



# Cloudscheduler version 2

from an HTCondor admin's point of view

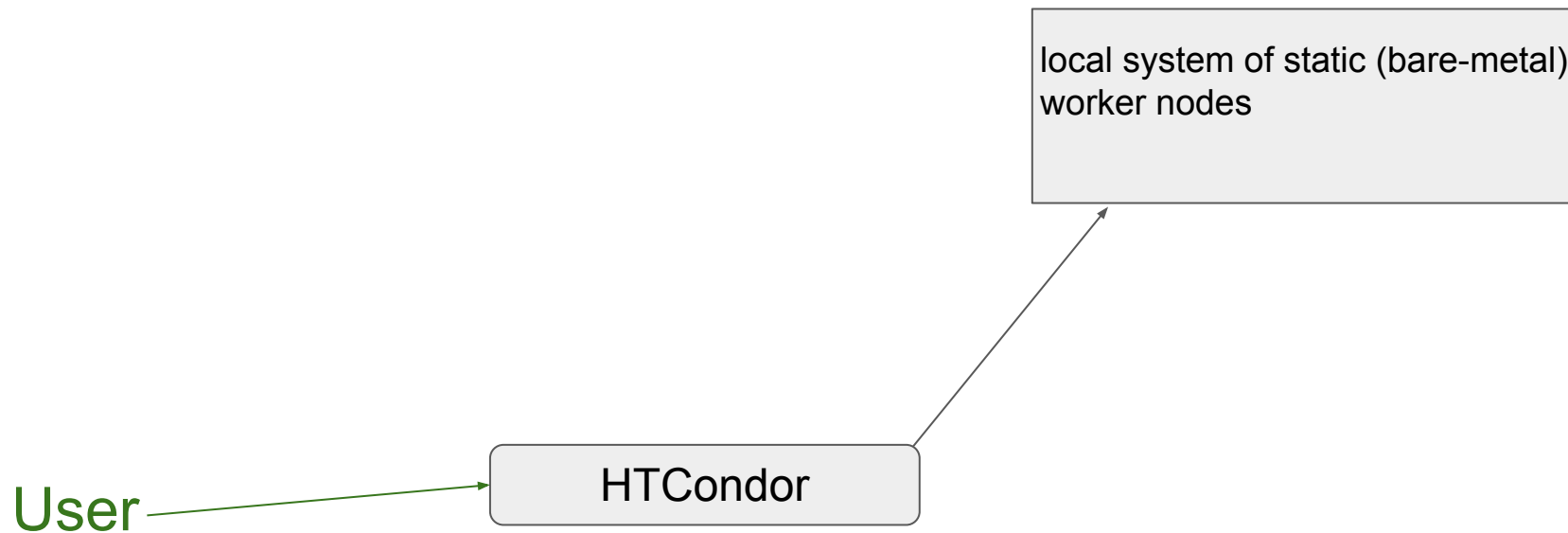
HEPiX Spring 2023 at ASGC, Taipei, Taiwan

Marcus Ebert  
on behalf of the  
HEP-RC group at the University of Victoria, Canada

# What is Cloudscheduler

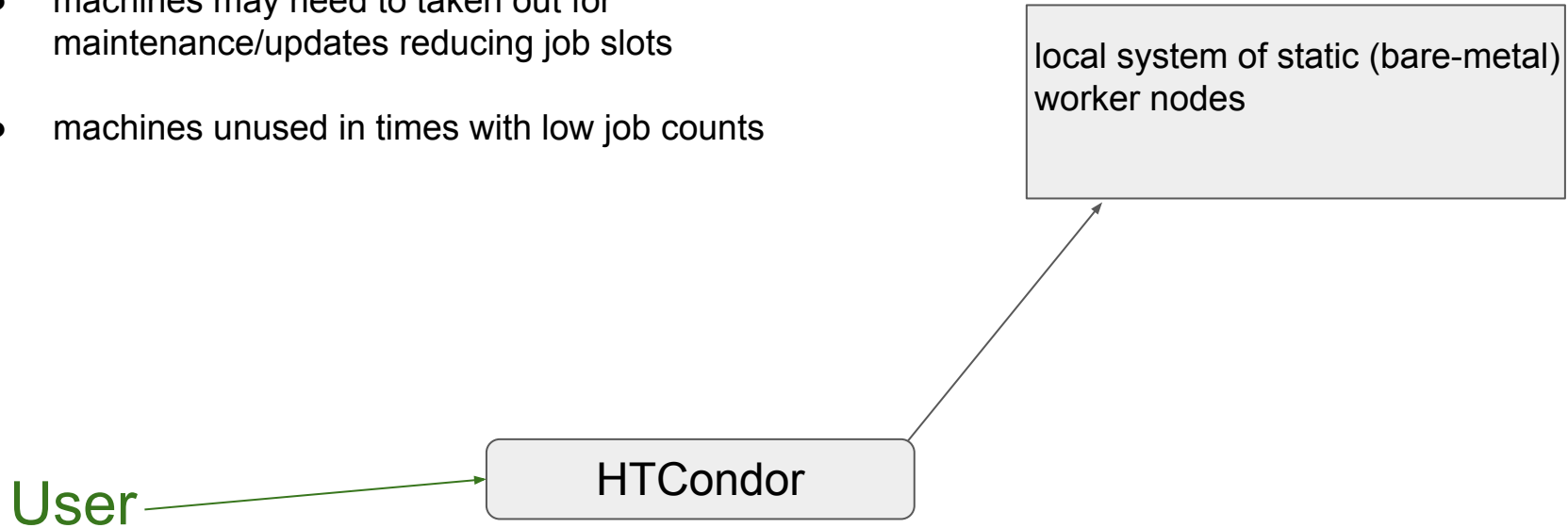
- software that is able to start Virtual Machines (VMs) on clouds
  - clouds can be local or far away
  - concept of groups
    - multiple clouds can be used in each group
    - multiple groups are possible
- startup of VMs depends on jobs in an HTCondor queue
  - dynamic process, on demand
  - VMs are started depending on the resources needed by jobs for a specific group
  - VMs are automatically deleted when no more jobs available that can use those resources

