Cloud access options by WS-PGRADE/gUSE

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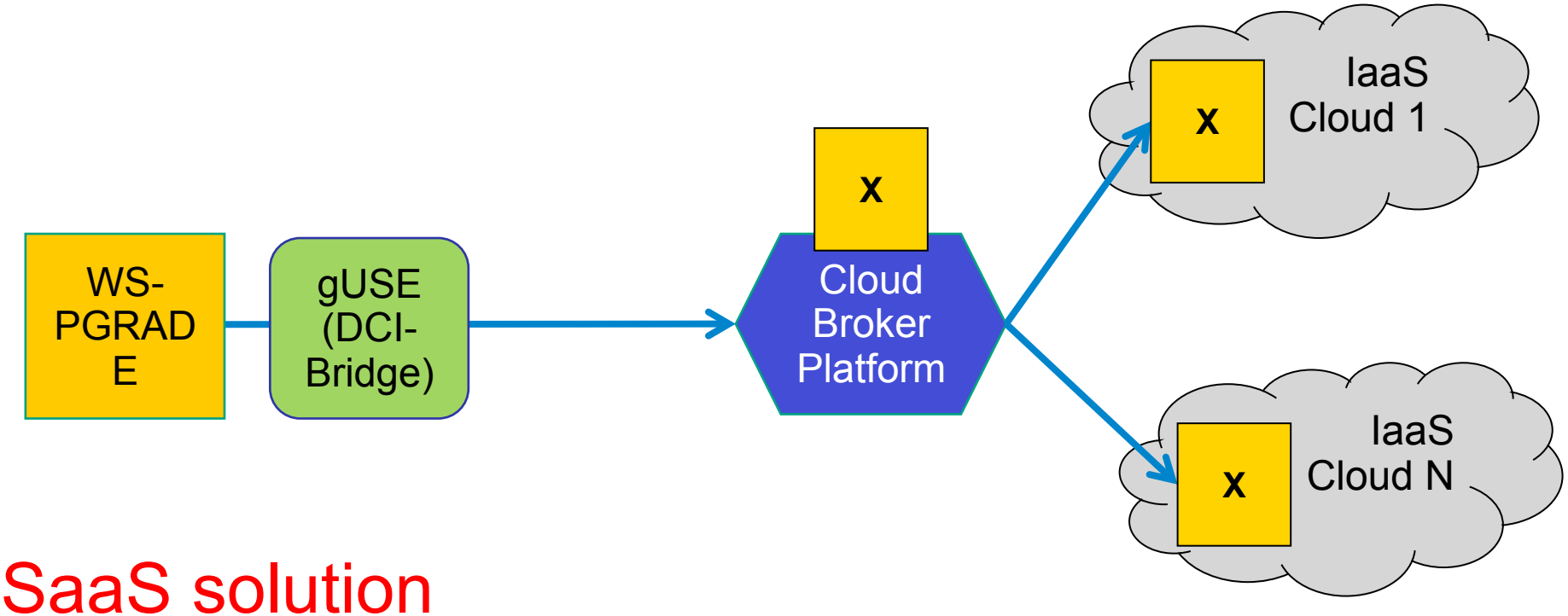
Current cloud support: Job submission into clouds

Three solutions:

1. SaaS by CloudBroker Platform
2. IaaS by CloudBroker Platform
3. Direct IaaS
    1. With floating IP
    2. Without floating IP (EGI FedCloud solution)

