

Accesso al batch-system HTCondor tramite JWT

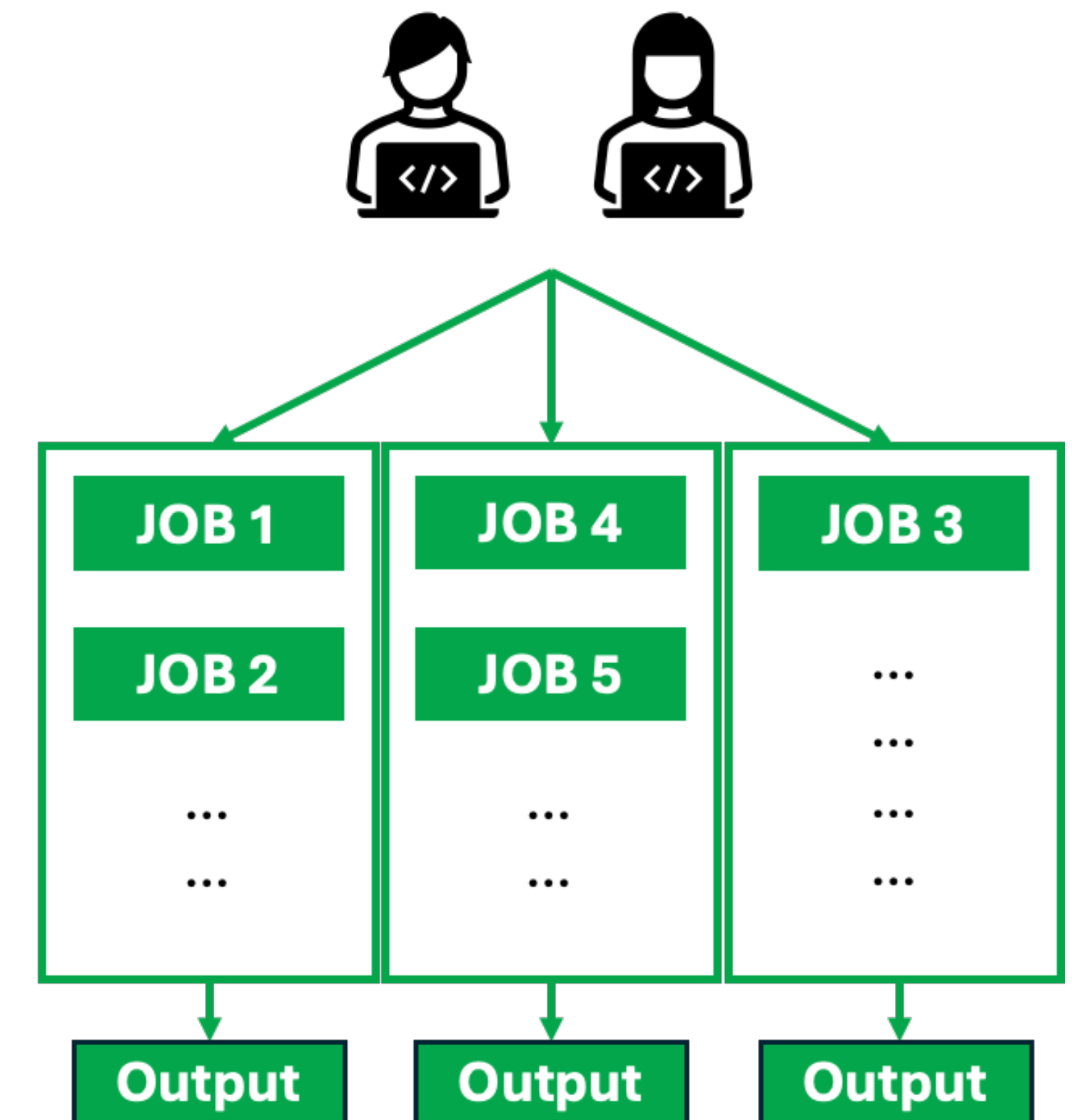
Alessandro Pascolini

HTC

High Throughput Computing

Cos'è il calcolo **HTC**?

- ottimizzato per processi **non interattivi** (BATCH)
- i processi (o job) vengono eseguiti su un'unica macchina, utilizzando **uno o più core**
- permette un **alto rendimento** delle risorse di calcolo (i.e. molti job eseguiti in contemporanea)

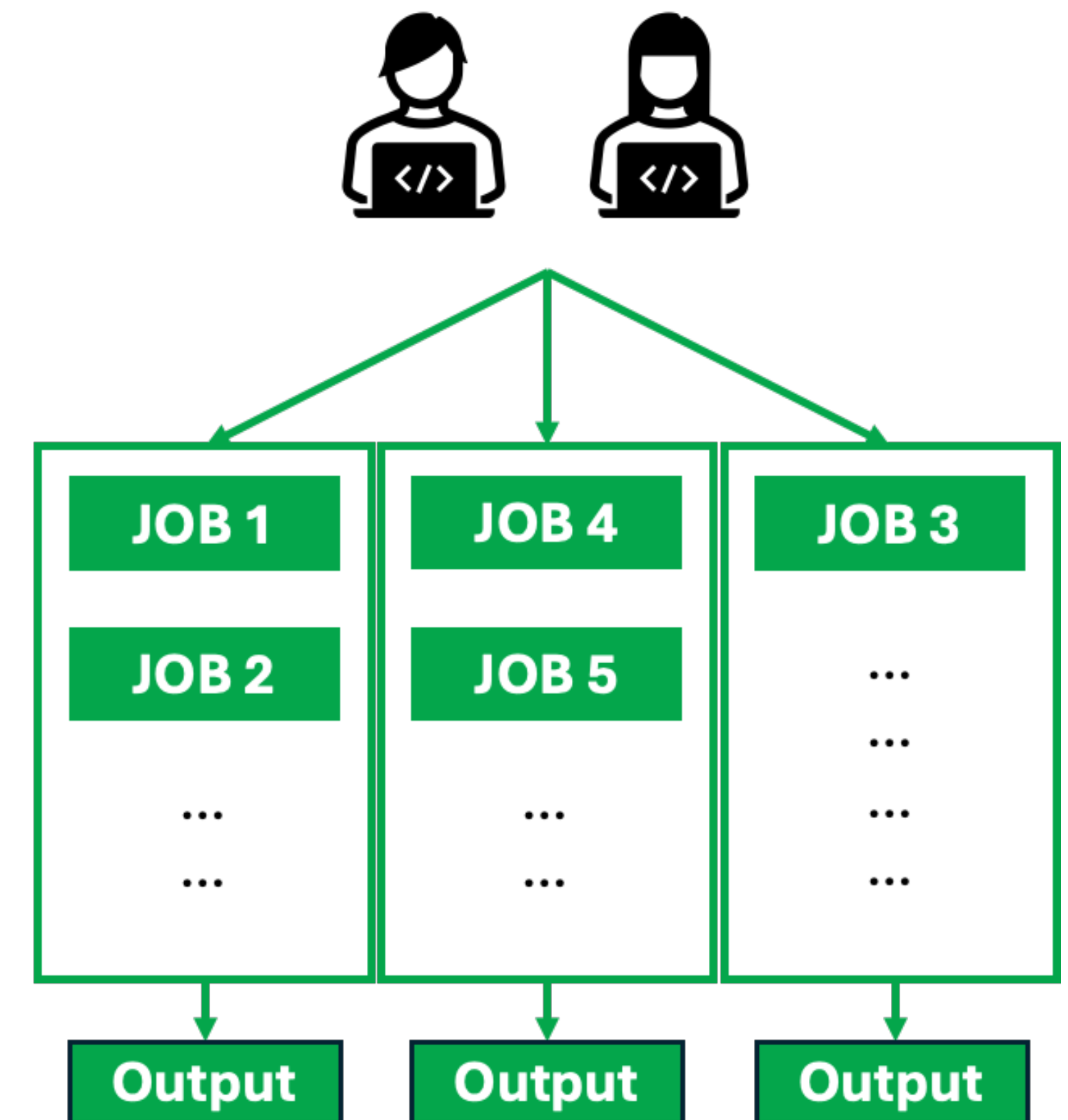


HTC

High Throughput Computing

Perchè usare un cluster **HTC**?