# Multi-cloud batch system with Cloudscheduler

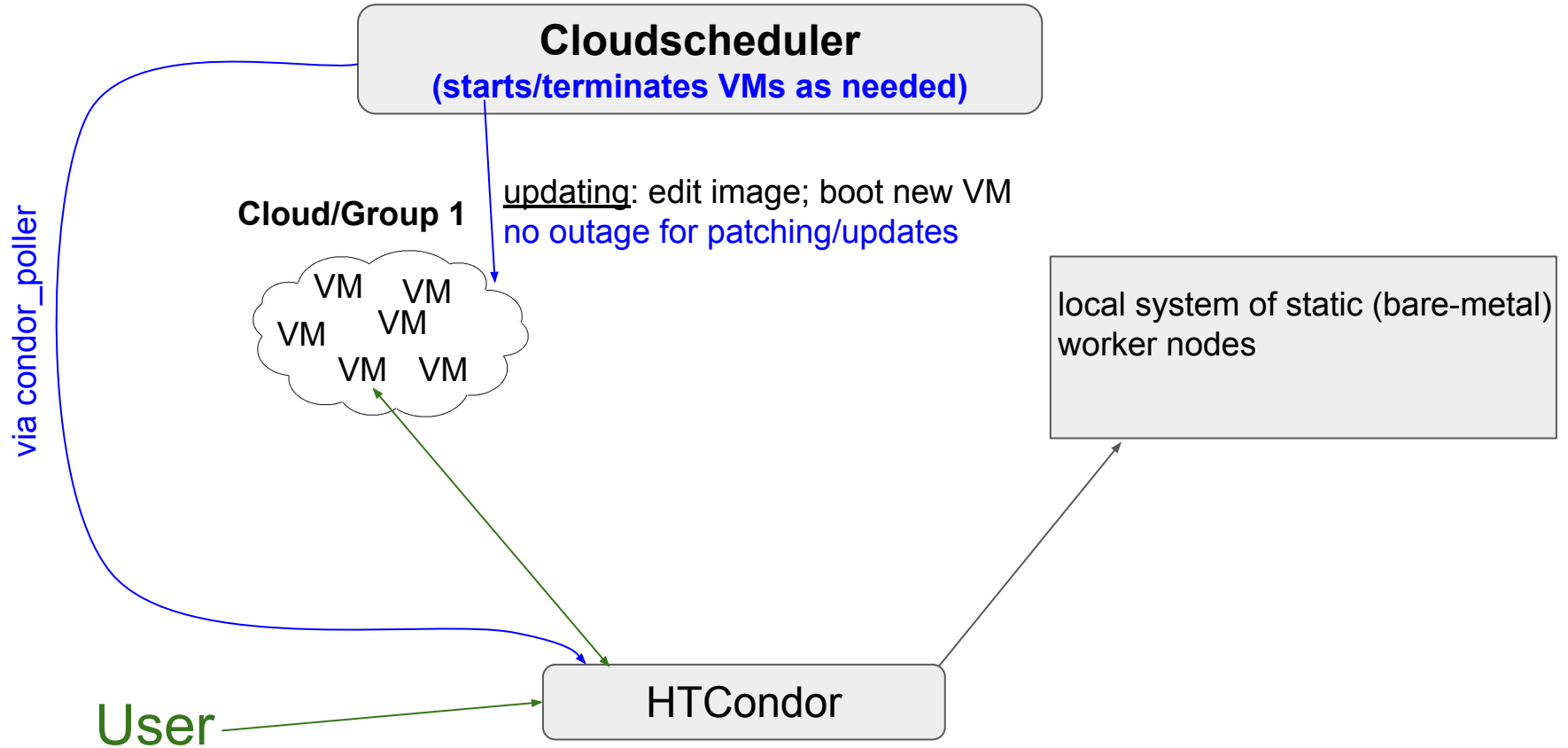


# Multi-cloud batch system with Cloudscheduler

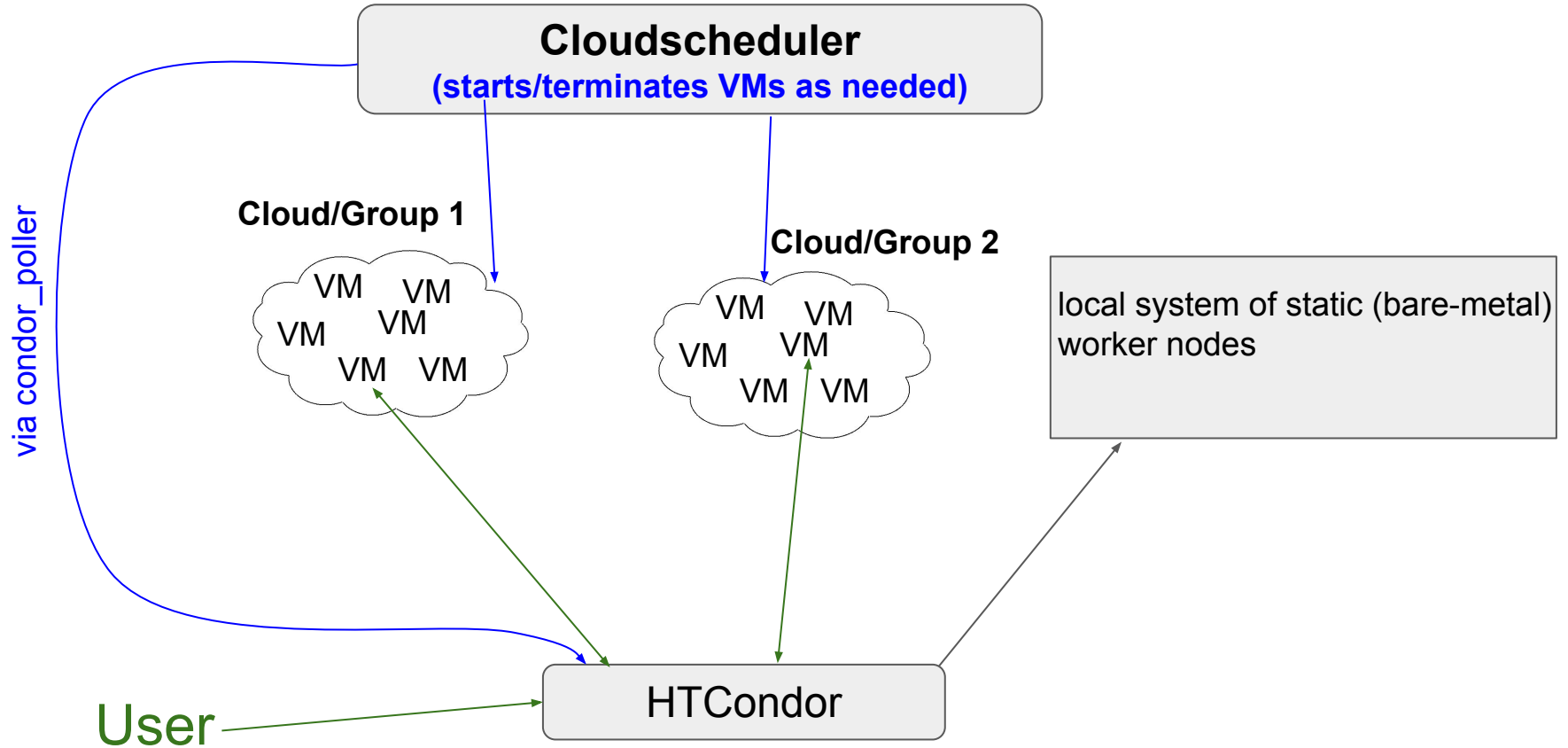
- not easy to extend in times of large job submissions
- machines may need to be taken out for maintenance/updates reducing job slots
- machines unused in times with low job counts



