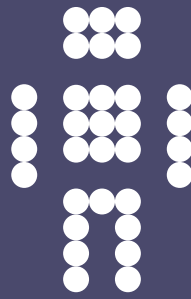


CFEngine



## Why buy a Commercial CFEngine Solution?

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A Business White Paper

CFEngine AS

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The flexibility of Free, Open Source is one of its attractive features, but adoption and integration comes at a cost. This often leads to a lack of business focus. CFEngine Nova, the basic enterprise level offering of the open source software, and its advanced cousins CFEngine Constellation and CFEngine Galaxy, attempt to address these issues and offer additional user freedoms, with minimal negative impact on the business.

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# Table of Contents

- Use CFEngine as it was intended ..... 1
- The BDMA lifecycle ..... 1
- CFEngine Nova, removing barriers and bringing new freedoms..... 2
- Clear Intentions and Continual Service Improvement..... 2
- Reduce hidden IT costs with a commercial solution..... 2
- Commercial CFEngine and efficiency..... 3
- Convenience and productivity..... 3
- Know more about your existing system..... 4
- Ask "What if?" ..... 4
- Integration with other systems..... 4
- System Reports from Compliance to Performance..... 5
- Updates coming to subscribers ..... 5
- Some advice: avoiding contraptions..... 6
- Minimal negative impact on business..... 6
- Detailed summary of features ..... 7



## Use CFEngine as it was intended

Most users of CFEngine's Free Community Editions do not tap into the full power of the CFEngine software. CFEngine's underlying simplicity is often shadowed by its broad scope – it can take years to build up the experience and practices to make effective use of the software. But help is now at hand.

Commercial CFEngine Enterprise Editions package our lifecycle automation software for top professional installations, with new run-time enhancements and integrated Knowledge Management<sup>1</sup>. Now you can run the CFEngine software the way the experts do, integrating with operating system vendor services and customizing with special needs while making maximum use of lightweight monitoring capabilities.

With CFEngine Nova, we have brought CFEngine's simple model of promises together with best practice frameworks like ITIL and COBIT, going beyond the Community Edition's capabilities to provide cross platform management of the machine lifecycle, plus inter-machine relationships that simple package managers cannot provide. In CFEngine Constellation and Galaxy, we extend the framework to include knowledge mining and multiple devices across the entire enterprise.

## The BDMA lifecycle

The four phases of lifecycle management are:

- Build* Traditionally a system is based on an image that it rolled out in a high risk, disruptive operation. With CFEngine Nova, you simply assemble a template of proposed promises for the *desired state* of machines in your network and the software takes care of the rest.
- Deploy* Deploying a policy only means making it available for download by client machines. With CFEngine Nova you simply publish your policy on one or more CFEngine Nova Policy Servers and all client machines will update according to the promises they have made. From there, the automatic agents take over and report back to the policy server with regular summaries of their activities.
- Manage* Because unplanned events occur, we need continual maintenance, not just initial installation. With CFEngine, distributed agents manage each machine autonomously. You will only have to deal with the few rare events that cannot be dealt with automatically. With CFEngine Nova, the agent is able to integrate effortlessly with package managers, file systems, system sensors and other aspects of the environment, leveraging our standard library of promise templates.
- Audit* Auditing with CFEngine Nova is a continuous process too. You no longer need to plan an audit, since CFEngine keeps a central summary of system operational state up to date at all times. Reports are automatically woven together with an analysis of policy and presented in a 'humanized' form in our automatic Knowledge Map. You also have access to our support level documentation and company knowledge banks.

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<sup>1</sup> This document is not a detailed exposition of features in CFEngine Nova, etc. Readers are referred to the *CFEngine Nova Supplement*, and the *CFEngine Reference Manual* on the CFEngine website for full details.

## CFEngine Nova, removing barriers and bringing new freedoms

A CFEngine commercial software subscription adds process simplifications and human friendly interfaces to the bare-bones Community Edition, providing the mechanisms for today's business integration. Users can eliminate undocumented custom scripting in favour of fully integrated CFEngine promises.

