

CFEngine 3.4.0 Agent Promise Attributes

Contents

1	Preface	1
2	Agent Control	1
3	File Control	2
4	classes:	2
5	defaults:	2
6	meta:	2
7	reports:	2
8	vars:	3
9	Any	3
10	commands:	4
11	databases:	4
12	guest_environments:	4
13	files:	4
13.1	"delete_lines:" in edit_line	6
13.2	"insert_lines:" in edit_line	6
13.3	"field_edits:" in edit_line	7
13.4	"replace_patterns:" in edit_line	7
13.5	Misc. in edit_line	7
13.6	"set_attribute:" in edit_xml	7
13.7	Misc. in edit_xml	7
14	interfaces:	8
15	methods:	8
16	outputs:	8
17	packages:	8
18	processes:	9
19	services:	10

20 storage:	10
21 Professional Training	10

1 Preface

CFEngine is designed to be comprehensive and to let you model nearly any aspect of system configuration. There are 478 unique promise attributes in CFEngine 3.4.0 to enable you to do so. 337 of them apply to the agent, the part of CFEngine that actually makes changes to your system.

This document lists these 337 agent promise attributes in a short format: name and synopsis for each. For more detail, please consult the syntax guide (<http://www.cfengine.com/syntax>) or the reference manual (<http://cfengine.com/manuals/cf3-reference>).

Fortunately, CFEngine 3 is also designed to address the challenges of Knowledge Management and it allows you to summarize and abstract the underlying low-level detail.

However if you do need to dive under the hood, it's good to know what's there. Have fun getting greasy to the elbows!

And if you want in-depth professional training, join us in L.A. on 25-28 Feb 2013 (<http://cf3la.eventbrite.com>), or email us to book your own on-site training (aleksey@verticalsysadmin.com).

Yours sincerely,

Aleksey Tsololikhin

2 Agent Control

abortclasses	A list of classes which if defined lead to termination of cf-agent
abortbundleclasses	A list of classes which if defined lead to termination of current bundle
addclasses	A list of classes to be defined always in the current context
agentaccess	A list of user names allowed to execute cf-agent
agentfacility	The syslog facility for cf-agent
allclassesreport	Generate allclasses.txt report
alwaysvalidate	true/false flag to determine whether configurations will always be checked before executing, or only after updates
auditing	true/false flag to activate the cf-agent audit log
binarypaddingchar	Character used to pad unequal replacements in binary editing
bindtointerface	Use this interface for outgoing connections
hashupdates	true/false whether stored hashes are updated when change is detected in source
childlibpath	LD_LIBRARY_PATH for child processes
checksum_alert_time	The persistence time for the checksum_alert class
defaultcopytype	ctime or mtime differ
dryrun	All talk and no action mode
editbinaryfilesize	Integer limit on maximum binary file size to be edited
editfilesize	Integer limit on maximum text file size to be edited
environment	List of environment variables to be inherited by children
exclamation	true/false print exclamation marks during security warnings
expireafter	Global default for time before on-going promise repairs are interrupted
files_single_copy	List of filenames to be watched for multiple-source conflicts
files_auto_define	List of filenames to define classes if copied
hostnamekeys	true/false label ppkeys by hostname not IP address
ifelapsed	Global default for time that must elapse before promise will be rechecked
inform	true/false set inform level default
intermittency	This option is deprecated, does nothing and is kept for backward compatibility
max_children	Maximum number of background tasks that should be allowed concurrently
maxconnections	Maximum number of outgoing connections to cf-serverd
mountfilesystems	true/false mount any filesystems promised
nonalphanumfiles	true/false warn about filenames with no alphanumeric content
repchar	The character used to canonize pathnames in the file repository
refresh_processes	Reload the process table before verifying the bundles named in this list (lazy evaluation)

default_repository	Path to the default file repository
secureinput	true/false check whether input files are writable by unauthorized users
sensiblecount	Minimum number of files a mounted filesystem is expected to have
sensiblesize	Minimum number of bytes a mounted filesystem is expected to have
skipidentify	Do not send IP/name during server connection because address resolution is broken
suspiciousnames	List of names to warn about if found during any file search
syslog	true/false switches on output to syslog at the inform level
track_value	true/false switches on tracking of promise valuation
timezone	List of allowed timezones this machine must comply with
default_timeout	Maximum time a network connection should attempt to connect
verbose	true/false switches on verbose standard output