- svolgere processi che richiedono **molto tempo** e **risorse**
- **risorse dedicate** all'esecuzione di job
- **delegare l'esecuzione** a macchine più performanti





Software più diffuso nella comunità WLCG per la gestione di **batch system** HTC

Ottimizzato per gestire cluster con:

- gran numero di nodi
- più utenti e gruppi con quote differenti



Software più diffuso nella comunità WLCG per la gestione di **batch system** HTC

Ruoli in HTCondor

- **Central Manager**
controller del cluster
- **Access Point**
macchina a cui i job vengono sottomessi
- **Execution Point**
macchina che esegue i job

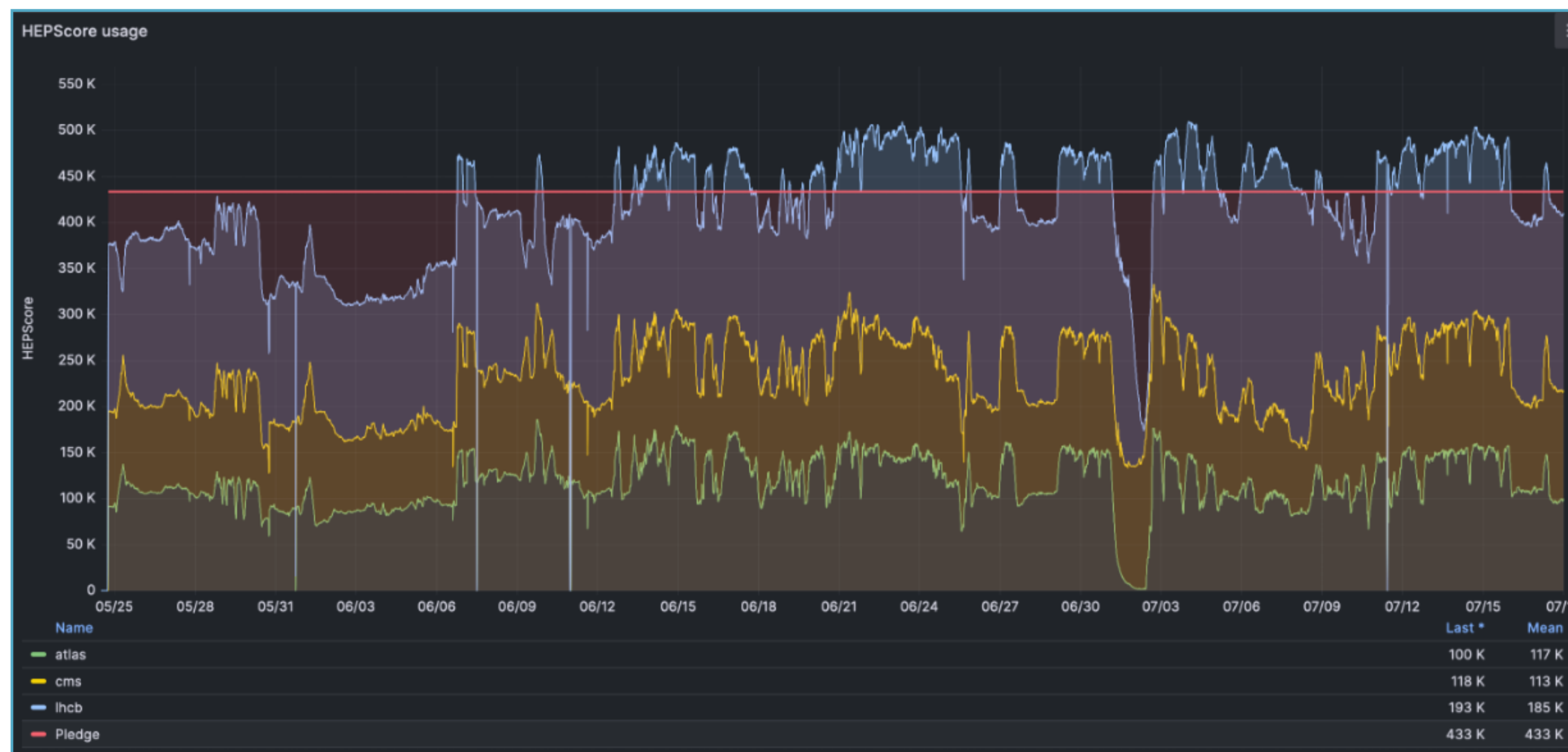


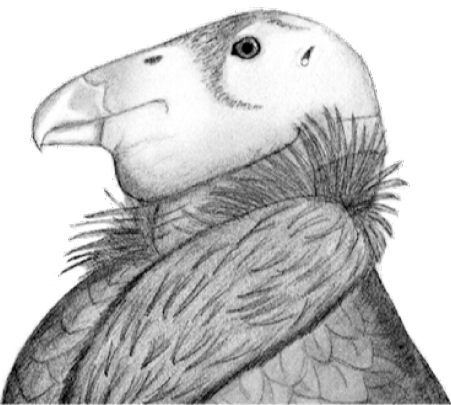


Gestione utenti e gruppi

Gruppi in HTCondor

- detti anche **Accounting Groups**
- ad ogni **AcctGroup** viene assegnato uno share di risorse
 - ▶ % delle risorse del cluster
 - ▶ **numero assoluto** di core
- Ogni **AcctGroup** può avere dei **sotto-share**
- un **AcctGroup** può usare **più risorse** di quante assegnate





Gestione utenti e gruppi

Utenti in HTCondor

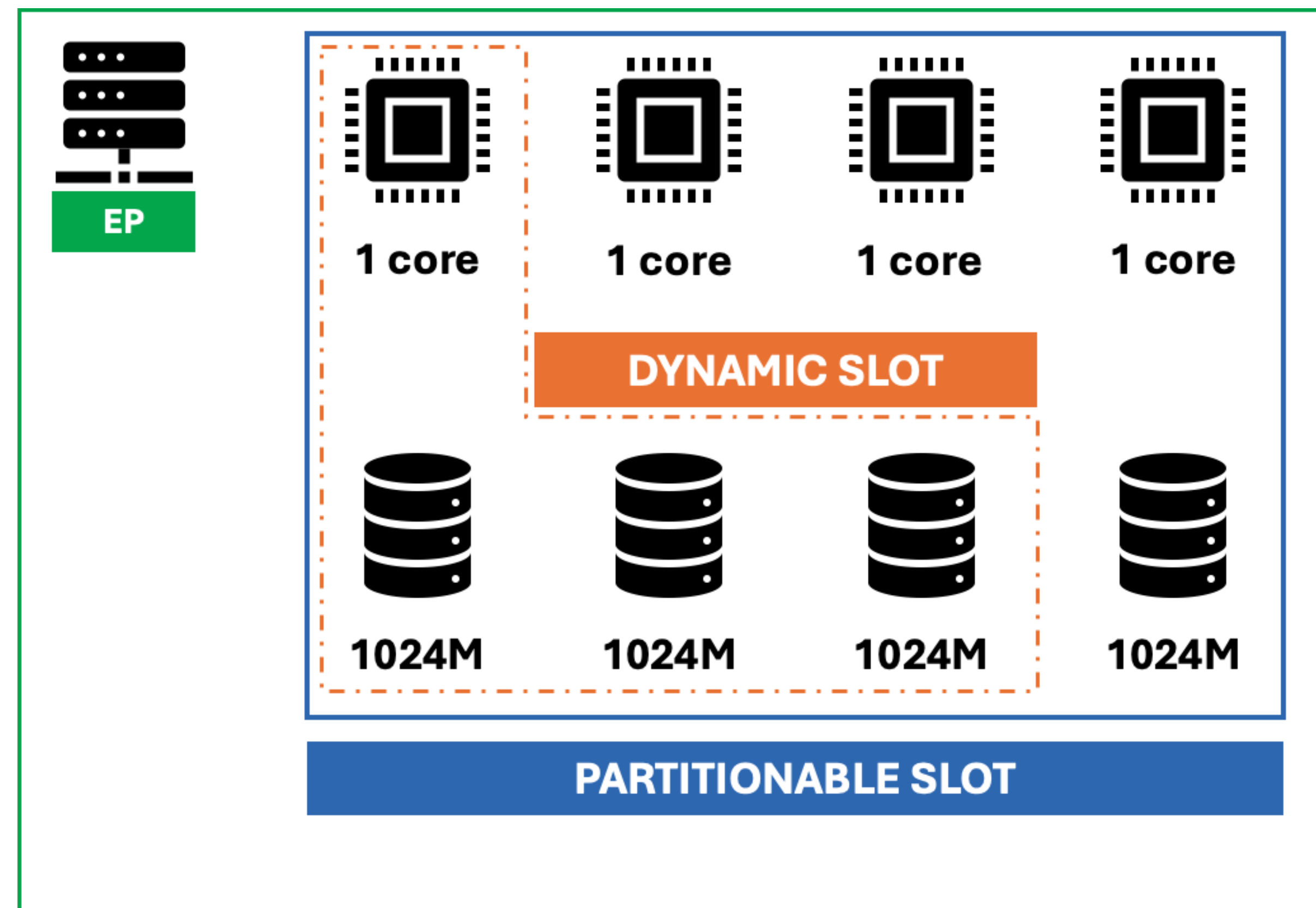
- ogni job appartiene all'**utente unix** che lo ha sottomesso
- l'EP esegue il job impersonando l'utente proprietario
- Ogni utente può appartenere a uno o più **Accounting Groups**
- **La priorità** di un utente viene decisa in base allo **storico di utilizzo** delle risorse