A subscription to CFEngine Nova, Constellation or Galaxy means you will always have access to the latest enhancements to CFEngine and can upgrade with a minimum of disruption. We promise not to fill CFEngine with gimmick functionality, but rather continue to develop serious and efficient tools with focus and robustness.

## Clear Intentions and Continual Service Improvement

Nova adds a framework, templates and tools that extend the Community edition and bring out the simple essence of its extensive core of features. Nova generates documentation for you, allowing you to track the intentions behind your IT promises as well as their consequences.

With full documentation of your system's intended and actual state, Nova brings the insight to be able to make better decisions moving forward. Rapid incremental change is essential to *business agility* in a modern IT environment.

A Nova subscription gives you the freedom to

- Automatically track the original intentions behind configuration decisions
- Extract, retain, and export knowledge about your environment
- Focus on strategy by having full insight and analysis about the environment
- Seek expert help from the CFEngine development team and mission specialists on technical issues
- Simplify community configurations with fewer external dependencies using inbuilt conveniences and self-contained packaging

With the Nova subscription model, you enroll in a programme of continual improvement, benefitting from world leading research into IT management. At CFEngine, we are dedicated to solving the pressing challenges ahead: increasing scale, poor knowledge management and increasing pace of change. The CFEngine Enterprise framework allows organizations to embrace good IT practices and comply with standards whether they concern issues of technical or human governance.

## Reduce hidden IT costs with a commercial solution

We believe that choosing one of our commercial solutions, instead of the Community Edition will help complex enterprises save on IT costs.

There is no such thing as a free lunch, so the expression goes, but a zero price tag on software is an appealing prospect, as is the ease of downloading software without risk or commitment. In the long run, however, any software will cost you time and effort. For some enterprises, moving forward with change is not an option because the cost of change is prohibitive. IT specialists need to learn new software and find time to test it, but businesses are stuck in a poverty trap of time and resources.

CFEngine Nova can be a cheap alternative to identifying and hiring a temporary human workforce to get over the hump – and unlike hiring consultants and contractors, Nova helps you to retain the expertise in your organization.

Commercial services exist to minimize these costs for users who need to focus on their core business activities. In short, commercial versions offer *business alignment* to customers.

Nova retains the benefits of the Free, Open Source core:

- Easy availability
- Low barriers to adoption
- Zero risk of vendor lock-in (you always own your own data and there are no secret file formats)
- Security of having a zero price fall-back

and brings new benefits to bear:

- Reduce time managing the software, let the software help you.
- The freedom to ask for solutions and support.
- A certified centre of competence from which to learn best practice or obtain authoritative information.

The openness of CFEngine brings quality assurance, but it should not leave you adrift without guidance. CFEngine's commercial offerings are developed in the spirit of offering the best possible compromise between community openness, in-house freedoms, and commercial assistance.

## Commercial CFEngine and efficiency

Some advantages of our commercial software include:

- One touch installation in a few seconds rather than a few hours
- Self-contained packaging without system dependencies
- Flexible licensing options without problematic license servers
- Self-healing compliance and documentation keeps audits up to date.
- Direct integration with directory services and databases, avoiding custom scripting.

## Convenience and productivity

**Continuity and Repair Enhancements** Database editing and verification is part of CFEngine Nova and allows for configuration support of your critical databases and Windows registry. File system ACL security management has been added for Windows, Linux and UNIX. The data when traversing across the network is secured in accordance with the FIPS 140-2 for data encryption.

Fault tolerant features have been added in CFEngine Nova to provide function for retrieval of data from network connections. There is risk involved in relying on data from a network when configuring hosts. If the network connection should fail, erroneous data might be written to a local configuration. CFEngine Nova adds local caching to network results and works reliably to provide the latest known values.

## Know more about your existing system

More than a year of modelling development at the CFEngine Propulsion Laboratory has resulted in a self-organizing map, which analyses and presents a web-based humanized interface to the wealth of system knowledge the CFEngine's internal instrumentation collects. The CFEngine Nova Knowledge Map allows you to see the system in sharper focus, with explanatory context.

- Extract data from internal sensors.
- View analysis through the self-organizing map.
- Connect to the CFEngine Company Knowledge Base for quick reference to promise templates and documentation.
- Insurance your organization against loss of in-house expertise.