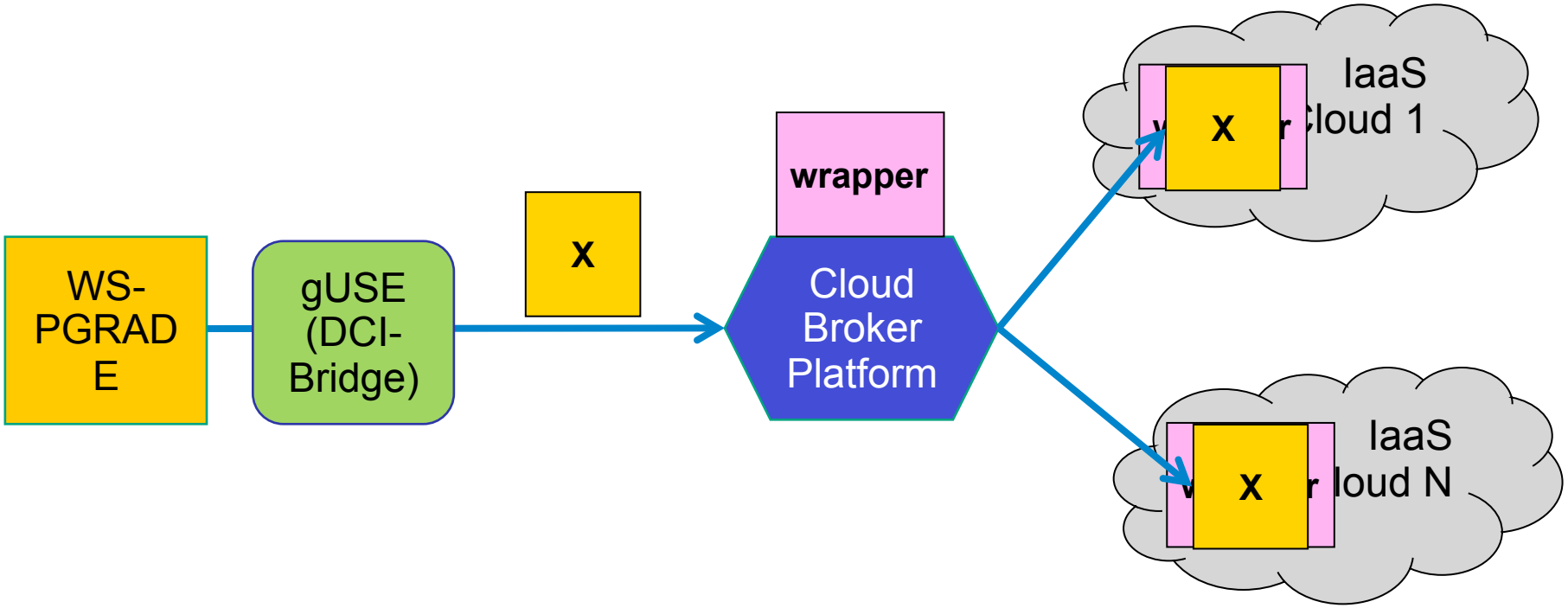
Integrated WS-PGRADE/CloudBroker Platform in Action



SaaS solution

- application X is pre-registered at CBP and in the Clouds connected to CBP
- X as node of a WS-PGRADE WF is called
- X is dynamically deployed and run in the IaaS clouds by CBP when gUSE initiates the WF node X execution.