3 File Control

namespace	Switch to a private namespace to protect current file from duplicate definitions
-----------	--

4 classes:

and	Combine class sources with AND
dist	Generate a probabilistic class distribution (from strategies in cfengine 2)
expression	Evaluate string expression of classes in normal form
or	Combine class sources with inclusive OR
persistence	Make the class persistent (cached) to avoid reevaluation, time in minutes
not	Evaluate the negation of string expression in normal form
select_class	Select one of the named list of classes to define based on host identity
xor	Combine class sources with XOR

5 defaults:

if_match_regex	If this regular expression matches the current value of the variable, replace it with default
string	A scalar string
slist	A list of scalar strings

6 meta:

string	A scalar string
slist	A list of scalar strings

7 reports:

friend_pattern	Regular expression to keep selected hosts from the friends report list
intermittency	Real number threshold [0,1] of intermittency about current peers, report above
lastseen	Integer time threshold in hours since current peers were last seen, report absence
printfile	file_to_print Path name to the file that is to be sent to standard output
printfile	number_of_lines Integer maximum number of lines to print from selected file*)
report_to_file	The path and filename to which output should be appended
showstate	List of services about which status reports should be reported to standard output

8 vars:

string	A scalar string
int	A scalar integer
real	A scalar real number
slist	A list of scalar strings
ilist	A list of integers
rlist	A list of real numbers
policy	The policy for (dis)allowing (re)definition of variables

9 Any

These promise attributes can be used in any promise.

action action_policy	Whether to repair or report about non-kept promises
action audit	True/false switch for detailed audit records of this promise
action background	True/false switch for parallelizing the promise repair
action expireafter	Number of minutes before a repair action is interrupted and retried
action ifelapsed	Number of minutes before next allowed assessment of promise
action logstring	A message to be written to the log when a promise verification leads to a repair
action log_level	The reporting level sent to syslog
action log_kept	This should be filename of a file to which log_string will be saved, if undefined it goes to the system logger
action log_priority	The priority level of the log message, as interpreted by a syslog server
action log_repaired	This should be filename of a file to which log_string will be saved, if undefined it goes to the system logger
action log_failed	This should be filename of a file to which log_string will be saved, if undefined it goes to the system logger
action measurement_class	If set performance will be measured and recorded under this identifier
action report_level	The reporting level for standard output for this promise
action value_kept	A real number value attributed to keeping this promise
action value_repaired	A real number value attributed to repairing this promise
action value_notkept	A real number value (possibly negative) attributed to not keeping this promise
classes promise_repaired	A list of classes to be defined globally
classes repair_failed	A list of classes to be defined globally
classes repair_denied	A list of classes to be defined globally
classes repair_timeout	A list of classes to be defined globally
classes promise_kept	A list of classes to be defined globally
classes cancel_kept	A list of classes to be cancelled if the promise is kept
classes cancel_repaired	A list of classes to be cancelled if the promise is repaired
classes cancel_notkept	A list of classes to be cancelled if the promise is not kept for any reason
classes kept_returncodes	A list of return codes indicating a kept command-related promise
classes repaired_returncodes	A list of return codes indicating a repaired command-related promise
classes failed_returncodes	A list of return codes indicating a failed command-related promise
classes persist_time	A number of minutes the specified classes should remain active
classes timer_policy	Whether a persistent class restarts its counter when rediscovered
comment	A comment about this promise's real intention that follows through the program
depends_on	A list of promise handles that this promise builds on or depends on somehow (for knowledge management)
handle	A unique id-tag string for referring to this as a promisee elsewhere
ifvarclass	Extended classes ANDed with context
meta	User-data associated with policy, e.g. key=value strings