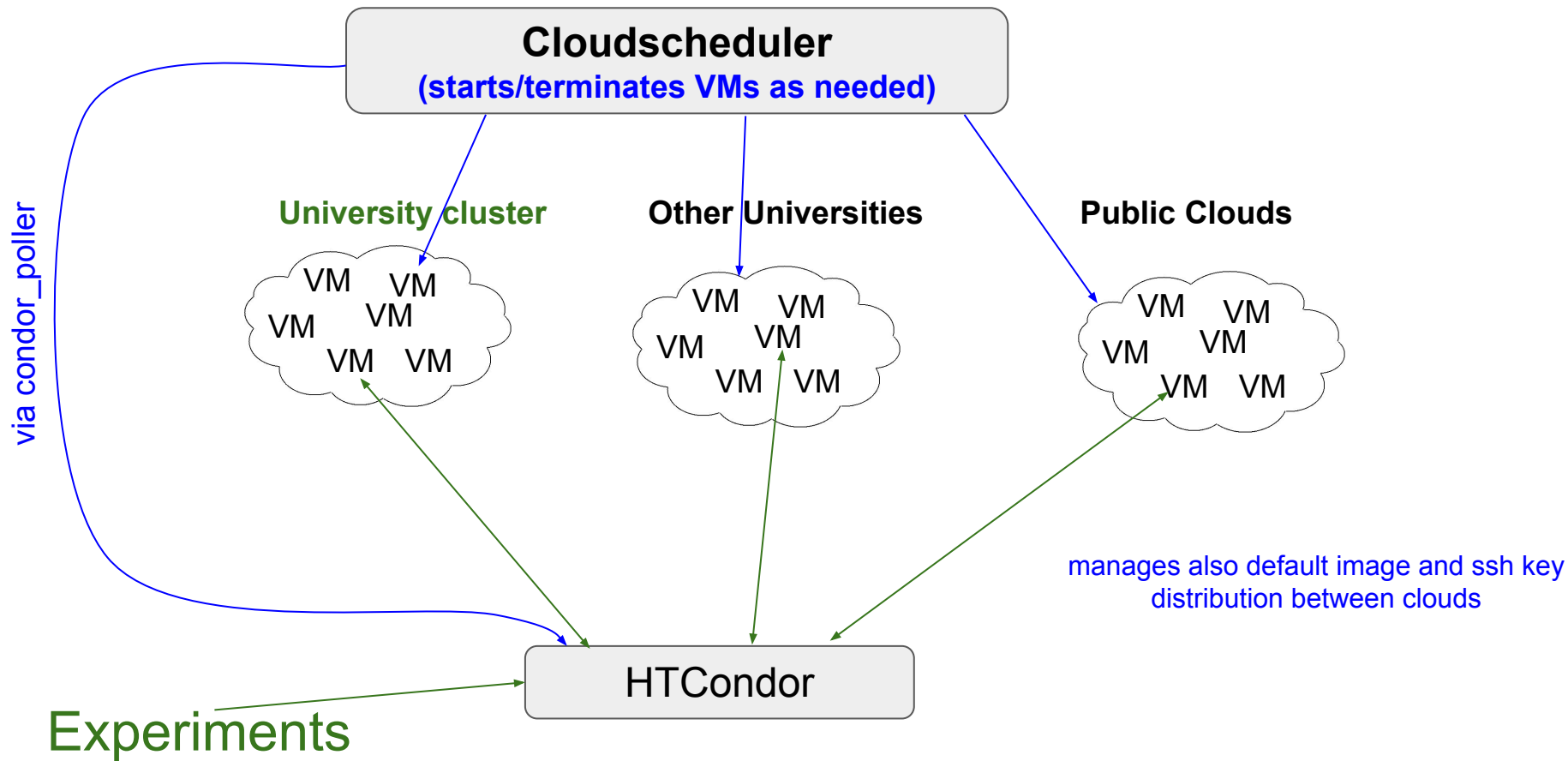
# Multi-cloud batch system with Cloudscheduler



# Multi-cloud batch system with Cloudscheduler



# Multi-cloud batch system with Cloudscheduler



# How to install cloudscheduler

- checkout the ansible playbook from github
  - <https://github.com/hep-gc/uvic-heprc-ansible-playbooks>
  - source: <https://github.com/hep-gc/cloudscheduler/>
    - ansible will get it automatically
  - technical information: <https://link.springer.com/epdf/10.1007/s41781-020-0036-1>
    - large improvements since then
- edit the vars files depending on your local systems
  - hostnames, IPs, admin email,..
- edit the secret files
  - contains passwords for mysql, amqp, influxdb, csv2 default user,...
- run the ansible playbook
- point browser to <https://....>



There are no public groups available to display.

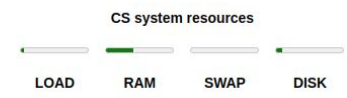
There are no public groups available to display.

login with default user created during ansible install



Group	Jobs	Idle	Running	Completed	Held	Other	Foreign	Condor FQDN	Condor Status	Condor Cert	Worker Cert
default	0	0	0	0	0	0	0	csv2-test.babar.uvic.ca	✓	-	-

Group	Clouds	RT (µs)	VMs	Starting	Unreg.	Idle	Running	Retiring	Manual	Error	Slots	Slot Cores Busy Idle	Native Cores Used Limit	RAM
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Group	Jobs	Idle	Running	Completed	Held	Other	Foreign	Condor FQDN	Condor Status	Condor Cert	Worker Cert
default	0	0	0	0	0	0	0	csv2-test.babar.uvic.ca	✓	-	-

Group	Clouds	RT (µs)	VMs	Starting	Unreg.	Idle	Running	Retiring	Manual	Error	Slots	Slot Cores Busy	Slot Cores Idle	Native Cores Used	Native Cores Limit	RAM

“default” group and condor server installed during installed

status of csv2 services

status of resource usage



Group	Jobs	Idle	Running	Completed	Held	Other	Foreign	Condor FQDN	Condor Status	Condor Cert	Worker Cert
default	0	0	0	0	0	0	0	csv2-test.babar.uvic.ca	✓	-	-

Group	Clouds	RT (µs)	VMs	Starting	Unreg.	Idle	Running	Retiring	Manual	Error	Slots	Slot Cores Busy Idle	Native Cores Used Limit	RAM

Status of clouds, VMs and utilized cores will appear here

“default” group and condor server installed during installed

status of csv2 services

status of resource usage

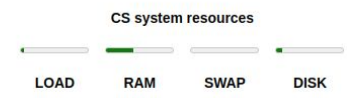


Group	Jobs	Idle	Running	Completed	Held	Other	Foreign	Condor FQDN	Condor Status	Condor Cert	Worker Cert
default	0	0	0	0	0	0	0	csv2-test.babar.uvic.ca	✓	-	-

Group	Clouds	RT (µs)	VMs	Starting	Unreg.	Idle	Running	Retiring	Manual	Error	Slots	Slot Cores Busy	Slot Cores Idle	Native Cores Used	Limit	RAM
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administrator settings for the csv2 system including user/group management