Integrated WS-PGRADE/CloudBroker Platform in Action

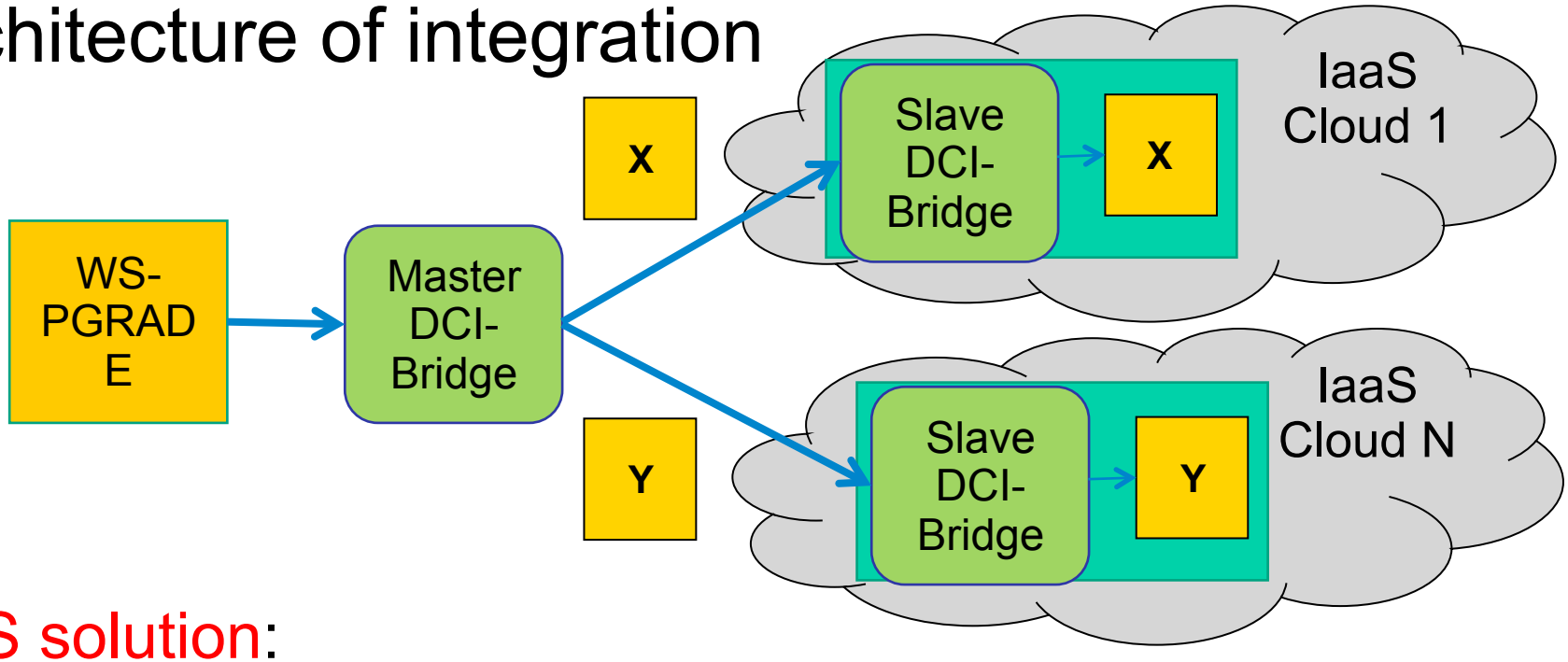


SaaS solution

- A generic wrapper application is pre-registered at CBP and in the Clouds connected to CBP
- X as node of a WS-PGRADE WF is called
- The wrapper with X is dynamically deployed and run in the IaaS clouds by CBP when gUSE initiates the WF node X execution.