Last Priority Update: 5/12 23:00						
Group	Config	Use	Effective	Priority	Wghted	Total Usage
User Name	Quota	Surplus	Priority	Factor	In Use	(wghted-hrs)
cms	0.15	Regroup		100000.00	3568	77328250.82
cmssgm006@t1htc_23			50086.50	100000.00	1	1683.92
cmssgm001@t1htc_23			50093.30	100000.00	1	1785.44
cmssgm002@t1htc_23			50093.30	100000.00	1	1726.99
cmssgm004@t1htc_23			50094.50	100000.00	1	1746.72
cmssgm005@t1htc_23			50095.90	100000.00	1	1665.17
cmssgm003@t1htc_23			50097.20	100000.00	1	1756.91
pilcms006@t1htc_23			18516354.40	100000.00	112	124250.44
pilcms005@t1htc_23			18555942.60	100000.00	336	121768.12
pilcms003@t1htc_23			18635964.80	100000.00	224	121318.12
pilcms001@t1htc_23			18824467.10	100000.00	48	121702.65
pilcms002@t1htc_23			19009587.60	100000.00	272	120830.10
pilcms004@t1htc_23			19255369.30	100000.00	160	117697.71
cmsprd005@t1htc_23			19653320.80	100000.00	528	12235058.98
cmsprd001@t1htc_23			22348081.60	100000.00	352	13517871.91
cmsprd003@t1htc_23			27177589.20	100000.00	272	12698828.44
cmsprd006@t1htc_23			28637493.50	100000.00	576	12230343.46
cmsprd002@t1htc_23			29137994.40	100000.00	288	12881450.21
cmsprd004@t1htc_23			38934849.00	100000.00	400	13026758.74
belle	0.03	Regroup		100000.00	787	9469448.83
belleprd006@t1htc_23			9025007.70	100000.00	73	1498286.80
belleprd004@t1htc_23			10668574.80	100000.00	101	1642569.56
belleprd001@t1htc_23			11806774.20	100000.00	115	1045777.75
belleprd003@t1htc_23			14118461.40	100000.00	138	1815765.80
belleprd005@t1htc_23			15707636.50	100000.00	161	1497600.01
belleprd002@t1htc_23			16006734.50	100000.00	199	1900852.90
lhcb	0.25	Regroup		100000.00	11792	128160890.10
lhcbsgm002@t1htc_23			50090.50	100000.00	1	406.97
lhcbprd002@t1htc_23			249752727.50	100000.00	1955	21738031.70
lhcbprd005@t1htc_23			250230760.70	100000.00	1930	21058473.86
lhcbprd003@t1htc_23			252231122.10	100000.00	1989	22226602.07
lhcbprd004@t1htc_23			252621159.50	100000.00	1978	22200340.31
lhcbprd001@t1htc_23			252985110.70	100000.00	1895	19817509.07
lhcbprd006@t1htc_23			255894927.50	100000.00	2045	21117107.78



Le risorse disponibili sui nodi di calcolo vendono **individuate automaticamente** e assegnate a **uno o più slot**

- gli slot by default sono **dinamici** (HTCondor 10.0+)
- tutte le risorse vengono assegnate a uno **slot partizionabile**
- slot dinamici vengono poi creati in **base alle richieste dei job**





Un job è un insieme di istruzioni per eseguire un processo sugli EP

In HTCondor ogni entità è descritta da un insieme di attributi

- **Requirements**
definisce un'espressione da soddisfare per eseguire il job su un EP
- **Request_<risorsa>**
quantità di **CPU, memory, disk** che vengono richieste all'EP

```
local-submit.sub
1 # Unix submit description file
2 # sleep.sub -- simple sleep job
3
4 batch_name           = Sleep
5 executable           = /usr/bin/sleep
6 arguments            = 300
7 log                  = Sleep.log
8 output               = Sleep.out
9 error                = Sleep.err
10
11
12 # require to run on LINUX machines
13 requirements = OpSys == "LINUX"
14
15 # ask for 1 core, 1024MB memory and 1024kB disk
16 request_cpus       = 1
17 request_memory     = 1024M
18 request_disk       = 10240K
19
20 # submitting 3 jobs (default 1, if no number specified after queue)
21 queue 3
```