Group	Jobs	Idle	Running	Completed	Held	Other	Foreign	Condor FQDN	Condor Status	Condor Cert	Worker Cert
default	0	0	0	0	0	0	0	csv2-test.babar.uvic.ca	✓	-	-

Group	Clouds	RT (µs)	VMs	Starting	Unreg.	Idle	Running	Retiring	Manual	Error	Slots	Slot Cores Busy	Slot Cores Idle	Native Cores Used	Limit	RAM
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settings specific to a single group



# How to use cloudscheduler

- condor installed with cloudscheduler: make it available for submissions
- existing HTCondor server: create a group in cloudscheduler and connect the existing server to it
  - install the condor\_poller on the existing HTCondor server
- additions to job's jdl file are needed:
  - *Requirements* string needs to contain cloudscheduler group\_name
    - *group\_name* =?= "atlas-uvic"
  - redirecting some jobs to subset of clouds: alias name also needs to be added
    - *target\_alias* =?= "belle-local-worker"
  - example: *Requirements = ( OpSys == "LINUX" ) && ( group\_name =?= "belle" && target\_alias =?= "belle-local-worker" && TARGET.Arch == "X86\_64" ) && ( TARGET.Disk >= RequestDisk ) && ( TARGET.Memory >= RequestMemory )*



default -

Users Username search..

+  csv2\_default

Update Group

list of groups

create/delete groups

manage who has access to this group

group administration

HTCondor FQDN	<input type="text" value="bellecs.heprc.uvic.ca"/>
HTCondor container hostname	<input type="text"/>
HTCondor other submitters	<input type="text" value="dirac"/>
Job CPUs	<input type="text" value="1"/>
Job RAM	<input type="text" value="1000"/>
Job Disk	<input type="text" value="5"/>
Job Swap	<input type="text" value="0"/>
VM Keyname	<input type="text" value="sharedKey"/>
VM Image	<input type="text" value="cernvm4micro2021.05.1.hdd"/>
VM Flavor	<input type="text" value="Auto detect"/>
VM Network	<input type="text" value="Auto detect"/>
VM Keep Alive	<input type="text" value="1800"/>
Visible to Public	<input checked="" type="checkbox"/>

- group configuration specifies general settings for a group, like
  - condor server
  - whose jobs can get resources
  - which image the group prefers,....

check if you want information on public status page

belle

- Settings
- Metadata

metadata specifies what gets to the VM via cloud-init

data can be in multiple files

priority defines the order of execution on the VM

- csv2htcondor\_check
- ssh\_key.yaml
- amazonfix.yaml
- belle
  - condor-config
- usersshkey
- accounting
- benchmark
- cernvm-data.txt
- killcondor-defunct.yaml
- get-hepspec.yaml
- default.yaml.j2
- monitoring
- ssh-fix.yaml
- +

### condor-config

Enabled:  Priority:  MIME Type:  Checksum: 35f97a16dfcebfa079c3e3a523dae99e

```
1 #cloud-config
2 merge_type: 'list(append)+dict(recurse_array)+str()'
3 write_files:
4 - content: |
5     #!/bin/bash -l
6     unset DIRAC
7     #export JOBFEATURES="/usr/sbin/make-jobfeatures"
8     #if [ -d /etc/machinefeatures ]
9     #then
10    # export MACHINEFEATURES=/etc/machinefeatures
11    #fi
12    uptime=$(date -d "$(uptime -s)" +%s)
13    now=$(date +%s)
14    if [ $(($now-$uptime)) -lt 3600 ];
15    then
16    sleep ${USER:4:2}m
17    fi
18
19    hs06bmk=$(condor_config_val HEPSPEC)
20    b2bmk=$(condor_config_val B2BMK)
21    hs06eq=$(condor_config_val HS06EQ)
22
23    condor_chirp set_job_attr HEPSPEC $hs06bmk > /dev/null 2>&1
24    condor_chirp set_job_attr B2BMK $b2bmk > /dev/null 2>&1
25    condor_chirp set_job_attr HS06EQ $hs06eq >/dev/null 2>&1
26
27    #sed -i "s/^shutil/#shutil/g;" $1
28    exec "$@"
29
30 owner: root:root
31 permissions: '0755'
32 path: /usr/libexec/condor/jobwrapper.sh
33 content: |
34     SEC_DAEMON_AUTHENTICATION =
35     SEC_DAEMON_AUTHENTICATION_METHODS =
36     SEC_CLIENT_AUTHENTICATION_METHODS =
37     SEC_PASSWORD_FILE =
38     LOG=/var/log/condor
39     RUN=/var/run/condor
40     SPOOL=/var/lib/condor/spool
41     JAVA_BENCHMARK_TIME = 0
```

editor window

- amazon-w
- arbutus
- beaver
- beluga** -
- Settings
- Metadata
- Exclusions
- cc-east
- chameleon-new
- ecdf-b
- +