10 commands:

args	Alternative string of arguments for the command (concatenated with promiser string)
contain useshell	true/false embed the command in a shell environment
contain umask	The umask value for the child process
contain exec_owner	The user name or id under which to run the process
contain exec_group	The group name or id under which to run the process
contain exec_timeout	Timeout in seconds for command completion
contain chdir	Directory for setting current/base directory for the process
contain chroot	Directory of root sandbox for process
contain preview	true/false preview command when running in dry-run mode (with -n)
contain no_output	true/false discard all output from the command
module	true/false whether to expect the cfengine module protocol

11 databases:

database_server db_server_owner	User name for database connection
database_server db_server_password	Clear text password for database connection
database_server db_server_host	Hostname or address for connection to database, blank means localhost
database_server db_server_type	The dialect of the database server
database_server db_server_connection_db	The name of an existing database to connect to in order to create/manage other databases
database_type	The type of database that is to be manipulated
database_operation	The nature of the promise - to be or not to be
database_columns	A list of column definitions to be promised by SQL databases
database_rows	An ordered list of row values to be promised by SQL databases
registry_exclude	A list of regular expressions to ignore in key/value verification

12 guest_environments:

environment_host	A class indicating which physical node will execute this guest machine
environment_interface env_addresses	The IP addresses of the environment's network interfaces
environment_interface env_name	The hostname of the virtual environment
environment_interface env_network	The hostname of the virtual network
environment_resources env_cpus	Number of virtual CPUs in the environment
environment_resources env_memory	Amount of primary storage (RAM) in the virtual environment (KB)
environment_resources env_disk	Amount of secondary storage (DISK) in the virtual environment (MB).
environment_resources env_baseline	The path to an image with which to baseline the virtual environment
environment_resources env_spec	A string containing a technology specific set of promises for the virtual instance
environment_state	The desired dynamical state of the specified environment
environment_type	Virtual environment type

13 files:

acl aces	Native settings for access control entry
acl acl_directory_inherit	Access control list type for the affected file system
acl acl_method	Editing method for access control list
acl acl_type	Access control list type for the affected file system
acl specify_inherit_aces	Native settings for access control entry
changes hash	Hash files for change detection
changes report_change	Specify criteria for change warnings
changes update_hashes	Update hash values immediately after change warning
changes report_diffs	Generate reports summarizing the major differences between individual text files
copy_from source	Reference source file from which to copy
copy_from servers	List of servers in order of preference from which to copy
copy_from collapse_destination_dir	true/false Place files in subdirectories into the root destination directory during copy
copy_from compare	Menu option policy for comparing source and image file attributes
copy_from copy_backup	Menu option policy for file backup/version control
copy_from encrypt	true/false use encrypted data stream to connect to remote host
copy_from check_root	true/false check permissions on the root directory when depth_search
copy_from copylink_pattern	List of patterns matching files that should be copied instead of linked
copy_from copy_size	Integer range of file sizes that may be copied
copy_from findertype	Menu option for default finder type on MacOSX
copy_from linkcopy_patterns	List of patterns matching files that should be replaced with symbolic links
copy_from link_type	Menu option for type of links to use when copying
copy_from force_update	true/false force copy update always
copy_from force_ipv4	true/false force use of ipv4 on ipv6 enabled network
copy_from portnumber	Port number to connect to on server host
copy_from preserve	true/false whether to preserve file permissions on copied file
copy_from purge	true/false purge files on client that do not match files on server when a depth_search is used
copy_from stealth	true/false whether to preserve time stamps on copied file
copy_from timeout	Connection timeout, seconds
copy_from trustkey	true/false trust public keys from remote server if previously unknown
copy_from type_check	true/false compare file types before copying and require match
copy_from verify	true/false verify transferred file by hashing after copy (resource penalty)
create	true/false whether to create non-existing file
delete dirlinks	Menu option policy for dealing with symbolic links to directories during deletion
delete rmdirs	true/false whether to delete empty directories during recursive deletion
depth_search depth	Maximum depth level for search
depth_search exclude_dirs	List of regexes of directory names NOT to include in depth search
depth_search include_basedir	true/false include the start/root dir of the search results
depth_search include_dirs	List of regexes of directory names to include in depth search
depth_search rmdeadlinks	true/false remove links that point to nowhere
depth_search traverse_links	true/false traverse symbolic links to directories
depth_search xdev	true/false exclude directories that are on different devices
edit_defaults edit_backup	Menu option for backup policy on edit changes
edit_defaults empty_file_before_editing	Baseline memory model of file to zero/empty before commencing promised edits
edit_defaults inherit	If true this causes the sub-bundle to inherit the private classes of its parent
edit_defaults max_file_size	Do not edit files bigger than this number of bytes
edit_defaults recognize_join	Join together lines that end with a backslash, up to 4kB limit
edit_defaults rotate	How many backups to store if <i>rotate</i> edit_backup strategy is selected. Defaults to 1.
edit_line	Specifies name of edit_line bundle
edit_template	The name of a special CFEngine template file to expand
edit_xml	Specifies name of edit_xml bundle
file_select leaf_name	List of regexes that match an acceptable name
file_select path_name	List of pathnames to match acceptable target
file_select search_mode	A list of mode masks for acceptable file permissions

