

State of the CFEngine

Or Since last time at Config Management Camp

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Releases

5 releases since 2017-01-01

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

Contributions

	Core	MPF	Docs
Commits	256	163	207
Contributors	24	14	17
New Contributors	9	2	4

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
  ]
}

```

```
}
```

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 2: Example /tmp/def.json

Multiple augments

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

Figure 3: 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
```

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 4: Example `template_method inline_mustache`

`inline_mustache`

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

```

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

```

Figure 5: Example `template_method inline_mustache`

`missing_ok`

MPF Functionality

Augments - Append the bundlesequence 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 itself 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 -Klb 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

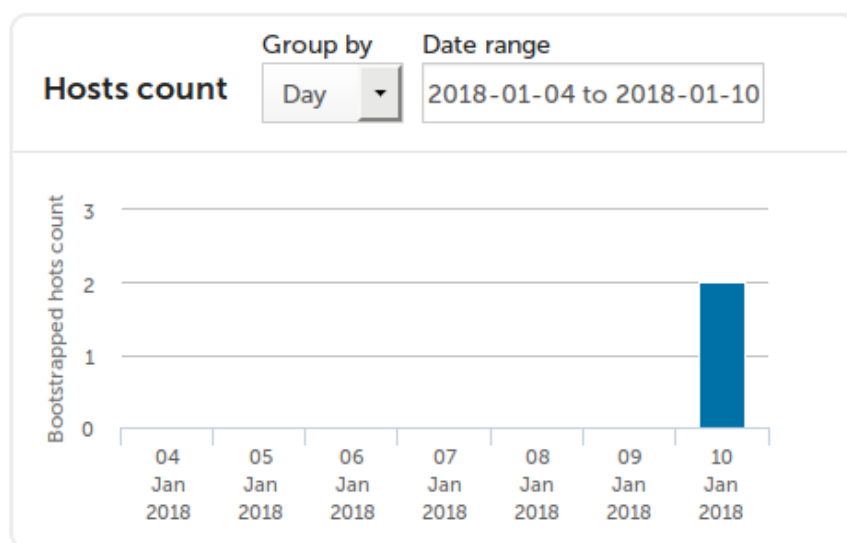
- Testing with 50,000 host data sets

Global Host Search

- Easily find hosts by name, ip or identity

Find host:

host count trend widget



mail settings

- Exported reports can now be sent as attachments in emails

CFEngine

Find host:

1 host

Health 📶

HA status 📶

Help, admin ⌵

Dashboard

Hosts

Reports

Monitoring

Design Center info

User management

Active tokens

Preferences

Manage apps

Version control repository

Host identifier

Custom notification scripts

Mail settings

About CFEngine

Mail settings

Send test email

Mail protocol ☐ Sendmail ☒ SMTP

Default from email

Max email attachment size (MB)

SMTP host

SMTP user

SMTP password

SMTP port

SMTP encryption

Apply

LDAP settings API

User management

Active tokens

Preferences

Manage apps

Version control repository

Host identifier

Custom notification scripts

Mail settings

Authentication settings

About CFEngine

Authentication settings

Authentication method ☐ Internal ☒ LDAP

LDAP API Uri

Ldap Host

The full domain name of the directory server e.g test.cfengine.com

Port

Encryption ☒ None ☐ SSL ☐ STARTTLS

Base DN

Base domain name of the directory server e.g dc=test,dc=cfengine,dc=com

Login attribute

Used as user name, e.g uid or sAMAccountName

Ldap filter

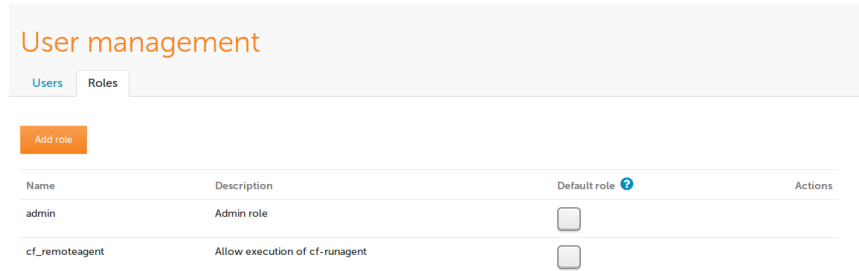
Filter to use when searching user objects e.g '[objectClass=inetOrgPerson]'

LDAP bind user name

This user needs to have search permissions

LDAP bind password

default roles



The screenshot shows the 'User management' interface with a 'Roles' tab selected. An 'Add role' button is at the top left. Below it is a table with columns: Name, Description, Default role (with a help icon), and Actions. Two roles are listed: 'admin' with description 'Admin role' and 'cf_remoteagent' with description 'Allow execution of cf-runagent'. Both have an unchecked checkbox in the 'Default role' column.

Name	Description	Default role ?	Actions
admin	Admin role	<input type="checkbox"/>	
cf_remoteagent	Allow execution of cf-runagent	<input type="checkbox"/>	

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