

# 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

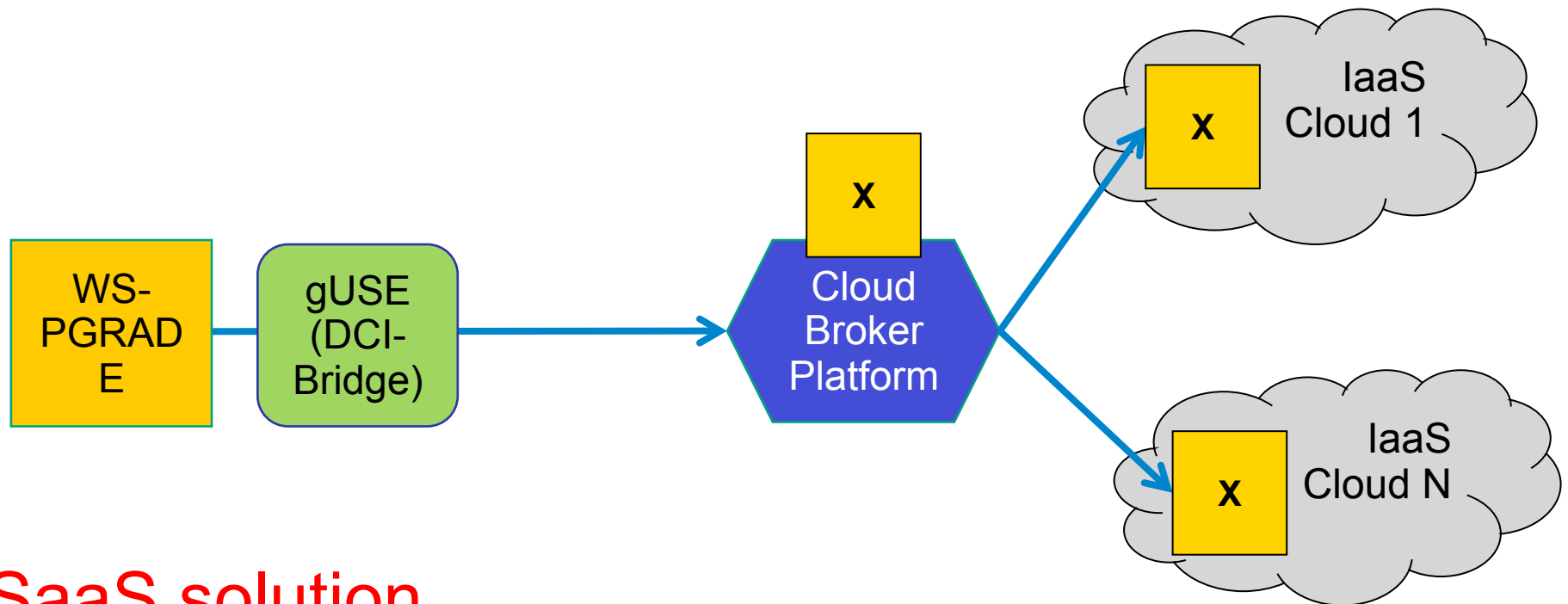
- 2.IaaS by CloudBroker Platform

- 3.Direct IaaS

1. With floating IP

2. Without floating IP (EGI FedCloud solution)

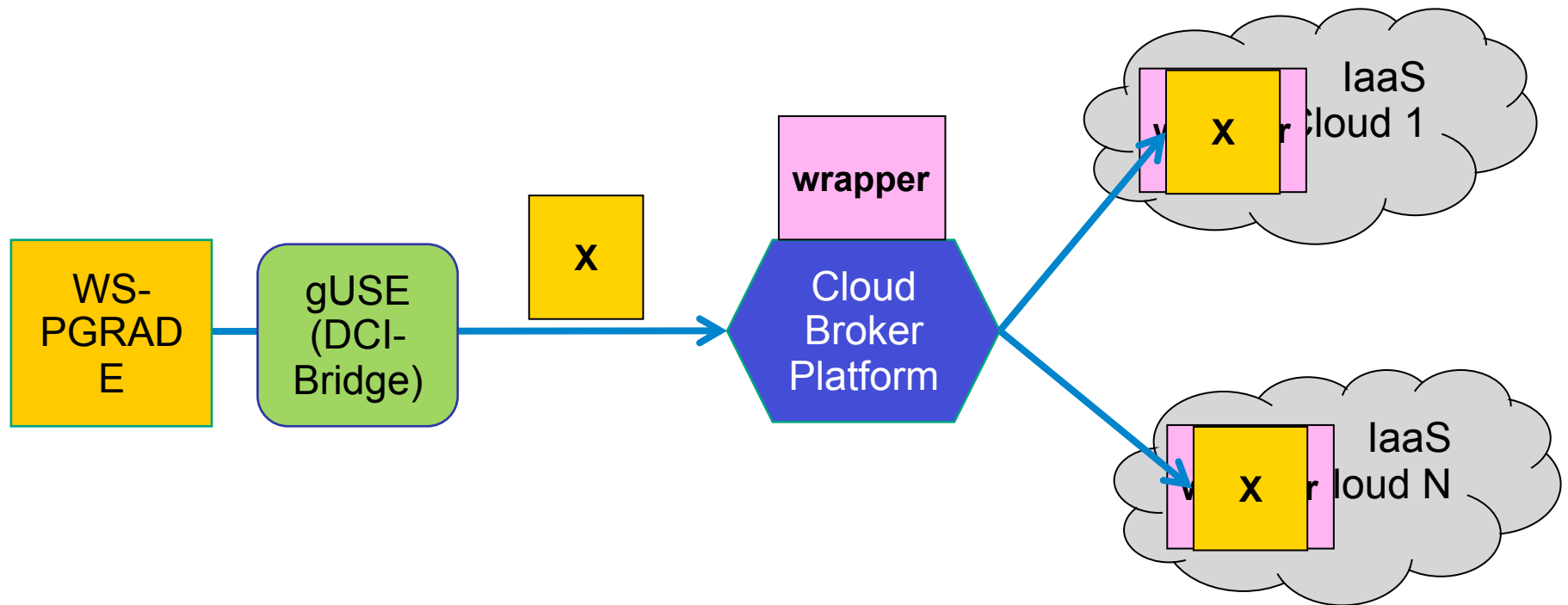
# Integrated WS-PGRADE/CloudBroker Platform in Action