Enabled

Paused

Priority

Cloud type

URL

Region

Auth Type

Project

User Id

Application Credential Id

Application Credential Secret

CA certificate

User domain name

Project domain name

Boot volume type

Boot volume base size

Boot volume extra size per core

Security Group

VM Keypname

VM Network

VM Image

VM Flavor

VM Keep Alive

Spot Price

Cores Softmax

Cores  / 1000

RAM  / 3840000 MB

Update Cloud

how many cores can be used in **TOTAL** on the cloud defined on the left

how many cores can be used by **csv2** on the cloud defined on the left

belle

Status

Cloud Config

Aliases

Group Config

Images

Keys

belle-local-worker

-

desy-worker

+

Clouds

amazon-w

arbutus

beaver

beluga

cc-east

chameleon-new

ecdf-b

Update

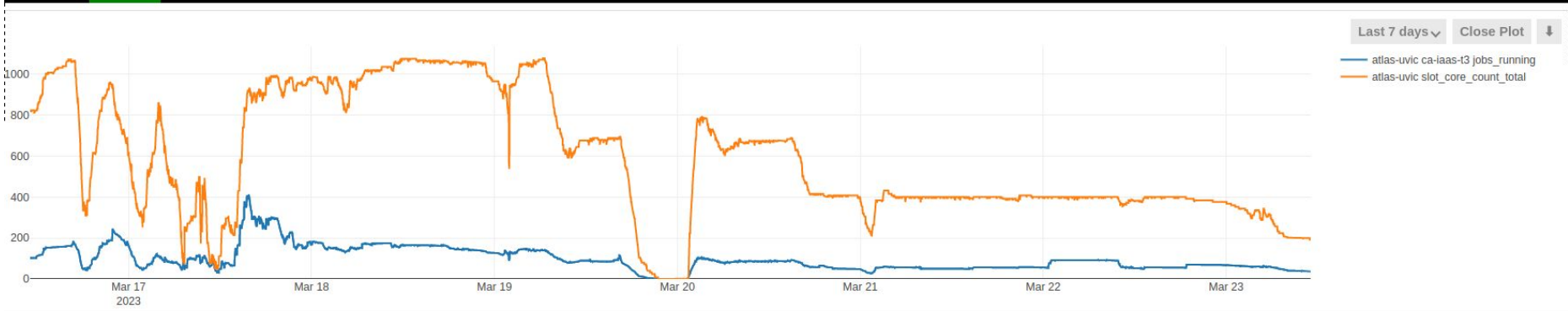
		belle	Status	Cloud Config	Aliases	Group Config	Images	Keys	Users	Groups	
Search by Image Name		+Upload Image		Private Image	Public Image	Transaction Error					
IMAGES		arbutus	beaver	beluga	cc-east	chameleon-new	ecdf-b				
Debian-10.13-Buster-x64-2023-02		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
AlmaLinux-8.7-x64-2022-11		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
cernvm4-2021.05.hdd		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
cernvm4micro2021.05.1.hdd		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
cernvm4-micro-2020.04-1.hdd		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
cernvm4-micro-2018.06-2.hdd		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
cernvm3-micro-3.0-6.hdd		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
cernvm4-micro-2020.01-1.hdd		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
cernvm3test-kernelpatch		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
cernvm3		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
cernvm4-shoaltest		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
Ubuntu-22.04.2-Jammy-x64-2023-02		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

belle	Status	Cloud Config	Aliases	Group Config	Images	Keys	Users	Groups	System Config	User Settings	HTCondor Plugin	Log out
Group	Target Alias	Jobs	Idle	Running	Completed	Held	Other	Foreign	Condor FQDN	Condor Status	Condor Cert	Worker Cert
atlas-cern	▼ None	0	0	0	0	0	0	0	csv2a.heprc.uvic.ca	✓	✓	✓
atlas-cern	▼ cern-extension	111	100	10	1	0	0	0	csv2a.heprc.uvic.ca	✓	✓	✓
atlas-cern	▼ hephy-uibk	274	29	218	27	0	0	0	csv2a.heprc.uvic.ca	✓	✓	✓
atlas-cern	▼ lrz-lmu_cloud	200	200	0	0	0	0	0	csv2a.heprc.uvic.ca	✓	✓	✓
atlas-cern	▼ uki-scotgrid-ecdf_cloud	152	98	51	2	1	0	0	csv2a.heprc.uvic.ca	✓	✓	✓
atlas-uk	▼ None	0	0	0	0	0	0	0	csv2a.heprc.uvic.ca	✓	✓	✓
atlas-uvic	▼ None	0	0	0	0	0	0	0	csv2a.heprc.uvic.ca	✓	✓	✓
atlas-uvic	▲ ca-iaas-t3	144	101	38	5	0	0	0	csv2a.heprc.uvic.ca	✓	✓	✓
			99×8c 2×1c	22×8c 16×1c	5×1c						Days left: 141	Days left: 141
australia-belle	▼ None	1154	364	790	0	0	0	0	bellects.heprc.uvic.ca	✓	-	-
babar	▼ None	0	0	0	0	0	0	0	login.babar.uvic.ca	✓	-	-
belle	▼ None	1554	607	947	0	0	0	0	bellects.heprc.uvic.ca	✓	-	-
belle	▼ belle-local-worker	3020	1508	1512	0	0	0	0	bellects.heprc.uvic.ca	✓	-	-
belle-validation	▼ None	0	0	0	0	0	0	0	belle-sd.heprc.uvic.ca	✓	-	-
belle-validation	▼ uvic-worker	12	0	12	0	0	0	0	belle-sd.heprc.uvic.ca	✓	-	-
desy-belle	▼ None	11	11	0	0	0	0	0	bellects.heprc.uvic.ca	✓	-	-
dune	▼ None	4	1	1	2	0	0	0	dune-condor.heprc.uvic.ca	✓	✓	✓
testing	▼ None	0	0	0	0	0	0	0	csv2a.heprc.uvic.ca	✓	✓	✓