## Ask "What if?"

CFEngine Nova helps you to think about enterprise IT operations with a unique relational insight. Without a costly and resource hungry Configuration Management Database (CMDB), Nova shows relationships and dependencies between configuration items. In a simple graphical way, dependencies are mapped and revealed allowing you to ask: what might be the consequences of changing a part of the operational system?

## Integration with other systems

Integration of CFEngine with other tools can be accomplished in at least 5 separate ways. Much of what you need is provided as built-in functionality, but for those cases where CFEngine does not provide specific functionality that you may require, we provide the following interfaces to external tools:

*Packages* Packages have become a de-facto standard approach to installing software, but package managers treat packages as black boxes, and cannot easily manage complex relationships between systems. CFEngine interfaces with package managers such as "yum", "zypper" and "apt" to go beyond the black-box approach to package management.

*Modules* CFEngine provides a means for application programs (or shell scripts which utilize them) to easily set classes and/or variables within CFEngine. In this way, a tool can be used by CFEngine to alter the state of the CFEngine promise engine. See the "module" attribute in "commands" promises in the reference manual for details.

### *Monitoring*

Often the greatest system inefficiency in datacentres is the monitoring of servers, using heavyweight technologies. Vast amounts of CPU cycles are wasted due to heavyweight scripting, meaning artificial peak demands that prevent server consolidation and waste power and energy.

With the monitoring promises employed in Nova's `cf-monitord`, CFEngine can examine system resources with a minimal resource footprint of its own, gathering historical trends, patterns and averages.

*Files* Files are the key to application integration. CFEngine can make a wide variety of file promises, e.g. to examine the contents of application-created data, read

and write data, edit files, etc. These range from addressing flat files and field-separated data, INI and XML, to parsing databases in

*Databases* CFEngine Nova can also make promises about databases, allowing you to create, manage and verify SQL database structural integrity across distributed systems.

#### *External commands*

CFEngine provides the simple means to execute any external command under its secure framework, optionally collecting its output for integration with policy. This 'keep it simple' approach is often the least costly and most straightforward way of integrating management of multiple applications and services.

#### *OS Awareness*

CFEngine Nova adds additional support for Solaris Zones and Microsoft Windows registry. The addition of Windows Server support brings the entire enterprise within reach of CFEngine Configuration Management and real-time repair.

## System Reports from Compliance to Performance

Performance reports and policy relationship maps are generated automatically. Service level reporting is provided in various formats for proof of compliance and documentation. Nova adds reports:

- Available Patches Report. Patches already installed on system
- Classes Report. User defined classes observed on the system
- Compliance Report. Total summary of host compliance
- File Changes Report. Latest observed changes to system files
- File Diffs Report. Latest observed differences to system files
- Hashes Report. File hash values measured (change detection)
- Installed Patches Report. Patches not yet installed, but published by vendor
- Installed Software Report. Software already installed on system
- Lastseen Report. Time and frequency of communications with peers
- Micro-Audit Report. Generated by CFEngine self-auditing
- Monitor Summary Report. Pseudo-real-time measurement
- Performance Report. Time cost of verifying system promises
- Promise Report. Per-promise average compliance report
- Promises Not-Kept Report. Promises that were recently unkept
- Promises Repaired Report. Promises that were recently repaired
- Setuid Report. Known setuid programs found on system
- Variables Report. Current variable values expanded on different hosts