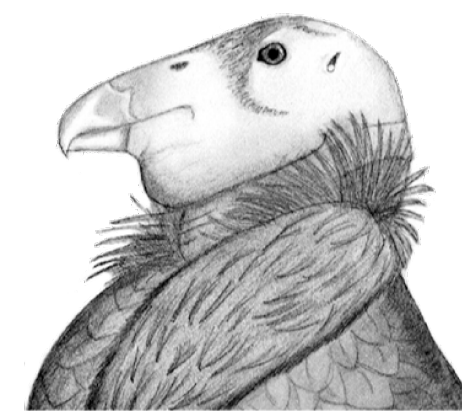
Output Files

Requests to EP

Molte di queste caratteristiche vengono definite nel **submit file**

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Vita di un Job

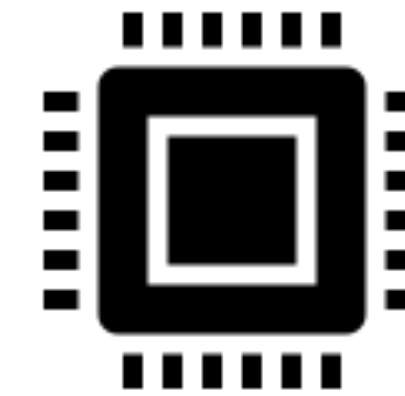


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AP



CM



EP



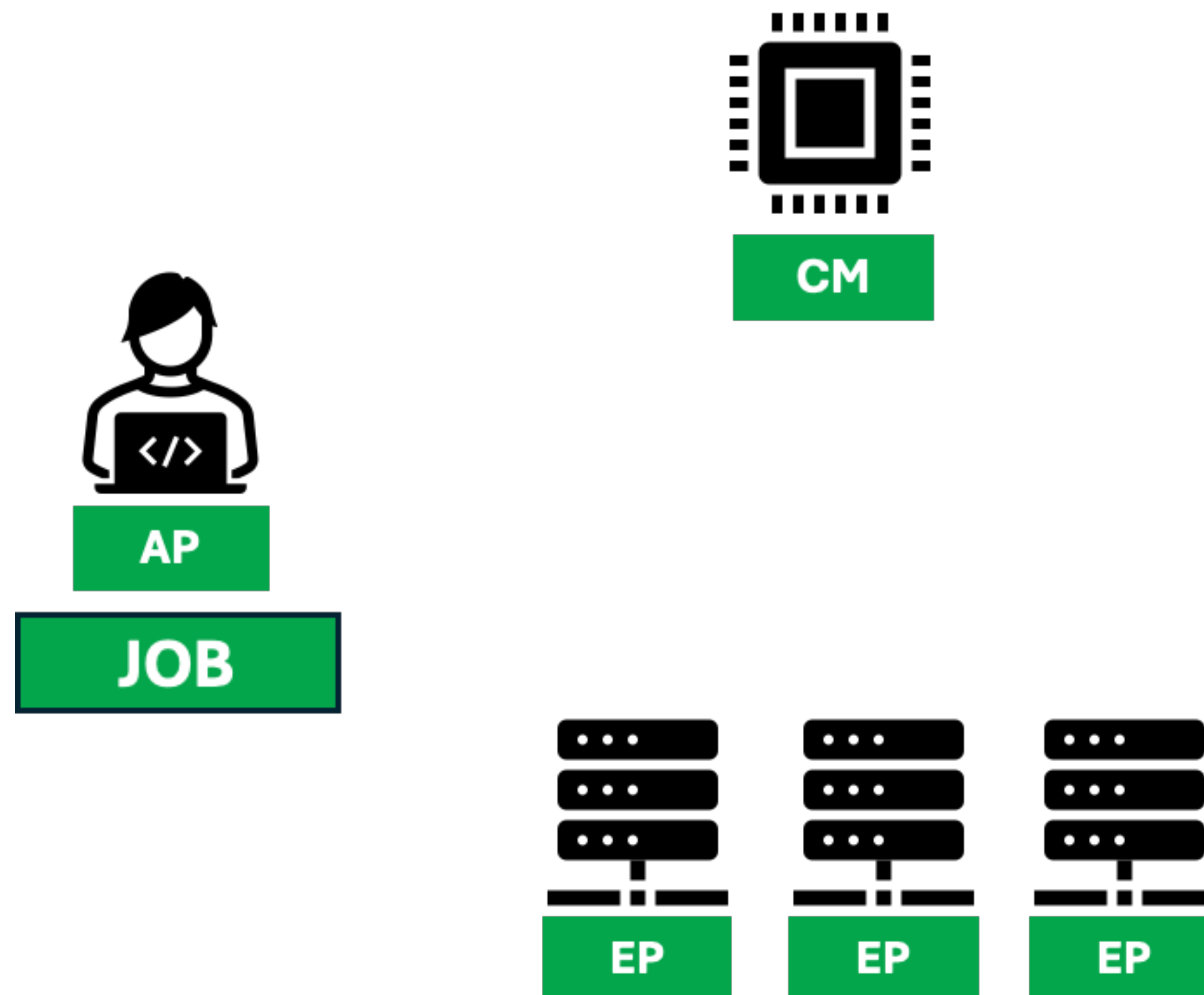
EP



EP



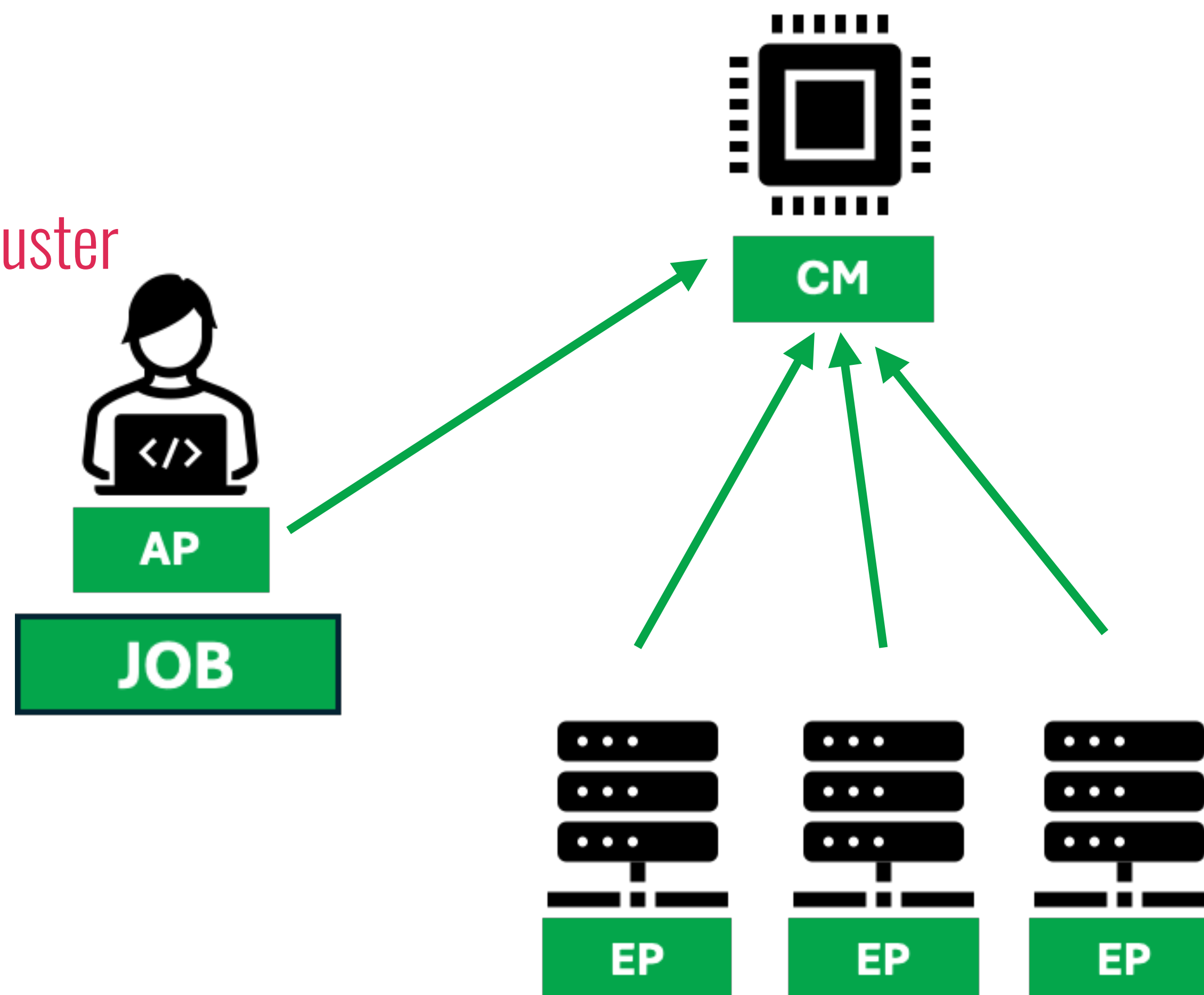
1. Il job viene **sottomesso** all'AP





Vita di un Job

1. Il job viene **sottomesso** all'AP
2. Il CM **raccoglie** periodicamente lo **stato del cluster**
 - slot sugli EP
 - Job in coda





