State of the CFEngine

Or Since last time at Config Management Camp

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Releases

5 releases since 2017-01-01

Version	Date
3.7.5	2017-03-30
3.10.1	2017-03-30
3.10.2	2017-08-11
3.11.0	2017-08-11
3.7.6	2017-09-12

Contributions

	Core	MPF	Docs
Commits	256	163	207
Contributors	24	14	17
New Contributors	9	4	6

Core Functionality

with attribute

```
bundle agent main
{
  vars:
      "todo" slist => { "a 1", "b 2", "c 3" };
      # Here, 'with' is the canonified version of $(todo), letting us avoid an
```

```
        # intermediate canonification array.
        "$(with)" string => "$(todo)", with => canonify($(todo));

        "complex" data => '
{
  "x": 200,
  "y": [ 1, 2, null, true, false ]
}
';

    reports:
        "For iterable '$(todo)' we created variable '$(with)' and its value is '$(todo)'
          with => canonify($(todo));

        "We can print a data container compactly without creating a temporary variable:
          with => format("%S", complex);

        "We can print a data container fully without creating a temporary variable: $(wi
          with => storejson(complex);
}
```

Figure 1:   With attribute usage example policy

with attribute

```
R: For iterable 'a 1' we created variable 'a_1' and its value is 'a 1'
R: For iterable 'b 2' we created variable 'b_2' and its value is 'b 2'
R: For iterable 'c 3' we created variable 'c_3' and its value is 'c 3'
R: We can print a data container compactly without creating a temporary variable: {"x"
R: We can print a data container fully without creating a temporary variable: {
  "x": 200,
  "y": [
    1,
    2,
    null,
    true,
    false
  ]
}
```

`inline_mustache`

You are no longer required to use an external file template. Now you can provide the template directly within the policy.

```
bundle agent main
{
  vars:
    "d" data => '{ "hello": "world", "feature": [ "render", "inline", "mustache" ] }';

  files:

    "/tmp/example.txt"
      create => "true",
      template_method => "inline_mustache",
      edit_template_string => "{{%-top-}}",
      template_data => @(d);

}
```

Figure 2: Example `template_method inline_mustache`

`inline_mustache`

Results in **/tmp/example.txt** having this content.

```
{
  "feature": [
    "render",
    "inline",
    "mustache"
  ],
  "hello": "world"
}
```

Figure 3: Example `template_method inline_mustache`

Multiple augments

NOTE: Current implementation discussion in progress in CFE-2741. Please consider participating.

```
{
  "vars":{
    "my_var": "defined in def.json",
    "my_other_var": "Defined ONLY in def.json"
  },
  "augments": [
    "/tmp/$(sys.flavor).json"
  ]
}
```

Figure 4: Example /tmp/def.json

Multiple augments

```
{
  "vars": {
    "my_var": "Overridden in centos_6.json",
    "centos_6_var": "Defined ONLY in centos_6.json"
  }
}
```

Figure 5: Example /tmp/centos_6.json

Multiple augments

```
[root@hub tmp]# cf-agent -KIf ./example.cf
R: def.my_var == Overridden in centos_6.json
R: def.my_other_var == Defined ONLY in def.json
R: def.centos_6_var == Defined ONLY in centos_6.json
```

`missing_ok`

MPF Functionality

Augments - Append the `bundlesequnece` of `promises.cf` and `update.cf`

- `control_common_bundlesequence_end`

- `control_common_update_bundlesequence_end`

```
{
  "vars":{
    "control_common_bundlesequence_end": [ "mybundle1", "mybundle2" ],
    "control_common_update_bundlesequence_end": [ "my_updatebundle1", "mybundle2" ]
  }
}
```

- Order of bundle actuation not guaranteed.

- Agent errors if named bundle is missing.

Augments - Log file retention and rotation limits

`mpf_log_files_max_size` Max file size before rotation

`mpf_log_file_retention` Number of file rotations to keep

`mpf_log_dir_retention` Number of file rotations to keep in `outputs`, `reports`, and the Enterprise application log directory.

```
{
  "vars": {
    "mpf_log_file_retention": "5",
    "mpf_log_file_max_size": "10M",
    "mpf_log_dir_retention": "7"
  }
}
```

Augments - Execution schedule

`control_executor_schedule` Classes that trigger execution of `cf-agent`.

```
{
  "vars": {
    "control_executor_schedule": [ "Min00", "Min30" ]
  }
}
```

Augments - `splaytime`

`control_executor_splaytime` Maximum number of minutes `exec_commad` should wait before executing.

```
{
  "vars": {
    "control_executor_splaytime": "3"
  }
}
```

Augments - `allowlegacyconnects`

`control_server_allowlegacyconnects` List of subnets allowed to connect
using legacy protocol (versions prior to 3.7.0).

```
{
  "vars": {
    "control_server_allowlegacyconnects": [ "0.0.0.0/0" ]
  }
}
```

Augments - `maxconnections`

`control_serverd_maxconnections` Maximum number of connections allowed
by `cf-serverd`.

```
{
  "vars":{
        "control_serverd_maxconnections": "1000"
  }
}
```

Augments - Client initiated reporting (Enterprise)

`control_hub_exclude_hosts` List of subnets to exclude from hub initiated
report collection.

`client_initiated_reporting_enabled` List of classes that if defined should
initiate reporting to an enterprise hub.