Group	Clouds	RT (µs)	VMs	Starting	Unreg.	Idle	Running	Retiring	Manual	Error	Slots	Slot Cores Busy Idle	Native Cores Used Limit	RAM	Foreign	Global VMs Cores RAM Volume
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Group	Clouds	RT (µs)	VMs								Slots			Native Cores Used			Foreign			Global																													
			Starting	Unreg.	Idle	Running	Retiring	Manual	Error	Busy	Idle	Used	Limit	RAM	VMs	Cores	RAM	VMs	Cores	RAM	Volume																												
atlas-cern	cern	1055	5	0	0	0	5	0	0	0	10	40	0	40	40		0	0		5	40																												
	ecdf	487	49	0	0	0	49	0	0	0	50	386	6	392	400		1	8		50	400																												
	hephy	475	217	0	0	0	217	0	0	0	217	1736	0	1736	1750		2	4		219	1740																												
	lrz		0	0	0	0	0	0	0	0	0	0	0	0	0		4	0		4	0																												
	lrz-pe72te		0	0	0	0	0	0	0	0	0	0	0	0	0		4	0		4	0																												
Totals			271	0	0	0	271	0	0	0	277	2162	6	2168	2190		7	12		278	2180																												
atlas-uk	ecdf	487	0	0	0	0	0	0	0	0	0	0	0	400		50	400		50	400																													
	Totals																																																
atlas-uvic	arbutus	781	16	0	0	0	0	16	0	0	16	128	0	128	3000		416	3304		432	3432																												
	cc-east	773	8	0	0	0	8	0	0	0	20	62	2	64	72		1	4		9	68																												
			Flavor: c8-45gb-430 (8) Busy: 62 Idle: 2 (3.1 %)																																														
			1 core slot totals - slots: 14 cores: 14																																														
			<table border="1"> <thead> <tr> <th>ID</th> <th>Slots</th> <th>Cores</th> </tr> </thead> <tbody> <tr><td>1_1</td><td>1</td><td>1</td></tr> <tr><td>1_2</td><td>1</td><td>1</td></tr> <tr><td>1_3</td><td>2</td><td>2</td></tr> <tr><td>1_4</td><td>2</td><td>2</td></tr> <tr><td>1_5</td><td>2</td><td>2</td></tr> <tr><td>1_6</td><td>2</td><td>2</td></tr> <tr><td>1_7</td><td>2</td><td>2</td></tr> <tr><td>1_8</td><td>2</td><td>2</td></tr> </tbody> </table>										ID	Slots	Cores	1_1	1	1	1_2	1	1	1_3	2	2	1_4	2	2	1_5	2	2	1_6	2	2	1_7	2	2	1_8	2	2										
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1_7	2	2																																															
1_8	2	2																																															
			8 core slot totals - slots: 6 cores: 48																																														
			<table border="1"> <thead> <tr> <th>ID</th> <th>Slots</th> <th>Cores</th> </tr> </thead> <tbody> <tr><td>1_1</td><td>6</td><td>48</td></tr> </tbody> </table>										ID	Slots	Cores	1_1	6	48																															
ID	Slots	Cores																																															
1_1	6	48																																															
			<table border="1"> <thead> <tr> <th>Soft max</th> <th>RAM</th> <th>Foreign VMs</th> <th>Foreign Cores</th> <th>Foreign RAM</th> <th>Global VMs</th> <th>Global Cores</th> <th>Global RAM</th> <th>Global Volume</th> </tr> </thead> <tbody> <tr> <td>0.4 / 2.7 TB</td> <td>0.0 / 2.7 TB</td> <td>9 / 376</td> <td>68 / 768</td> <td>0.4 / 2.7 TB</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>										Soft max	RAM	Foreign VMs	Foreign Cores	Foreign RAM	Global VMs	Global Cores	Global RAM	Global Volume	0.4 / 2.7 TB	0.0 / 2.7 TB	9 / 376	68 / 768	0.4 / 2.7 TB																							
Soft max	RAM	Foreign VMs	Foreign Cores	Foreign RAM	Global VMs	Global Cores	Global RAM	Global Volume																																									
0.4 / 2.7 TB	0.0 / 2.7 TB	9 / 376	68 / 768	0.4 / 2.7 TB																																													





Group	Target Alias	Jobs	Idle	Running	Completed	Held	Other
las-cern	None	0	0	0	0	0	0
las-cern	cern-extension	111	101	10	0	0	0
las-cern	hephy-uibk	280	57	217	6	0	0
las-cern	lrz-lmu_cloud	200	200	0	0	0	0
las-cern	uki-scotgrid-ecdf_cloud	148	99	49	0	0	0
las-uk	None	0	0	0	0	0	0
las-uvic	None	0	0	0	0	0	0
las-uvic	ca-iaas-t3	136	100	32	4	0	0
			100x8c	22x8c 10x1c	4x1c		
istralia-belle	None	1203	383	820	0	0	0
ibar	None	0	0	0	0	0	0
lle	None	1551	604	947	0	0	0