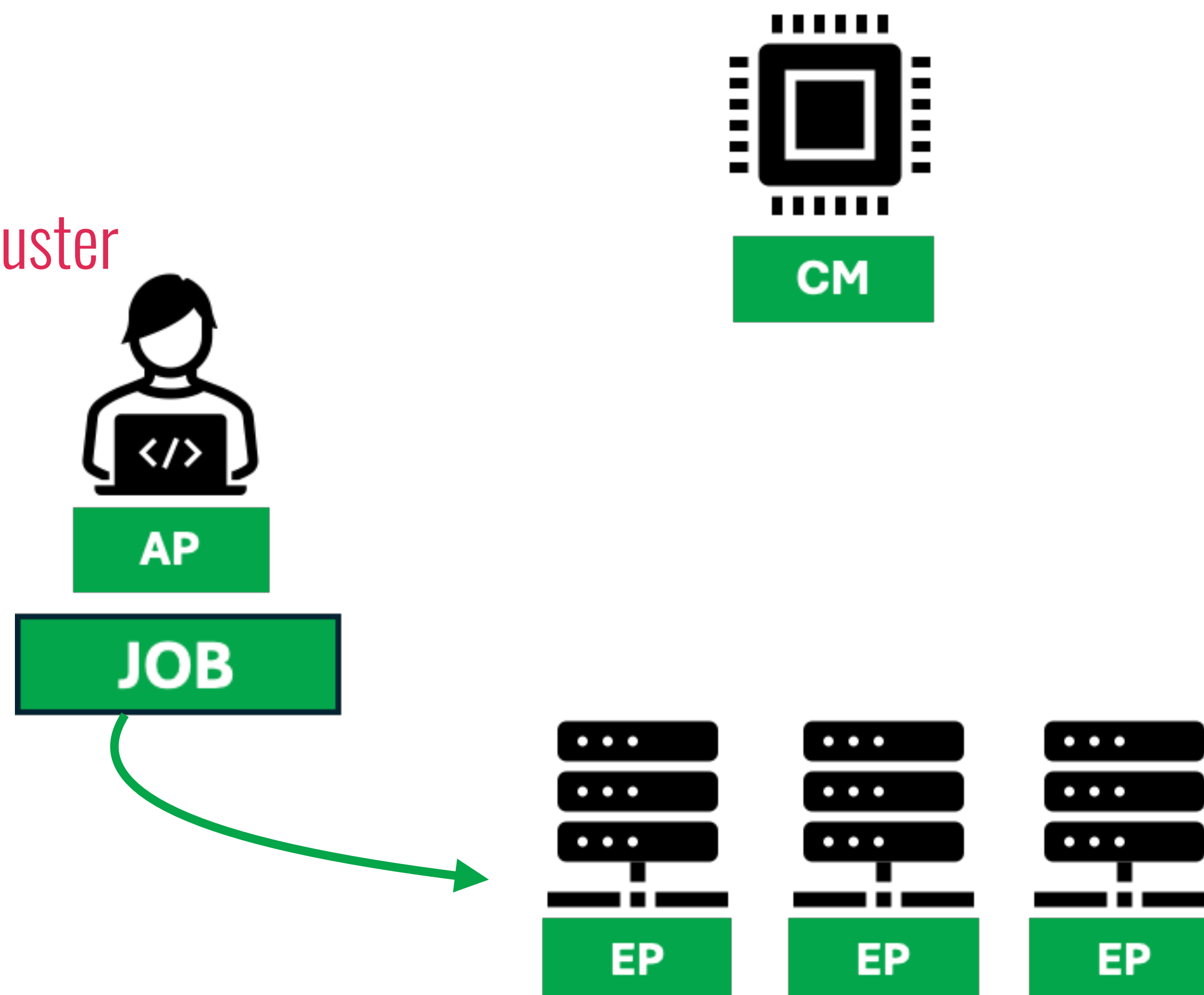
1. Il job viene **sottomesso** all'AP
2. Il **CM** **raccoglie** periodicamente lo **stato del cluster**
 - slot sugli **EP**
 - Job in coda
3. Inizia la **negoziatura**
i job in idle vengono assegnati agli **EP**





Vita di un Job

1. Il job viene **sottomesso** all'AP
2. Il **CM** **raccoglie** periodicamente lo **stato del cluster**
 - slot sugli **EP**
 - Job in coda
3. Inizia la **negoziazione**
i job in idle vengono assegnati agli **EP**
4. Il job viene eseguito sull'**EP**





IDLE

- Job submitted, waiting to be assigned to EP
- Attributes:
 - Qdate → submission timestamp
 - JobID/ClusterID → unique identifiers of Job/Cluster

RUNNING

- Job assigned to EP and started execution
- Attributes:
 - + JobStartDate → timestamp when job started running
 - + RemoteHost → hostname of EP

COMPLETED

- Job has ended
- Attributes:
 - + CompletionDate → timestamp when job ended
 - + LastRemoteHost → hostname of EP

If everything goes well...

REMOVED

- Job removed from queue by User or Admin
- Attributes:
 - + RemoveReason → String with the reason of job removal

If something doesn't...

HOLD

- Job put in hold due to several reasons
- HTCondor may put a job in hold to prevent it from using more resources than requested
- Attributes:
 - HoldReason → String with the reason

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Job Cheat Sheet



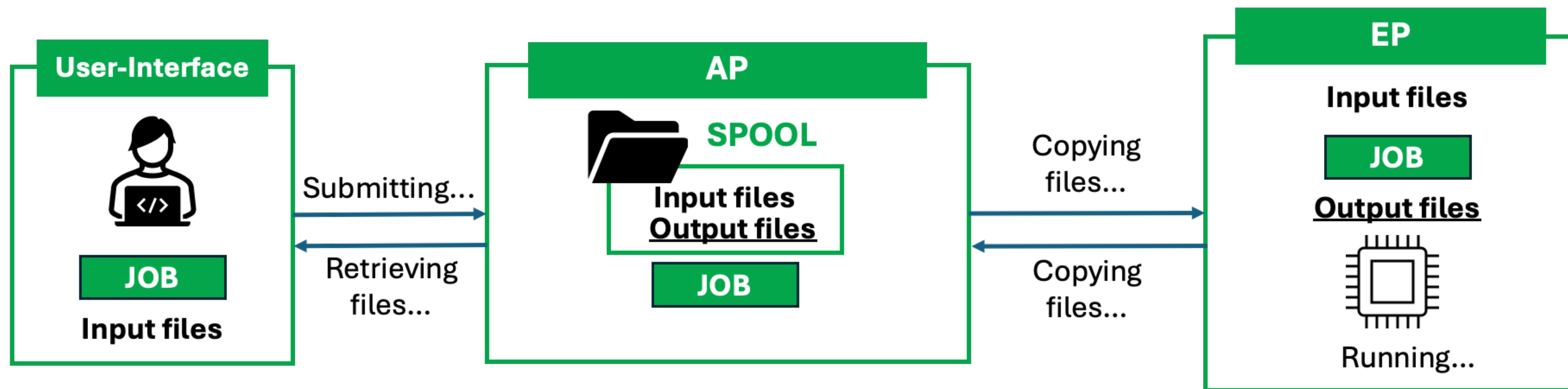
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Useful Job Attributes	
ClusterID	ID of a Cluster of jobs
JobID	unique ID of a job [ClusterID.Job_number]
Owner	Local user executing the job
AcctGroup	Queue the owner/job belongs to
JobStatus	Number associated to the status of the job
Qdate	Unix timestamp of submission
JobstartDate	Unix timestamp of job start
CompletionDate	Unix timestamp of job completion
(Last)RemoteHost	EP slot where the job was/is running
HoldReason	String indicating the reason the job was put in HOLD state
RemoveReason	String indicating the reason the job was REMOVED

JOB STATUS	
1	IDLE
2	RUNNING
3	REMOVED
4	COMPLETED
5	HELD

**These Job Attributes may
not be all defined at the
same time!!**



1. User submits job from machine without shared FS with AP
2. Sends files to the spool directory on the AP
3. The input files are copied to the EP
4. After completion the job output files are copied back in the spool directory
5. User can retrieve the output files from the AP spool

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condor_q [2]

- Shows info about the user's submitted jobs
- Allows to examine attributes of the jobs
- Can query using:
 - Constraints
 - JobID
 - Usernames
 - Job status

[2] HTCondor doc on condor_q
https://htcondor.readthedocs.io/en/latest/man-pages/condor_q.html

```
apascolinit1@ui-tier1 ~  
$ condor_q  
  
-- Schedd: sn01-htc.cr.cnaf.infn.it : <131.154.192.242:9618?... @ 07/10/24 15:10:03  
OWNER      BATCH_NAME  SUBMITTED   DONE    RUN    IDLE  TOTAL JOB_IDS  
apascolinit1 Sleep      7/10 12:58      _      _      3      3 408036.0-2  
  
Total for query: 3 jobs; 0 completed, 0 removed, 3 idle, 0 running, 0 held, 0 suspended  
Total for apascolinit1: 3 jobs; 0 completed, 0 removed, 3 idle, 0 running, 0 held, 0 suspended  
Total for all users: 39917 jobs; 14676 completed, 0 removed, 15238 idle, 9994 running, 9 held, 0 suspended  
  
apascolinit1@ui-tier1 ~  
$ condor_q -af:jh owner jobstatus 'formattime(qdate)' *  
ID      owner      jobstatus formattime(qdate)  
408036.0 apascolinit1 1         Wed Jul 10 12:58:52 2024  
408036.1 apascolinit1 1         Wed Jul 10 12:58:52 2024  
408036.2 apascolinit1 1         Wed Jul 10 12:58:52 2024
```