file_select search_size	Integer range of file sizes
file_select search_owners	List of acceptable user names or ids for the file, or regexes to match
file_select search_groups	List of acceptable group names or ids for the file, or regexes to match
file_select search_bsdflags	String of flags for bsd file system flags expected set
file_select ctime	Range of change times (ctime) for acceptable files
file_select mtime	Range of modification times (mtime) for acceptable files
file_select atime	Range of access times (atime) for acceptable files
file_select exec_regex	Matches file if this regular expression matches any full line returned by the command
file_select exec_program	Execute this command on each file and match if the exit status is zero
file_select file_types	List of acceptable file types from menu choices
file_select issymlinkto	List of regular expressions to match file objects
file_select file_result	Logical expression combining classes defined by file search criteria
link_from copy_patterns	A set of patterns that should be copied and synchronized instead of linked
link_from link_children	true/false whether to link all directory's children to source originals
link_from link_type	The type of link used to alias the file
link_from source	The source file to which the link should point
link_from when_linking_children	Policy for overriding existing files when linking directories of children
link_from when_no_source	Behaviour when the source file to link to does not exist
move_obstructions	true/false whether to move obstructions to file-object creation
pathtype	Menu option for interpreting promiser file object
perms bsdflags	List of menu options for bsd file system flags to set
perms groups	List of acceptable groups of group ids, first is change target
perms mode	File permissions (like posix chmod)
perms owners	List of acceptable owners or user ids, first is change target
perms rxdirs	true/false add execute flag for directories if read flag is set
rename disable	true/false automatically rename and remove permissions
rename disable_mode	The permissions to set when a file is disabled
rename disable_suffix	The suffix to add to files when disabling (.cfdisabled)
rename newname	The desired name for the current file
rename rotate	Maximum number of file rotations to keep
repository	Name of a repository for versioning
touch	true/false whether to touch time stamps on file
transformer	Command (with full path) used to transform current file (no shell wrapper used)

13.1 "delete_lines:" in edit_line

delete_select delete_if_startwith_from_list	Delete line if it starts with a string in the list
delete_select delete_if_not_startwith_from_list	Delete line if it DOES NOT start with a string in the list
delete_select delete_if_match_from_list	Delete line if it fully matches a regex in the list
delete_select delete_if_not_match_from_list	Delete line if it DOES NOT fully match a regex in the list
delete_select delete_if_contains_from_list	Delete line if a regex in the list match a line fragment
delete_select delete_if_not_contains_from_list	Delete line if a regex in the list DOES NOT match a line fragment
not_matching	true/false negate match criterion