Foreign

0
0
0
0
0
0
0
0
0
0
0
0

Condor FQDN Condor Status Condor Cert Worker Cert

Condor FQDN	Condor Status	Condor Cert	Worker Cert
csv2a.heprc.uvic.ca	✓	✓	✓
csv2a.heprc.uvic.ca	✓	✓	✓
csv2a.heprc.uvic.ca	✓	✓	✓
csv2a.heprc.uvic.ca	✓	✓	✓
csv2a.heprc.uvic.ca	✓	✓	✓
csv2a.heprc.uvic.ca	✓	✓	✓
csv2a.heprc.uvic.ca	✓	✓	✓
csv2a.heprc.uvic.ca	✓	✓	✓
bellecs.heprc.uvic.ca	✓	-	-
login.babar.uvic.ca	✓	-	-
bellecs.heprc.uvic.ca	✓	-	-

timeline for value in each field can be plotted

Group	Target Alias	Jobs	Idle	Running	Completed	Held	Other	Foreign
atlas-cern	None	0	0	0	0	0	0	0
atlas-cern	cern-extension	111	101	10	0	0	0	0
atlas-cern	hephy-ulbk	280	57	216	7	0	0	0
atlas-cern	lrz-lmu_cloud	200	200	0	0	0	0	0
atlas-cern	uki-scotgrid-ecdf_cloud	148	99	49	0	0	0	0
atlas-uvic	None	0	0	0	0	0	0	0
atlas-uvic	ca-iaas-t3	136	100	32	4	0	0	0
australia-belle	None	1203	383	820	0	0	0	0
babar	None	0	0	0	0	0	0	0
belle	None	1551	604	947	0	0	0	0
belle	belle-local-worker	3012	1500	1512	0	0	0	0
belle-validation	None	0	0	0	0	0	0	0
belle-validation	uvic-worker	5	0	5	0	0	0	0
desy-belle	None	26	26	0	0	0	0	0
dune	None	4	1	1	2	0	0	0

Group	Clouds	RT (µs)	VMs								Slots			Native Cores			Foreign			Global			
			Starting	Unreg.	Idle	Running	Retiring	Manual	Error	Busy	Idle	Used	Limit	RAM	VMs	Cores	RAM	VMs	Cores	RAM	Volume		
atlas-cern	cern	2076	5	0	0	0	5	0	0	0	10	40	0	40	40	0	0	0	0	5	40	0	0
	ecdf	869	49	0	0	0	49	0	0	0	49	385	7	392	400	0	1	8	0	50	400	0	0
	hephy	439	217	0	0	0	217	0	0	0	217	1736	0	1736	1750	0	2	4	0	219	1740	0	0
	lrz	⊘	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0
	lrz-pe72te	⊘	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0	0
	Totals			271	0	0	0	271	0	0	0	276	2161	7	2168	2190	0	7	12	0	278	2180	0
atlas-uvic	arbutus	737	16	0	0	0	0	16	0	0	16	128	0	128	3000	0	416	3304	0	432	3432	0	0

# Summary

Cloudscheduler can be used to create or extend an HTCondor batch system with on-demand starting worker nodes in distributed clouds.

A single cloudscheduler instance can handle multiple groups, each with a different HTCondor system, and multiple clouds in each group.

Ansible playbook and source available on github to allow easy install

# Summary

Cloudscheduler can be used to create or extend an HTCondor batch system with on-demand starting worker nodes in distributed clouds.

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What I didn't mention in the talk: There is not just a web interface but a CLI too...

csv2\_default -

+

New Password

Confirm Password

Cert CN

Superuser

Groups

default

Update user

↑

User administration

↑

list of users

create/delete users

↙

manage settings for a user

default Status Cloud Config Aliases Group Config Images Keys Users Groups **System Config** User Settings HTCondor Plugin Log out

condor\_poller.py  
**csmain**  
 csv2-ec2-instance-types  
 ec2cloudPoller.py  
 ec2\_image\_filter  
 ec2\_instance\_type\_filter  
 general  
 glintPoller.py  
 GSI  
 openstackPoller.py  
 ProcessMonitor  
 publisher.py  
 signal\_monitor  
 SQL  
 timeseriesPoller.py  
 vm\_data\_via\_https.py  
 watch\_csv2  
 web\_frontend

condonworker\_optional\_gsi\_msgs   
 idle\_VMs\_throttle 10  
 log\_file /var/log/cloudscheduler/main.l  
 log\_level INFO  
 max\_start\_vm\_cloud 5  
 new\_VMs\_throttle 5  
 sleep\_interval\_main\_long 10  
 sleep\_interval\_main\_short 5  
 terminate\_off   
 Update Config

configure behaviour for a specific service

menu entries for the difference csv2 services

system administration

csv2\_default

New Password	<input type="text"/>
Confirm Password	<input type="text"/>
Enabled global view on status page	<input type="checkbox"/>
Enabled jobs by target alias on status page	<input type="checkbox"/>
Enabled foreign/global VM information on status page	<input type="checkbox"/>
Enabled slot detail on status page	<input checked="" type="checkbox"/>
Enabled slot flavor info on status page	<input checked="" type="checkbox"/>
Status refresh interval (sec)	<input type="text" value="30"/>
Default group	<input type="text" value="default"/>

user configurable settings

each user can configure how csv2 behaves for them