* qdate → submission timestamp

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condor_rm [6]

- Removes user's jobs
- A job to be removed can be specified by:
 - JobID
 - ClusterID
 - Owner
 - BatchName
 - Constraint

[6] HTCondor doc on condor_transfer_data
https://htcondor.readthedocs.io/en/latest/manual/pages/condor_rm.html

```
apascalini1@ui-tier1 ~
$ condor_submit submit.sub
Submitting job(s)...
3 job(s) submitted to cluster 61294.
apascalini1@ui-tier1 ~
$ condor_q

-- Schedd: sn-01t.cr.cnaf.infn.it : <131.154.192.159:9618?... @ 07/17/24 10:39:18
OWNER      BATCH_NAME    SUBMITTED   DONE    RUN    IDLE  TOTAL JOB_IDS
apascalini1 Sleep      7/17 10:39      _      _      3      3 61294.0-2

Total for query: 3 jobs; 0 completed, 0 removed, 3 idle, 0 running, 0 held, 0 suspended
Total for apascalini1: 3 jobs; 0 completed, 0 removed, 3 idle, 0 running, 0 held, 0 suspended
Total for all users: 8 jobs; 0 completed, 0 removed, 3 idle, 5 running, 0 held, 0 suspended

apascalini1@ui-tier1 ~
$ condor_rm 61294.0
Job 61294.0 marked for removal
apascalini1@ui-tier1 ~
$ condor_q

-- Schedd: sn-01t.cr.cnaf.infn.it : <131.154.192.159:9618?... @ 07/17/24 10:39:49
OWNER      BATCH_NAME    SUBMITTED   DONE    RUN    IDLE  TOTAL JOB_IDS
apascalini1 Sleep      7/17 10:39      1      2      _      3 61294.1-2

Total for query: 2 jobs; 0 completed, 0 removed, 0 idle, 2 running, 0 held, 0 suspended
Total for apascalini1: 2 jobs; 0 completed, 0 removed, 0 idle, 2 running, 0 held, 0 suspended
Total for all users: 7 jobs; 0 completed, 0 removed, 0 idle, 7 running, 0 held, 0 suspended

apascalini1@ui-tier1 ~
$ condor_rm 61294
All jobs in cluster 61294 have been marked for removal
apascalini1@ui-tier1 ~
$ condor_q

-- Schedd: sn-01t.cr.cnaf.infn.it : <131.154.192.159:9618?... @ 07/17/24 10:39:58
OWNER BATCH_NAME    SUBMITTED   DONE    RUN    IDLE  HOLD  TOTAL JOB_IDS
apascalini1 Sleep      7/17 10:39      _      _      _      _      0

Total for query: 0 jobs; 0 completed, 0 removed, 0 idle, 0 running, 0 held, 0 suspended
Total for apascalini1: 0 jobs; 0 completed, 0 removed, 0 idle, 0 running, 0 held, 0 suspended
Total for all users: 5 jobs; 0 completed, 0 removed, 0 idle, 5 running, 0 held, 0 suspended
```

Job removed using JobID

Jobs removed using ClusterID

HTCondor-CE

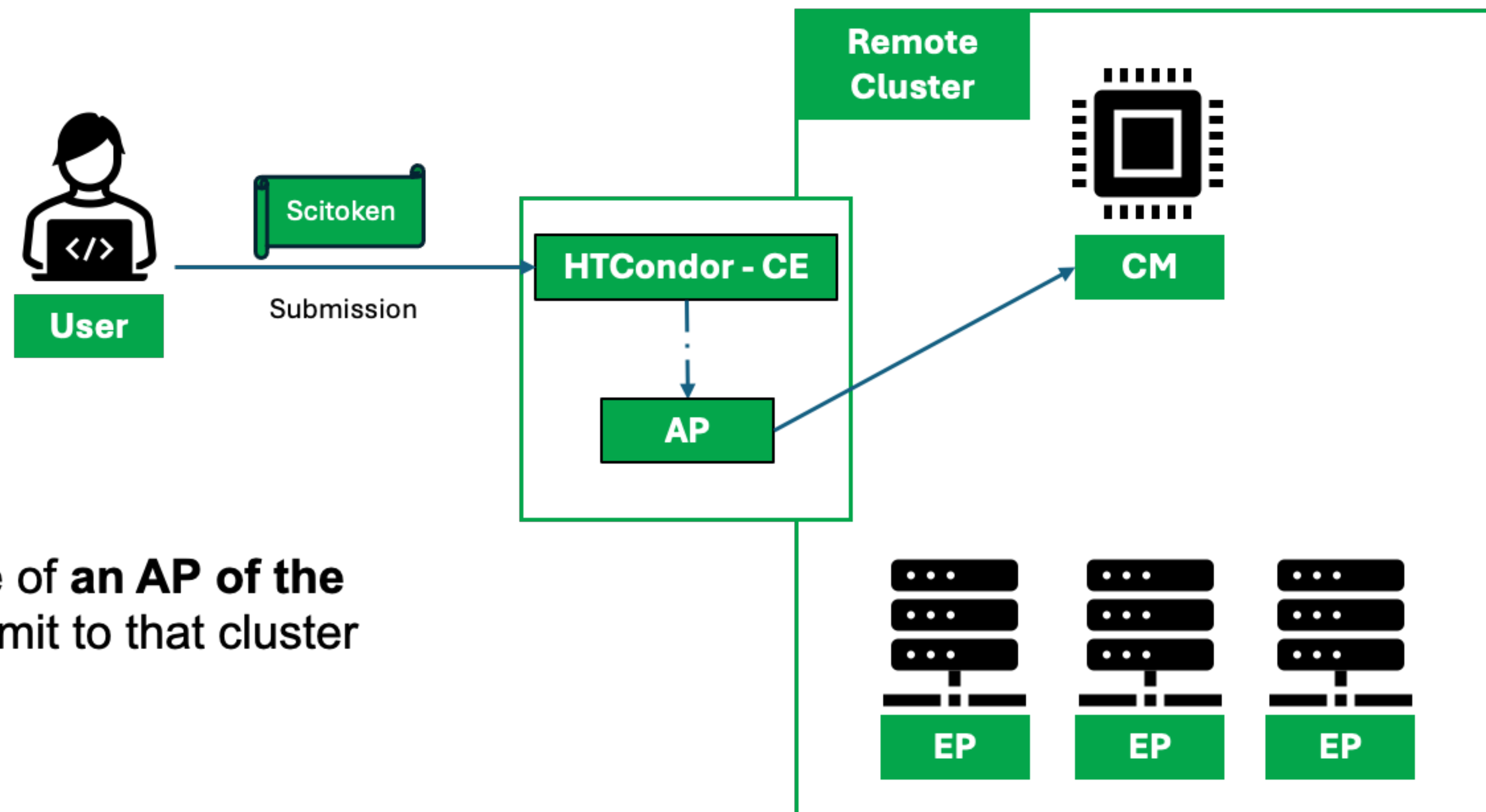


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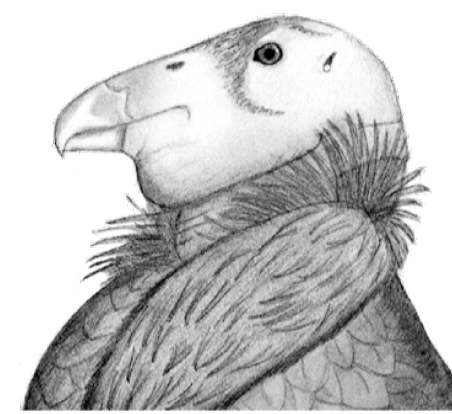