## 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

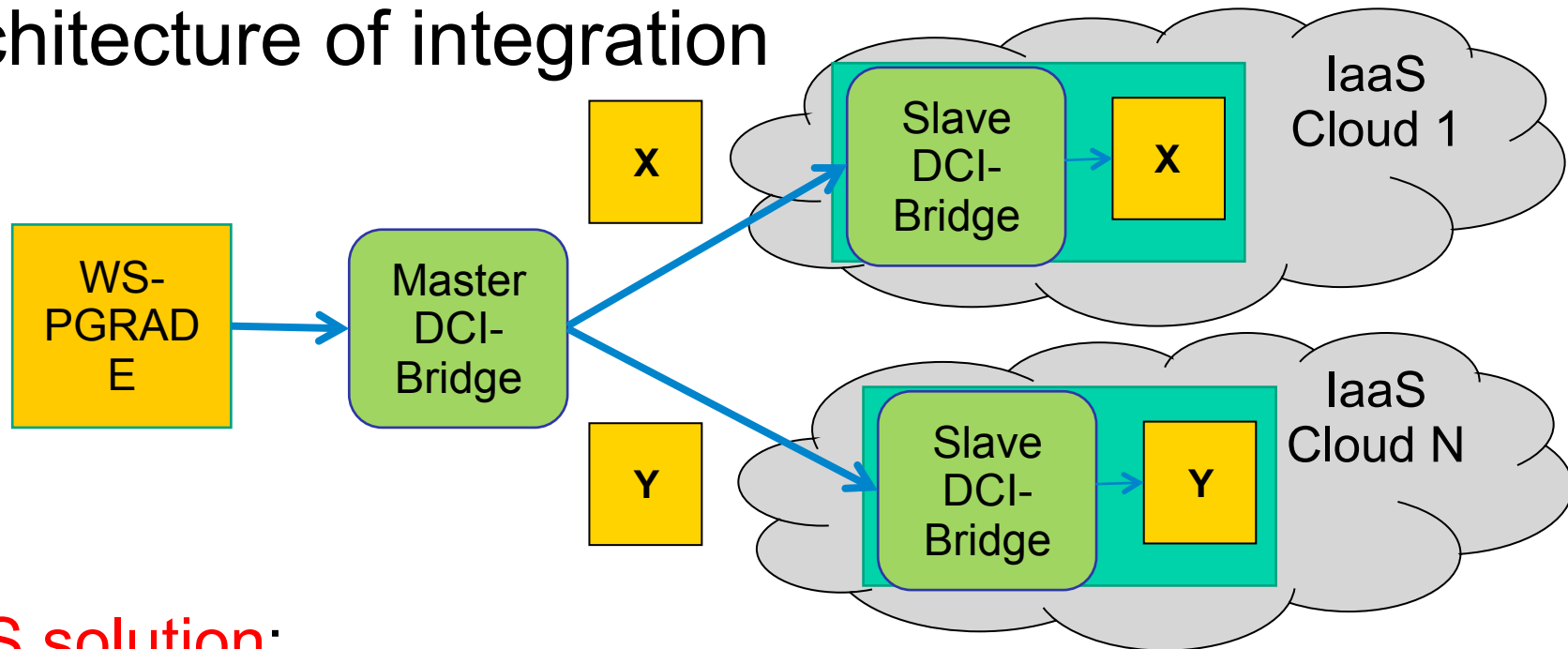


## SaaS solution

- 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

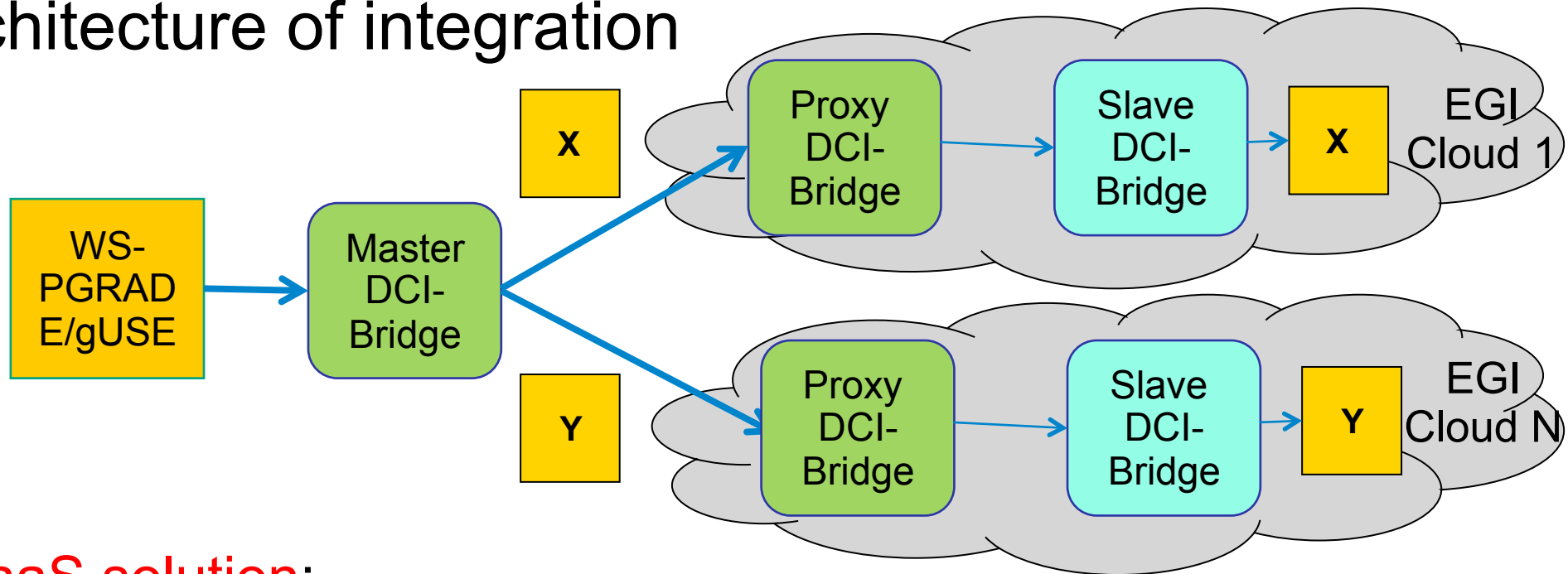
## Architecture of integration



- **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](https://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 - 15<sup>th</sup> 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**.