Direct Access to IaaS Clouds with Floating IP support

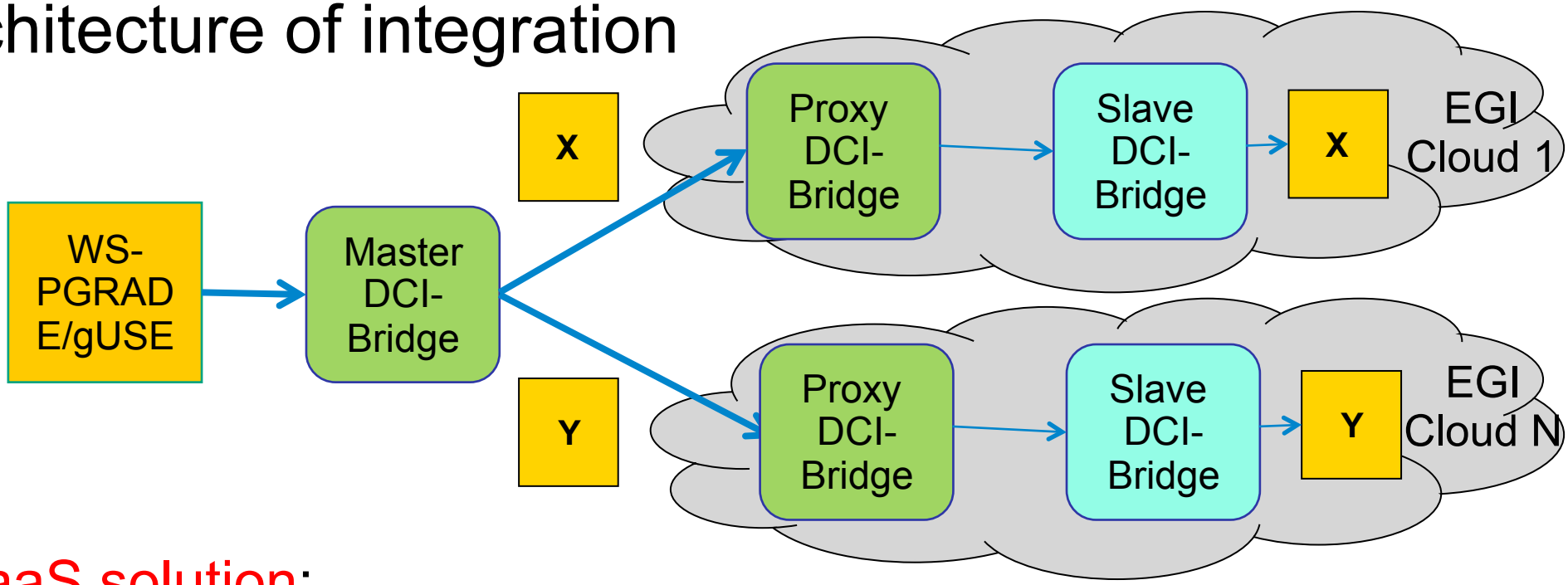
Architecture of integration



- IaaS solution:
  - any jobs can be run from WS-PGRADE workflows
  - Prerequisite: DCI Bridge VMI should be available for the target cloud
  - S-DCI-B should be accessible in general case via public IP -> Floating IP support is needed in the cloud
  - Supported clouds: Any cloud supporting EC2 protocol and Floating IP
  - The M-DCI-B on demand deploys as many S-DCI-Bs as many needed but maximum according to the user's quota

Access to Clouds with permanent DCI Bridge service (used for EGI FedCloud)

Architecture of integration



- IaaS solution:
  - any jobs (X, Y, etc.) can be run from WS-PGRADE workflows
  - P-DCI-B should run as a service on the EGI clouds since the Floating IP solution is not supported by rOCCI
  - Slave DCI Bridge does not need public IP
  - The M-DCI-B on demand deploys as many S-DCI-Bs as many needed but maximum according to the user's quota

WS-PGRADE/gUSE and EGI FedCloud configuration

Clouds of EGI FedCloud that are accessible from the EGI FedCloud WS-PGRADE/gUSE service:

guse-fedcloud-gateway.sztaki.hu (facebook login)

- 9 sites runs the Proxy DCI Bridge according to APPDB)
- 4 out of these 9 were tested:
  - CESNET Cloud
  - IN2P3 Cloud
  - (INFN Padova)
  - (CETA-CIEMAT Cloud)

Meta-broker to distribute PS instances among several clouds

Release 3.7.1 – 15th June, 2015:

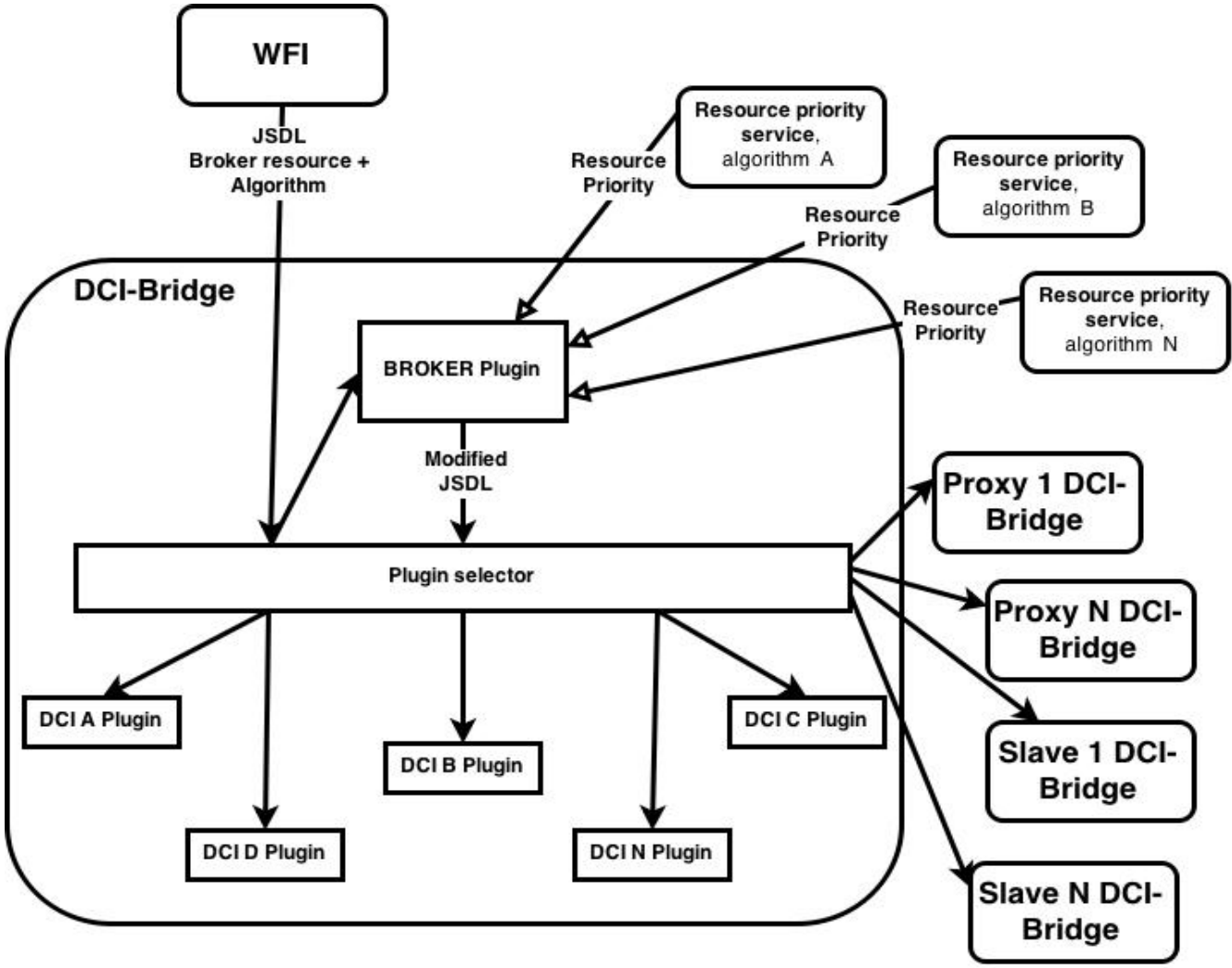
The main improvement of this gUSE version is the introduction of the **Meta-broker** solution. The use of Meta-Broker ensures the best resource selection for job submission: user can execute jobs in parallel in resources where the time of job executions is the shortest of all currently available resources (clusters, clouds or grids).

In previous WS-PGRADE/gUSE releases all the job instances of a PS WF node were running on the **SAME DCI** that was defined by the WF developer. **Now** the job instances can be distributed **among many different DCIs.**

For example, the job instances of a PS node can be distributed evenly in several clouds of EGI FedCloud infrastructure.

Meta-broker service to evenly distribute tasks in multiple clouds

- Introduced Metabroker solution – enables the gateway to implement load balancing at the PS job level
- Based on the new **Resource Priority Service**: integrated service to keep track of PBS resource performances



Meta-broker distribution of PS jobs in configuration time

For every PS node user can specify which clouds (or other types of resources) should be used