CERN openlab

Parallel Task Execution

Mco replacement

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Introduction

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This project consists of evaluating Puppet Bolt as a possible replacement of MCollective.

Bolt Vs MCollective

	Puppet Bolt	**Puppet Mcollective**
Installation	Include ccin2p3-bolt puppet module	• Need to install Mcollective-server on every server. • Changes need to be synchronized across servers.
Task Execution	• Scripts in any language. • Modules from the Puppet Forge. • Reusable & Shareable tasks.	• RPC Ruby, Install agent in every server • Call external script
Orchestration	Bolt Plans: Group tasks together and run them in ordered, orchestrated sequences	Bolt Plans: Group tasks together and run them in ordered, orchestrated sequences
Security	Security provided by ssh	Unencrypted, messages are signed with ssh key for Authentication

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Run a task:

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bolt task run <MODULE::TASK> parameter=value --nodes
```


Example of task in Bolt

```
#!/usr/bin/env python
import socket,sys,os,json

host = os.environ.get('PT_host')
result = { 'host': host }

if host:
    result['ipaddr'] = socket.gethostbyname(host)
    result['hostname'] = socket.gethostname()
    result['_output'] = "%s is available at %s on %s" %
        (host, result['ipaddr'], result['hostname'])
    print(json.dumps(result))
else:
    result['_error'] = { 'msg': 'No host argument passed',
        'kind': 'missing_parameter' }
    print(json.dumps(result))
    sys.exit(1)
```

Bolt plan, Restart HAproxy (I)

```
plan bolt::haproxy_cluster_reboot_2 (
  TargetSpec $nodes,
  String $timeout =  '0',
  String     $message = 'reboot',
) {

  get_targets($nodes).each |$node| {

  #disable service httpd service on backend node
    run_task(
     'service',
      $node,
      action => 'disable',
      name =>'httpd',
    )

    #reboot backend node
    run_task(
      'reboot::init',
      $node,
      timeout => $timeout,
      message  => $message,
    )
```

Bolt plan, Restart HAproxy (II)

```
    #Wait until backend node http service is Up
    run_task(
      'bolt::wait_up',
       localhost,
       timeout => $timeout,
       backend_node => $node.host
    )

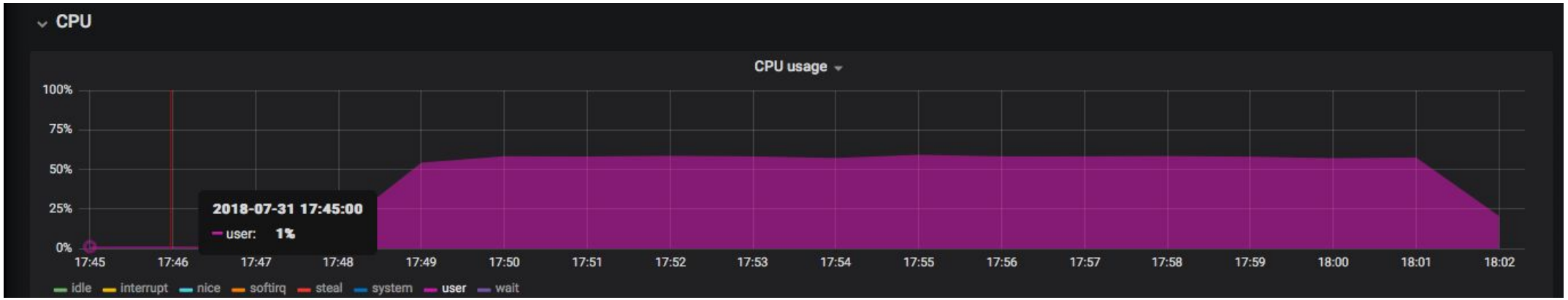
    #enable service httpd service on backend node
    run_task(
      'service',
      $node,
      action => 'enable',
      name =>'httpd',
    )

    run_task(
      'service',
      $node,
      action => 'start',
      name =>'httpd',
    )
  }
}
```

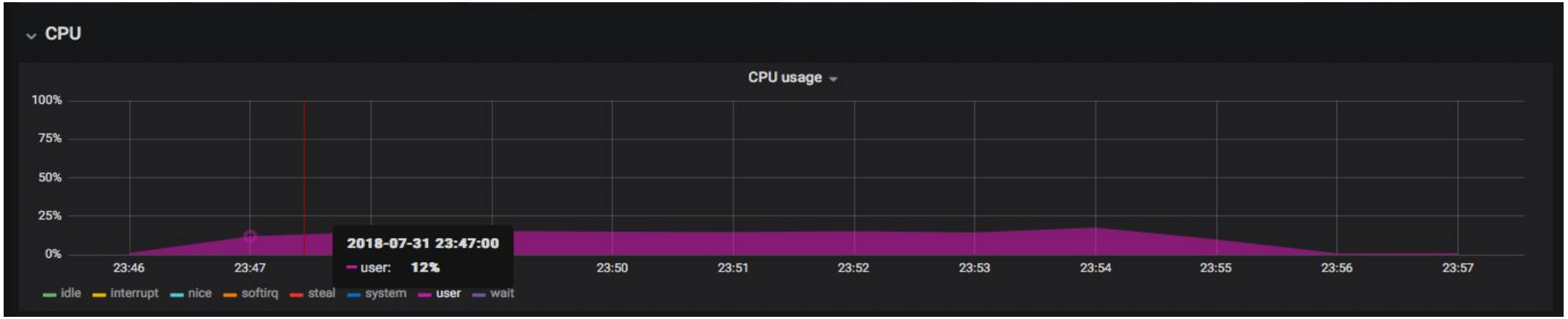
Numbers (I)

- I have Installed both Bolt and Mcollective in my MVs.
- The following results have been obtained when running multiples times a simple hello world task.

Numbers (II)



CPU % Bolt Client



CPU % MCO Client

Performance evaluation conclusion

- Bolt uses ssh as a ‘transport layer’, which starts a new connection for every task. ssh auth overhead is the reason for bad performance.

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- Bolt can be a real option in small infrastructures, < 2000 − 3000 nodes (see [1] p. 183). This is only going to be useful on batch if we can be smart. (Working on it)

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  If we can improve the performance of Puppet Bolt, it will be the perfect tool that will replace Mcollective.

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- ✓ Improved ccin2p3-bolt puppet module.
- ✓ Code General purpose Bolt tasks and plans.
- ✓ Bolt evaluation as replacement of Mco.

Work to do

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Work to do

- Make Bolt Great Again.
  Study options used by Ansible to improve performance.
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- Continue coding Bolt’s general purpose tasks and plans.

Bibliography

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QUESTIONS?

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