`control_server_call_collect_interval` Number of minutes between client
initiated reporting.

```
{
    "vars": {
        "control_server_call_collect_interval": "1",
```

```
        "control_hub_exclude_hosts": [ "0.0.0.0/0" ]
    },

    "classes" {
        "client_initiated_reporting_enabled": [ "any" ]
    }
}
```

Augments - `files_single_copy`

`control_agent_files_single_copy` List of regular expressions matching
files that should not be copied more than once.

```
{
  "vars":{
    "control_agent_files_single_copy": [ ".*" ]
  }

}
```

Augments - `default_repository`

`mpf_control_agent_default_repository` List of classes class will cause
these backups to be placed in `$(sys.workdir)/backups`.

`control_agent_default_backup` Directory where backups should be placed
(defaults to `$(sys.workdir/backups)`).

```
{
  "classes": {
    "mpf_control_agent_default_repository": [ "any" ]
  },

  "vars": {
    "control_agent_default_repository": "/var/cfengine/edit_backups"
  }
}
```

`templates` **shortcut**

`dir_templates` Path to common template directory. Shortcut provided by
`cf-serverd` as `templates/`.

```
{
    "vars": {
        "dir_templates": "/var/cfengine/mytemplates"
        }
}
```

```
bundle agent example
{
  files:

    "$(def.dir_templates)/mytemplate.mustache" -> { "myservice" }

      copy_from => remote_dcp( "templates/mytemplate.mustache",
                                $(sys.policy_server) ),

      comment => "mytemplate is necessary in order to render
                  myservice configuration file.";
}
```

Automatically restart components on related data change

While the agent itsef will reload its config upon notice of policy change
this bundle specifically handles changes to variables used in the MPF which
may come from external data sources which are unknown to the components
themselves.

`mpf_augments_control_enabled` List of classes that automatic component
restart on related data change should be enabled for.

```
{
  "classes":{
      "mpf_augments_control_enabled": [ "any" ]
  }
}
```

Host info report now now renders inventory variables

```
cf-agent -KIb host_info_report

### Inventory

#### Variables tagged for inventory

{
  "default:cfe_autorun_inventory_disk.free": "5.00",
  "default:cfe_autorun_inventory_listening_ports.ports": [
    "22",
    "25",
    "53",
  ],
  "default:cfe_autorun_inventory_memory.total": "32050.27",
  "default:sys.arch": "x86_64",
  "default:sys.cf_version": "3.11.0",
  "default:sys.class": "linux",
  "default:sys.cpus": "4",
  "default:sys.flavor": "ubuntu_17",
  "default:sys.hardware_addresses": [
    "5c:e0:c5:9f:f3:8f",
    "52:54:00:6b:62:06",
    "02:42:79:79:f6:02",
    "0a:00:27:00:00:00"
  ],
  "default:sys.inet": {
    "default_gateway": "192.168.42.1",
```

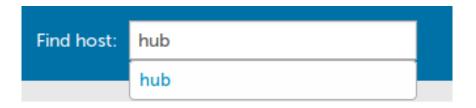Figure 6: Sample from inventory section of host info report
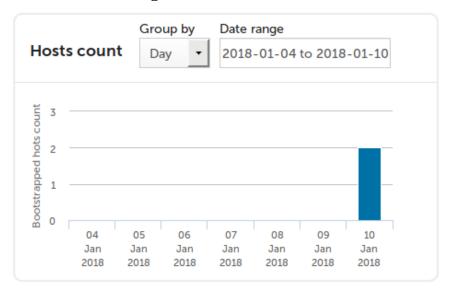
Enterprise Functionality

UI responsiveness

- Testing with 50,000 host data sets

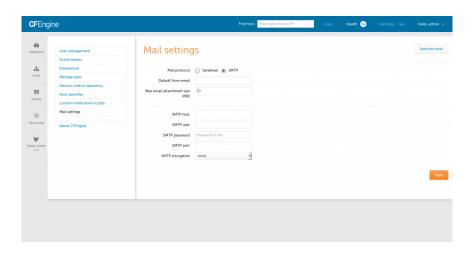## Global Host Search

- Easily find hosts by name, ip or identity

host count trend widget

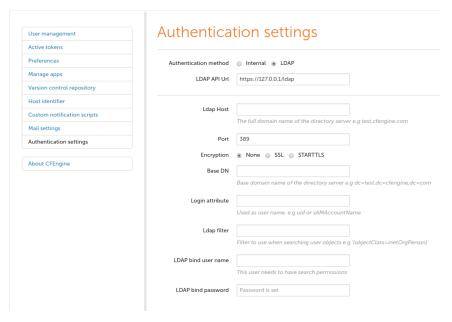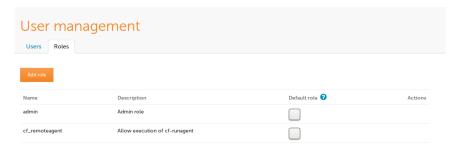**mail settings**

- Exported reports can now be sent as attachments in emails

LDAP settings API

default roles

New OOTB Inventory Attributes

- Policy Release Id

- AIX OS Level

Inventory API

```
curl --user admin -X POST \
  -H 'content-type: application/json' \
  https://hub/api/inventory -d '{ "select":[ "Host name", "OS type"]}'
```

Figure 7: Example API Query

Inventory API

```
{
    "data": [
        {
            "header": [
                {
                    "columnName": "Host name",
                    "columnType": "STRING"
                },
                {
                    "columnName": "OS type",
                    "columnType": "STRING"
                }
            ],
            "queryTimeMs": 11,
```

```
            "rowCount": 2,
            "rows": [
                [
                    "host001",
                    "linux"
                ],
                [
                    "hub",
                    "linux"
                ]
            ]
        }
    ],
    "meta": {
        "count": 1,
        "page": 1,
        "timestamp": 1515607751,
        "total": 1
    }
}
```

Figure 8: Example Query Response