HTCondor-CE (**Compute Entrypoint**)
is an additional software to manage
GRID Jobs

- AuthN/Z (**SCITOKEN** o SSL)
- Submission to a **remote cluster**



HTCondor-CE runs on the same machine of **an AP of the remote cluster** in order to be able to submit to that cluster



HTCondor-CE

Autenticazione con JWT

To submit a job to an HTCondor-CE it is necessary to use a supported AuthN method:

- **SSL (VOMS-proxy)**
- **Scitokens (JWT)**

Token issued by IAM [7]

Needed scopes:
compute.create
compute.modify
compute.read
compute.cancel

```
apascolini1@ui-tier1 ~  
$ payload $(oidc-token htc-grid)  
{  
  "sub": "2c5255ba-9480-4815-aea0-88159f6602b7",  
  "iss": "https://iam.cloud.infn.it/",  
  "preferred_username": "apascolini",  
  "client_id": "9b01323c-c74b-44f4-bffb-d439300f453e",  
  "wlcg.ver": "1.0",  
  "aud": "https://wlcg.cern.ch/jwt/v1/any",  
  "nbf": 1720621050,  
  "scope": "openid compute.create offline_access profile compute.read compute.cancel compute.modify wlcg wlcg.groups",  
  "name": "Alessandro Pascolini",  
  "exp": 1720624650,  
  "iat": 1720621050,  
  "jti": "35503676-f800-43dc-9e51-3fc605b26932",  
  "wlcg.groups": [  
    "/user-support"  
  ]  
}
```



Configurazione per Autenticazione con JWT

L'autenticazione e autorizzazione in HTCondor si basa su

- validazione del JWT
- mapping statico o dinamico verso un **utente unix** del cluster remoto

```
apascolini1@ui-tier1 ~  
$ payload $(oidc-token htc-grid)  
{  
  "sub": "2c5255ba-9480-4815-aea0-88159f6602b7",  
  "iss": "https://iam.cloud.infn.it/",  
  "preferred_username": "apascolini",  
  "client_id": "9b01323c-c74b-44f4-bffb-d439300f453e",  
  "wlcg.ver": "1.0",  
  "aud": "https://wlcg.cern.ch/jwt/v1/any",  
  "nbf": 1720621050,  
  "scope": "openid compute.create offline_access profile compute.read compute.cancel compute.modify wlcg wlcg.groups",  
  "name": "Alessandro Pascolini",  
  "exp": 1720624650,  
  "iat": 1720621050,  
  "jti": "35503676-f800-43dc-9e51-3fc605b26932",  
  "wlcg.groups": [  
    "/user-support"  
  ]  
}
```



Configurazione per Autenticazione con JWT

Mapping statico

- in `/etc/condor-ce/mapfiles.d/<mapfile>`
- considera solo coppia **issuer** e **subject**
 - coppia esatta
 - regexp

Il mapping viene sempre valutato in **ordine discendente**

```
[root@ce01-htc ~]# cat /etc/condor-ce/mapfiles.d/10-scitokens.conf
#####
# File managed by PUPPET
#####
#####
#
# HTCondor-CE manual SciTokens authentication mappings
#
# This file will NOT be overwritten upon RPM upgrade.
#
#####

# Authentication of SciTokens and WLCG tokens requires CA certificates
# installed in the standard system (/etc/pki/tls/certs/ca-bundle.crt)
# or Grid (/etc/grid-security/certificates) locations. If using Grid
# certificates, be sure to set 'AUTH_SSL_*' configuration values as
# appropriate in /etc/condor-ce/config.d/

# To allow clients with SciToken or WLCG tokens to submit jobs to your
# HTCondor-CE, add lines of the following format:
#
# SCITOKENS /<TOKEN ISSUER>,<TOKEN SUBJECT>/ <USERNAME>
#
# Where the second field (between the '/') should be a Perl Compatible
# Regular Expression (PCRE). For example, to map all clients with
# SciTokens issued by the OSG V0 regardless of subject to the local
# 'osg' user, add the following line to this file:
#
# SCITOKENS /^https:\\\\scitokens.org\\/osg-connect,.*\\/ osg

# ALICE
SCITOKENS /^https:\\\\alice-auth(\\.web)?\\.cern\\.ch\\/,a4f952ab-6e43-059c-c530-80df119a018b$/ alicesgm001
SCITOKENS /^https:\\\\alice-auth(\\.web)?\\.cern\\.ch\\/,79a94edc-20c0-f95c-9f93-860837a4e1c9$/ alice001

# ATLAS
SCITOKENS /^https:\\\\atlas-auth(\\.web)?\\.cern\\.ch\\/,7dee38a3-6ab8-4fe2-9e4c-58039c21d817/ atlasprd001
SCITOKENS /^https:\\\\atlas-auth(\\.web)?\\.cern\\.ch\\/,750e9609-485a-4ed4-bf16-d5cc46c71024/ pilatlas001
SCITOKENS /^https:\\\\atlas-auth(\\.web)?\\.cern\\.ch\\/,5c5d2a4d-9177-3efa-912f-1b4e5c9fb660/ atlassgm001
```



Configurazione per Autenticazione con JWT

Mapping dinamico

- in `/etc/condor-ce/mapfiles.d/<mapfile>`
- basato su PLUGINS
- considera coppia `issuer` e `subject` per utilizzare il plugin
 - coppia esatta
 - regexp

```
# IAM Cloud tokens with plugin
SCITOKENS /^https:\/\/iam\.cloud\.inf\.it\/,/ PLUGIN:IAM_GROUPS
```

Il mapping viene sempre valutato in **ordine discendente**



Configurazione per Autenticazione con JWT

Mapping dinamico - PLUGINS

- definiti nella configurazione del HTC-CE
- HTC-CE passa il payload del token come stdin
- HTC-CE si aspetta un **utente unix** come **unica stringa di stdout**
- Molto flessibile
- AuthN/Z su più caratteristiche dei token
i.e. wlcg/iam groups

```
[root@ce01-htc ~]# condor_ce_config_val -d sec_scitokens_plugin
# Configuration from machine: ce01-htc.cr.cnaf.infn.it

# Parameters with names that match sec_scitokens_plugin:
SEC_SCITOKENS_PLUGIN_IAM_COMMAND = $(PLUGIN_DIR)/scitokens-mapping/scitokens-mapping.sh
SEC_SCITOKENS_PLUGIN_IAM_GROUPS_COMMAND = $(PLUGIN_DIR)/scitokens-mapping/scitokens-mapping.sh
```

fix: missing open curly brace
Carmelo Pellegrino authored 11 months ago

6f2daf03 History

scitokens-mapping.sh 1.43 KiB Edit Replace Delete

```
1 #!/usr/bin/env bash
2 #
3 # Script to map SCITOKENS on pool accounts
4 # It is intended to used as a SciTokens Mapping plugin within HTCondor:
5 # https://htcondor.readthedocs.io/en/latest/admin-manual/security.html#scitokens-mapping-plugins
6 #
7 # Author: Carmelo Pellegrino <carmelo.pellegrino@cnaf.infn.it>
8 #
9
10 set -e
11
12 source $(dirname $0)/functions.sh
13
14 # swallow stdin into a variable
15 readonly JWT_PAYLOAD="$(cat)"
16 readonly ISSUER="$(echo "${JWT_PAYLOAD}" | jq -r .iss)"
17 readonly SUBJECT="$(echo "${JWT_PAYLOAD}" | jq -r .sub)"
18
19 if [ -n "$1" ]; then
20     VO="$1"
21 else
22     readonly IAMGROUPS="$(echo "${JWT_PAYLOAD}" | jq -r '.wlcg.groups[]')"
```



Routing HTCondor-CE con JWT

Il job una volta sottomesso al HTC-CE deve poi essere sottomesso allo **schedd locale**

