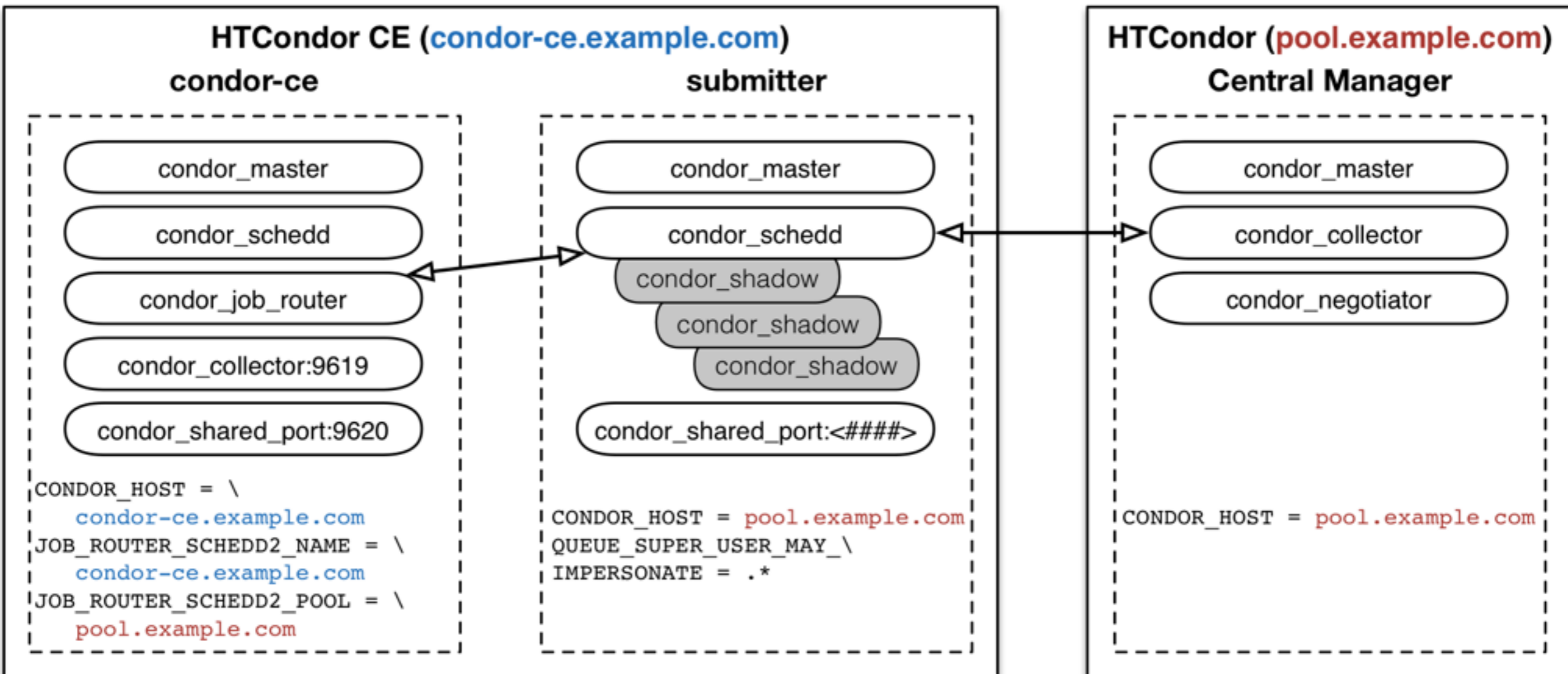
# HTCondor-CE in a slide



## Gratia Support

The Routed Job (in grey) knows the PBS job number (from the blahp), and knows the proxy information (copied from the CE Job). When the PBS job finishes, we delay processing it until the routed job finishes. When the routed job finishes, Condor-CE schedd will place an ad in `/var/lib/gratia/condor_ce_data`. In GratiaCore, we will join the PBS and routed job data together.

# HTCondor-CE - Example



# HTCondor-CE Architecture

- Everything is:
  - HTCondor-based.
  - HTCondor configurations.
  - HTCondor plugins.
- Authentication is done with GSI; authorization is done with LCMAPS.
- Remote submit protocol is Condor-C.
- Interface with local batch system is blahp / Condor-G.
- The 'heart' of customizing jobs is the JobRouter, a declarative transform language.
  - Expect to see this show up in other places in HTCondor!

# Strategic Directions

- A few strategic directions:
  - Flesh out the blahp support for LSF & SGE.
    - Getting blahp to work with LSF has been an **epic battle**.
    - Directly benefits the OSG-Connect project
  - Make (HTCondor-CE) - (HTCondor) = smaller.
    - Goal is always to keep the HTCondor-CE “config-only”.
  - Take better advantage of existing HTCondor features; get HTCondor team to implement new ones.
  - Continue refinements - especially in terms of ease-of-configuration and ease-of-customization.

# Configuration & Customization

- Have osg-configure expose better interfaces for VO-custom attributes.
  - Improves ability of an organized group of sites collaborate on attribute definitions.
- There's a few known "gotchas"
  - Variables you shouldn't touch!
  - Or fragility in syntax (multi-line classads).
- Working with HTCondor team to remove these limitations. Next release series will remove these irritations by default
- For example:

***i* NOTE**

If a value is set in `JOB_ROUTER_DEFAULTS` with `eval_set_<variable>` and you want to override it, you will need to use `eval_set_<variable>` in the `JOB_ROUTER_ENTR` your own risk as it may cause the CE to break.

***i* NOTE**

Do not set the `JOB_ROUTER_DEFAULTS` configuration variable yourself. This will cause the CE to stop functioning.

# HTCondor-CE and Docker Universe

- HTCondor-CE allows you to inject arbitrary attributes into the routed job.
  - This allows admins to control which HTCondor features or options are turned on for a given user's job.
- At Nebraska, we've been very interested in containerization efforts; one observation are chroots are hard to create!
  - Docker provides similar container features *but* provides tooling for easy-to-create environments.
- We're hoping to provide native integration for Docker and HTCondor-CE where possible!
- A few slides follow from Todd Tannenbaum on the "base ideas" for docker universe.
  - First draft should show up in 8.3.6.

# Slide Courtesy Todd Tannenbaum

## **Docker Universe**

```
universe = docker
```

```
executable = /bin/my_executable
```

Executable comes either from submit machine or image

NOT FROM execute machine



# Slide Courtesy Todd Tannenbaum

## **Docker Universe**

```
universe = docker  
executable = /bin/my_executable  
docker_image = deb7_and_HEP_stack
```

Image is the name of the docker image stored on  
execute machine

# Slide Courtesy Todd Tannenbaum

## **Docker Universe**

```
universe = docker  
executable = /bin/my_executable  
docker_image = deb7_and_HEP_stack  
transfer_input_files = some_input
```

HTCondor can transfer input files from  
submit machine into container

(same with output in reverse)

# HTCondor-CE (Local) Collector

- We've always wanted more information about payload jobs.
  - Who's running? What are they running? Are they using CPU efficiently?
- In the next HTCondor-CE release, the CE will allow pilots to send startd ads (representing the payload jobs). The CE admin can view the payload activity with `condor_status`.
- In the next gWMS release, the pilot will send these ads automatically.

# Long Term Outlook

- With goals of “upstream code” and “make easier to use” - the hope is the HTCondor-CE will shrink year-over-year.
  - Both in code size and # of irritations!
- Already provides much better visibility to “what is my CE doing”; transparency should only increase.