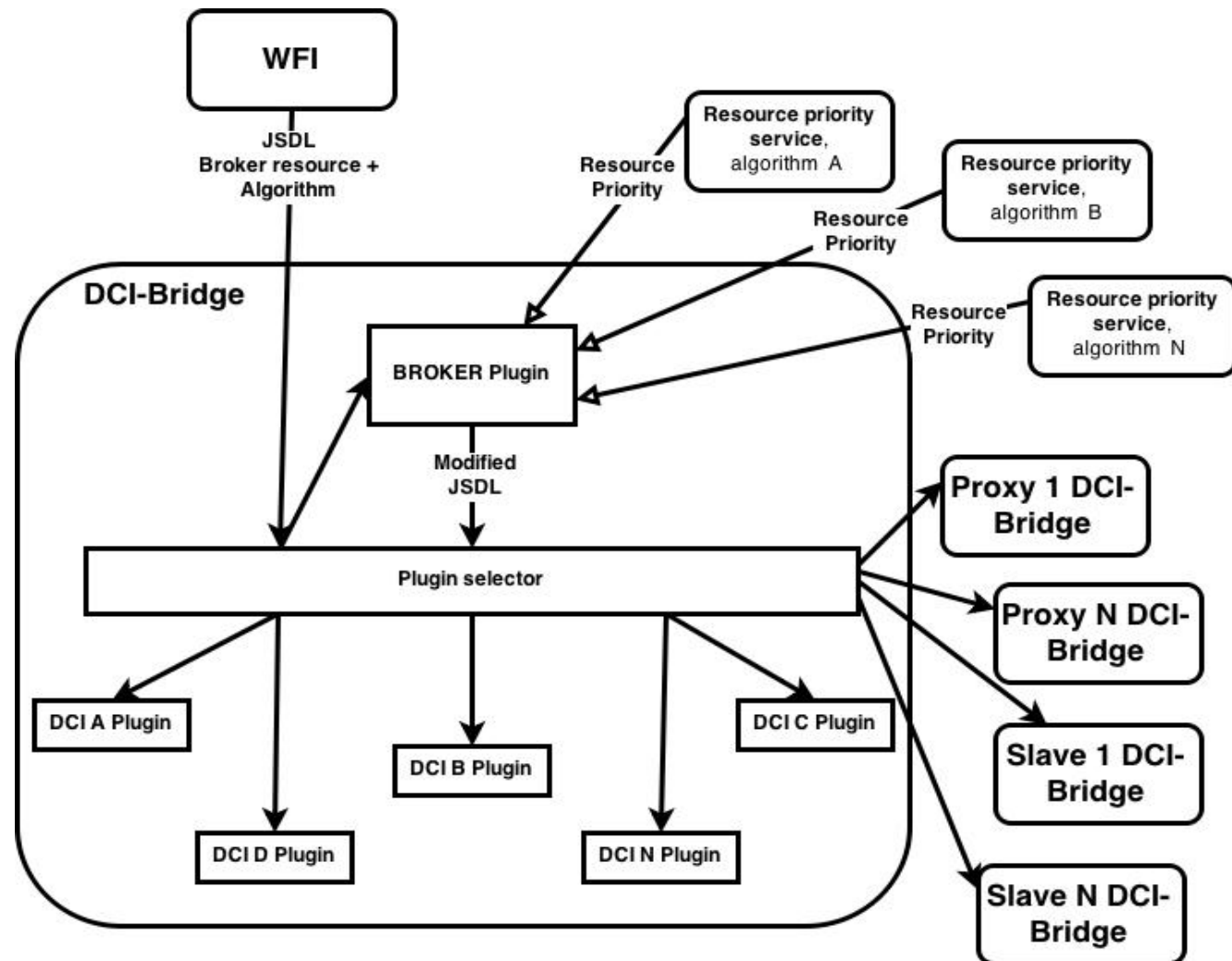
For example, the job instances of a PS node can be distributed evenly in several clouds of EGI FedCloud infrastructure.



# 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

The screenshot shows a configuration window titled "Configure" with a close button (X) in the top right corner. The window contains the following fields and options:

- Job's name:** MulCross
- Optional note:** Cross Product of input ports. Operation among inputs is M(ultiplication)
- Navigation icons:** [Job Executable] [Job I/O] [JDL/RSL] [History]
- Workflow Service Binary:** A section with a gear icon and a green checkmark icon.
- Type:** broker
- Grid:** default
- Brokered Resources:**
  - cloud**
    - LPDS cloud (256)
    - SZTAKI cloud (64)
    - LPDS OCC1 (128)
  - glite**
    - hungriid (16)
  - pbs**
    - c153-110.localcloud/ (256)
- Replicate settings in all Jobs:**
- Kind of binary:**  Sequential  Java  MPI
- MPI Node Number:** [Empty text field]
- Executable code of binary:**  Local  Remote  Data/venue  
Recently stored: ARI.sh  
Choose File No file chosen
- Parameter:** M