- prima deve essere **"routato"**

```
### VO LHC
JOB_ROUTER_ROUTE_NAMES = $(JOB_ROUTER_ROUTE_NAMES) dteam ops wlcg atlas_sam atlas atlas_arm atlas_cuda alice alice_sam cms_itb cms cms_sam lhcb lhcb_sam group
1_catchall belle dune group2_catchall cta cygno ds50 eic hyperk juno na62 virgovirgo virgoligo clas12 user_support designer

# - ATLAS
JOB_ROUTER_ROUTE_atlas_sam @=jrt
  REQUIREMENTS (x509UserProxyVoName =?= "atlas" && x509UserProxyFirstFQAN =?= "/atlas/Role=lcgadmin/Capability=NULL") \
    || (regexp("^https://atlas-auth(.web)?\.cern\.ch/", AuthTokenIssuer) && AuthTokenSubject =?= "5c5d2a4d-9177-3efa-912f-1b4e5c9fb660")

  UNIVERSE      VANILLA

  SET           t1_SamTest      True
@jrt

JOB_ROUTER_ROUTE_atlas @=jrt
  REQUIREMENTS (x509UserProxyVoName =?= "atlas" \
    || (regexp("^https://atlas-auth(.web)?\.cern\.ch/", AuthTokenIssuer) && Member(AuthTokenSubject ? : "", {"7dee38a3-6ab8-4fe2-9e4c-58039c21d8
17","750e9609-485a-4ed4-bf16-d5cc46c71024"}))) \
    && (queue =?= "atlas")

  UNIVERSE      VANILLA

  SET           t1_SamTest      False
@jrt
```

HTCondor-CE

Alcune referenze



Mapping con SCITOKENS

<https://htcondor.com/htcondor-ce/v24/configuration/authentication/#scitokens>

Routing

<https://htcondor.com/htcondor-ce/v24/configuration/writing-job-routes/>

Troubleshooting - Common Issues

<https://htcondor.com/htcondor-ce/v24/troubleshooting/common-issues/>



With HTCondor-CE all the previous commands can be used

Some small changes...

~~condor_q → condor_q -pool <ce-fqdn>:9619 -name <ce-fqdn>
condor_submit → condor_submit -pool <ce-fqdn>:9619 -remote <ce-fqdn>~~

Useful commands:

```
export _condor_CONDOR_HOST=<ce-fqdn>:9619  
export _condor_SCHEDD_HOST=<ce-fqdn>  
alias condor_submit='condor_submit -spool'
```



With HTCondor-CE all the previous commands can be used

```
apascolinit1@ui-tier1 ~  
$ export BEARER_TOKEN=$(oidc-token htc-grid)  
apascolinit1@ui-tier1 ~  
$ export _condor_SEC_CLIENT_AUTHENTICATION_METHODS=SCITOKENS  
apascolinit1@ui-tier1 ~  
$ export _condor_CONDOR_HOST=ce01t-htc.cr.cnaf.infn.it:9619  
apascolinit1@ui-tier1 ~  
$ export _condor_SCHEDD_HOST=ce01t-htc.cr.cnaf.infn.it  
apascolinit1@ui-tier1 ~  
$ condor_q
```

Export to authenticate to the CE

Successfully contacted the CE

```
-- Schedd: ce01t-htc.cr.cnaf.infn.it : <131.154.192.69:9619?... @ 07/10/24 17:54:36  
OWNER BATCH_NAME          SUBMITTED   DONE    RUN    IDLE   HOLD   TOTAL JOB_IDS  
  
Total for query: 0 jobs; 0 completed, 0 removed, 0 idle, 0 running, 0 held, 0 suspended  
Total for apascolinius: 0 jobs; 0 completed, 0 removed, 0 idle, 0 running, 0 held, 0 suspended  
Total for all users: 365 jobs; 364 completed, 0 removed, 0 idle, 0 running, 1 held, 0 suspended
```

HTCondor-CE

Comandi



HTCondor
Software Suite



With HTCondor-CE all the previous commands can be used

```
token-submit.sub
1 # Unix submit description file
2 # sleep.sub -- simple sleep job
3
4 # Grid-specific options
5 +owner = undefined
6 scitokens_file = $ENV(HOME)/token
7
8 batch_name = Token-Sleep
9 executable = /usr/bin/sleep
10 arguments = 300
11 log = Sleep.log
12 output = Sleep.out
13 error = Sleep.err
14
15
16 # require to run on LINUX machines
17 requirements = OpSys == "LINUX"
18
19 # ask for 1 core, 1024MB memory and 1024KB disk
20 request_cpus = 1
21 request_memory = 1024M
22 request_disk = 10240K
23
24 # submitting 3 jobs (default 1, if no number specified after queue)
25 queue 3
```

GRID stuff

NOTA
some CEs may override the requirements specified in the submit file

```
apascolinit1@ui-tier1 ~
$ alias condor_submit='condor_submit -spool'
apascolinit1@ui-tier1 ~
$ MASK=$(umask); umask 0077 ; echo $BEARER_TOKEN > $HOME/token; umask $MASK
apascolinit1@ui-tier1 ~
$ condor_submit token-submit.sub
Submitting job(s)...
3 job(s) submitted to cluster 9424.
apascolinit1@ui-tier1 ~
$ condor_q

-- Schedd: ce01t-htc.cr.cnaf.infn.it : <131.154.192.69:9619?... @ 07/10/24 18:10:58
OWNER      BATCH_NAME      SUBMITTED   DONE    RUN    IDLE  TOTAL JOB_IDS
apascolinus Token-Sleep   7/10 18:10      -      -      3      3 9424.0-2

Total for query: 3 jobs; 0 completed, 0 removed, 3 idle, 0 running, 0 held, 0 suspended
Total for apascolinus: 3 jobs; 0 completed, 0 removed, 3 idle, 0 running, 0 held, 0 suspended
Total for all users: 368 jobs; 364 completed, 0 removed, 3 idle, 0 running, 1 held, 0 suspended
```

Sottomissione HTCondor-CE

Hands-On

Hands-On

Esercizi

- 3 semplici esercizi
- disponibili a: <https://baltig.infn.it/apascolini/corso-htc.git>

```
git clone https://baltig.infn.it/apascolini/corso-htc.git
```

- CE per l'hands-on
`ce01t-htc.cr.cnaf.infn.it`
- Mapping configurato per token rilasciati da:
<https://iam.quantumtea.it/>

Hands-On

Ottenere un token per la sottomissione

```
$ eval $(oidc-agent-service use)
```

```
$ oidc-gen -w device htcondor-handson
```

```
issuer: https://iam.quantumtea.it/
```

```
scopes:
```

```
profile wlcg.groups wlcg compute.create compute.modify compute.read compute.cancel
```

Hands-On

Ottenere un token per la sottomissione

Controllare il token

```
$ oidc-token htcondor-handson | jq -R ' split(".") | .[1] | @base64d | fromjson'
```

```
[apascolini@ui-apascolini ~]$ oidc-token htcondor-handson | jq -R ' split(".") | .[1] | @base64d | fromjson'
{
  "wlcg.ver": "1.0",
  "sub": "19960fa5-2efa-4b91-8da9-8ac542e2c104",
  "aud": "https://wlcg.cern.ch/jwt/v1/any",
  "nbf": 1747120517,
  "scope": "openid compute.create offline_access profile compute.read compute.cancel compute.modify wlcg wlcg.groups",
  "iss": "https://iam.quantumtea.it",
  "exp": 1747124117,
  "iat": 1747120517,
  "jti": "2a740136-3ae2-4a40-a741-c0849f4be634",
  "client_id": "bc3adfdc-bd1e-42bd-bc0c-1618e84da877",
  "wlcg.groups": [
    "/htcondor"
  ]
}
```

Hands-On

Contattare HTCondor-CE

HTCondor via RPM

Nella repo con gli esercizi:

```
$ source useful-ce-exports.sh ce01t-htc.cr.cnaf.infn.it
```

```
$ export BEARER_TOKEN=$(oidc-token htcondor-handson)
```

```
$ condor_q
```

Hands-On

Contattare HTCondor-CE

HTCondor via Docker

Nella repo con gli esercizi:

```
$ source docker-setup.sh ce01t-htc.cr.cnaf.infn.it
```

```
$ export BEARER_TOKEN=$(oidc-token htcondor-handson)
```

```
$ condor_q
```

Leggermente più scomodo ma funziona :)