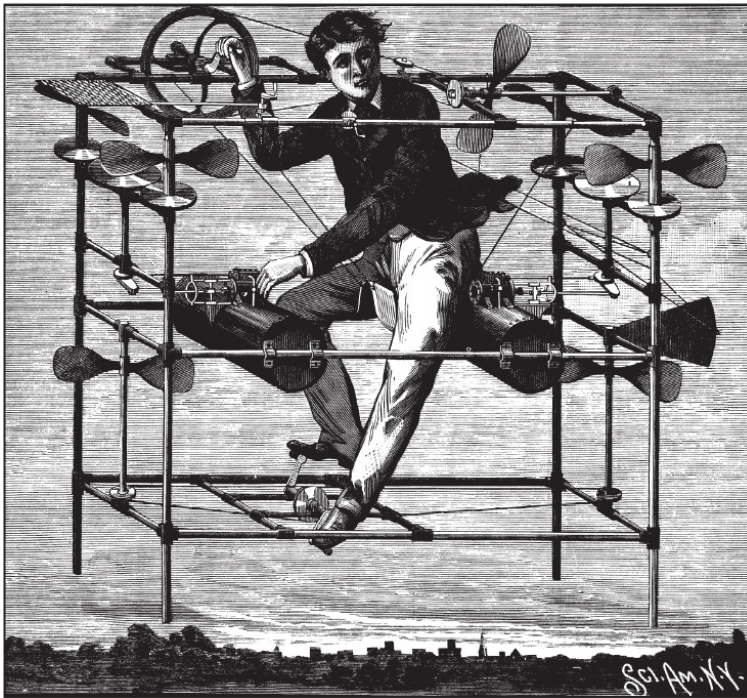
## Updates coming to subscribers

For users who have existing CFEngine 2 installations, in early 2010, CFEngine Nova will include a tool to help convert CFEngine 2 policies into CFEngine Nova format.

Moreover, a CFEngine change console will provide a graphical user interface, tying into the knowledge map, for editing and managing promises.

## Some advice: avoiding contraptions

Free, Open Source Software has some traps for technically competent IT milieux. Given the freedom to add features and experiment with open source code, IT specialists tend to spend business time building in-house contraptions. Contraptions are scripts and devices thrown together by necessity without standardization or documentation. They are high risk investments, because in a few weeks or months no one remembers how or why they were built – indeed the author might have left the team.



When in-house contraptions fail to perform as expected, it is usually easier to throw them away and build everything from scratch rather than understanding and debugging them. This adds repeated costs and loss of productivity. CFEngine provides a level of standardization without taking away competent engineers' freedom to use their skills.

Ironically, the same is true of custom modifications to open source software. The more you customize a solution, the deeper the hole you have to climb out of when something goes wrong. Standards represent time saved and knowledge in the bank, so choosing off-the-shelf software with a supported, open process is good *knowledge management* for an organization. CFEngine provides this kind of assistance through its commercial software releases.

## Minimal negative impact on business

Making a software investment is a major undertaking. At CFEngine we have worked hard to make the software easy to adopt and have a minimum negative impact on operations. CFEngine Nova and its commercial cousins can be introduced immediately into your system, and lie in wait for the adoption of a programme of small incremental changes and documentations.

We build on the spirit of our Open Source heritage, offering additional freedoms for a price rather than locking you in. CFEngine commercial solutions have been designed to give a high return on investment, removing the hidden costs of free software, and focusing attention to knowledge management, continuity and business alignment.

## Detailed summary of features

- Technical and user support
- Automation
  - Simple automatic installation (one command per system)
  - Auto-analysis and self-healing knowledge console
  - Policy mining and semantic knowledge representation
  - Auto-classification of systems
  - Performance and Service Level reports
  - On- and off-line syntax lookup.
  - System state discovery.
- Capabilities
  - Native Windows support and database management
    - Registry management and repair
    - Filesystem ACL security management
  - Database verification and editing including SQL (Mysql,Postgres) and Windows registry
  - Unix File system ACL support for extended security management
  - System reporting
    - Extended monitoring probes and system classification capabilities.
    - HTML, XML, CSV report generation
    - Service and performance level reports
    - Reliability reports
    - Deep history analysis and visualization, through knowledge base.
    - Policy dependency and impact analysis reporting
  - Access remote CFEngine variables (e.g. password hashes etc) without need for intermediate file storage or directory services.
  - LDAP directory service integration
  - Role based access control by class.
  - Third-party software integration.
- Knowledge Management
  - Automated integration of policy with user defined knowledge-maps
  - Auto-generated central knowledge console linking to CFEngine's company support knowledge base.
  - Private knowledge extensible for tie-in with local documentation.
  - Links from reports to Copernicus online support service

- Dependency mapping between promises in CFEngine, with integration into the semantic map
- Trace high level policies to low level policies
- Services integration support