13.2 "insert_lines:" in edit_line

expand_scalars	Expand any unexpanded variables
----------------	---------------------------------

insert_type	Type of object the promiser string refers to
insert_select	Insert line if it starts with a string in the list
insert_if_startwith_from_list	
insert_select	Insert line if it DOES NOT start with a string in the list
insert_if_not_startwith_from_list	
insert_select	Insert line if it fully matches a regex in the list
insert_if_match_from_list	
insert_select	Insert line if it DOES NOT fully match a regex in the list
insert_if_not_match_from_list	
insert_select	Insert line if a regex in the list match a line fragment
insert_if_contains_from_list	
insert_select	Insert line if a regex in the list DOES NOT match a line fragment
insert_if_not_contains_from_list	
location before_after	Menu option, point cursor before of after matched line
location first_last	Menu option, choose first or last occurrence of match in file
location select_line_matching	Regular expression for matching file line location
whitespace_policy	Criteria for matching and recognizing existing lines

13.3 "field_edits:" in edit_line

edit_field allow_blank_fields	true/false allow blank fields in a line (do not purge)
edit_field extend_fields	true/false add new fields at end of line if necessary to complete edit
edit_field field_operation	Menu option policy for editing subfields
edit_field field_value	Set field value to a fixed value
edit_field select_field	Integer index of the field required 0..n (default starts from 1)
edit_field start_fields_from_zero	If set, the default field numbering starts from 0
edit_field value_separator	Character separator for subfields inside the selected field

13.4 "replace_patterns:" in edit_line

replace_with occurrences	Menu option to replace all occurrences or just first (NB the latter is non-convergent)
replace_with replace_value	Value used to replace regular expression matches in search

13.5 Misc. in edit_line

select_region	Whether to include the section delimiter
include_start_delimiter	
select_region	Whether to include the section delimiter
include_end_delimiter	
select_region select_start	Regular expression matching start of edit region
select_region select_end	Regular expression matches end of edit region from start

13.6 "set_attribute:" in edit_xml

attribute_value	Value of the attribute to be inserted into the XPath node of the XML file
-----------------	---

13.7 Misc. in edit_xml

build_xpath	Build an XPath within the XML file
select_xpath	Select the XPath node in the XML file to edit

14 interfaces:

tcp_ip ipv4_address	IPv4 address for the interface
tcp_ip ipv4_netmask	Netmask for the interface
tcp_ip ipv6_address	IPv6 address for the interface

15 methods:

inherit	If true this causes the sub-bundle to inherit the private classes of its parent
usebundle	Specify the name of a local variable to contain any result/return value from the child

16 outputs:

output_level	Output level to observe for the named promise or bundle (meta-promise)
promiser_type	Output level to observe for the named promise or bundle (meta-promise)

17 packages:

package_architectures	Select the architecture for package selection
package_method package_add_command	Command to install a package to the system
package_method package_arch_regex	Regular expression with one backreference to extract package architecture string
package_method package_changes	Menu option - whether to group packages into a single aggregate command
package_method package_delete_command	Command to remove a package from the system
package_method package_delete_convention	This is how the package manager expects the package to be referred to in the deletion part of a package update, e.g. \$(name)
package_method package_file_repositories	A list of machine-local directories to search for packages
package_method package_installed_regex	Regular expression which matches packages that are already installed
package_method package_default_arch_command	Command to detect the default packages' architecture
package_method package_list_arch_regex	Regular expression with one backreference to extract
package_method package_list_command	Command to obtain a list of available packages
package_method package_list_name_regex	Regular expression with one backreference to extract package name string
package_method package_list_update_command	Command to update the list of available packages (if any)
package_method package_list_update_ifelapsed	The ifelapsed locking time in between updates of the package list
package_method package_list_version_regex	Regular expression with one backreference to extract package version string
package_method package_name_convention	This is how the package manager expects the package to be referred to, e.g. \$(name).\$(arch)
package_method package_name_regex	Regular expression with one backreference to extract package name string

package_method package_noverify_regex	Regular expression to match verification failure output
package_method package_noverify_returncode	Integer return code indicating package verification failure
package_method package_patch_arch_regex	Regular expression with one backreference to extract update architecture string
package_method package_patch_command	Command to update to the latest patch release of an installed package
package_method package_patch_installed_regex	Regular expression which matches packages that are already installed
package_method package_patch_list_command	Command to obtain a list of available patches or updates
package_method package_patch_name_regex	Regular expression with one backreference to extract update name string
package_method package_patch_version_regex	Regular expression with one backreference to extract update version string
package_method package_update_command	Command to update to the latest version a currently installed package
package_method package_verify_command	Command to verify the correctness of an installed package
package_method package_version_regex	Regular expression with one backreference to extract package version string
package_method package_multiline_start	Regular expression which matches the start of a new package in multiline output
package_method package_commands_useshell	Whether to use shell for commands in this body
package_method package_version_less_command	Command to check whether first supplied package version is less than second one
package_method package_version_equal_command	Command to check whether first supplied package version is equal to second one
package_policy	Criteria for package installation/upgrade on the current system
package_select	A criterion for first acceptable match relative to "package_version"
package_version	Version reference point for determining promised version

18 processes:

process_count in_range_define	List of classes to define if the matches are in range
process_count match_range	Integer range for acceptable number of matches for this process
process_count out_of_range_define	List of classes to define if the matches are out of range
process_select command	Regular expression matching the command/cmd field of a process
process_select pid	Range of integers matching the process id of a process
process_select pgid	Range of integers matching the parent group id of a process
process_select ppid	Range of integers matching the parent process id of a process
process_select priority	Range of integers matching the priority field (PRI/NI) of a process
process_select process_owner	List of regexes matching the user of a process
process_select process_result	Boolean class expression returning the logical combination of classes set by a process selection test
process_select rsize	Range of integers matching the resident memory size of a process, in kilobytes
process_select status	Regular expression matching the status field of a process
process_select stime_range	Range of integers matching the start time of a process
process_select ttime_range	Range of integers matching the total elapsed time of a process
process_select tty	Regular expression matching the tty field of a process
process_select threads	Range of integers matching the threads (NLWP) field of a process
process_select vsize	Range of integers matching the virtual memory size of a process, in kilobytes

process_stop	A command used to stop a running process
restart_class	A class to be defined globally if the process is not running, so that a command: rule can be referred to restart the process
signals	A list of menu options representing signals to be sent to a process

19 services:

service_policy	Policy for cfengine service status
service_dependencies	A list of services on which the named service abstraction depends
service_method service_args	Parameters for starting the service as command
service_method service_autostart_policy	Should the service be started automatically by the OS
service_method service_bundle	How to handle dependencies and dependent services
service_method service_type	Service abstraction type

20 storage:

mount edit_fstab	true/false add or remove entries to the file system table ("fstab")
mount mount_type	Protocol type of remote file system
mount mount_source	Path of remote file system to mount
mount mount_server	Hostname or IP or remote file system server
mount mount_options	List of option strings to add to the file system table ("fstab")
mount unmount	true/false unmount a previously mounted filesystem
volume check_foreign	true/false verify storage that is mounted from a foreign system on this host
volume freespace	Absolute or percentage minimum disk space that should be available before warning
volume sensible_size	Minimum size in bytes that should be used on a sensible-looking storage device
volume sensible_count	Minimum number of files that should be defined on a sensible-looking storage device
volume scan_arrivals	true/false generate pseudo-periodic disk change arrival distribution

21 Professional Training

In-depth hands-on professional training is available from Vertical Sysadmin (www.verticalsysadmin.com).

To book your own on-site course, email aleksey@verticalsysadmin.com.

To sign up for our next public training, 25-28 Feb 2013 in L.A., go to <http://cf3la.eventbrite.com>