Pandora FMS 3.2.1

Feature overview
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OpenOffice/PDF Version

1º Edition, 10 November 2010

2º Edition, 12 February 2011

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## Enterprise vs OpenSource Edition Feature Comparison

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<thead>
<tr>
<th>Feature</th>
<th>OpenSource</th>
<th>Enterprise</th>
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</thead>
<tbody>
<tr>
<td><strong>Licence</strong></td>
<td>GPL2</td>
<td>Artica ST Enterprise Licence, with full access to source code, and restricted distribution and usage.</td>
</tr>
<tr>
<td><strong>Support</strong></td>
<td>Self-service via Pandora FMS Community Forums and online documentation</td>
<td>Full commercial support (8/5 or 24/7). Access to our enterprise Knowledge Base and module library.</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td>Free</td>
<td>Based on the number of agents</td>
</tr>
<tr>
<td>Auto Discovery &amp; network topology detection</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Performance &amp; Availability Monitoring</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Fault &amp; Event Management</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Service-level monitoring &amp; Visual Console</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Full featured multiplatform agents for Windows, HPUX, Solaris, BSD, AIX and Linux</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Android &amp; Embedded devices agents</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Virtual infraestructure and cloud computing</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>High Availability</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Role-Based Access Control Levels</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SNMP Monitoring</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>WMI Monitoring</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SNMP Trap monitoring</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SLA &amp; Reporting</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>ITIL v3 Metrics</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Alert Correlation</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Transactional WEB Monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple site setup scelation (Metaconsole and ExportServer)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Remote Inventory and/or with Agents</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Remote agent management</td>
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Centralized Management using monitoring policies

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<th>Present</th>
<th>Absent</th>
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<tr>
<td>Automatic updates with Open Update Manager</td>
<td>✔️</td>
<td></td>
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<tr>
<td>Geolocation (GIS)</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>SOA API (REST) and CLI</td>
<td>✔️</td>
<td></td>
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<tr>
<td>Advanced Reporting</td>
<td>✔️</td>
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<td>Fine Grain ACL System</td>
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<td>Dashboard</td>
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<td>Historic database for huge loaded systems</td>
<td>✔️</td>
<td></td>
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<tr>
<td>3rd Party Product Integration API Library</td>
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</table>

1.1. *Autodiscovery and network topology detector*

Pandora FMS is able to scan and detect new non monitored systems periodically, detecting its OS and profile, based on TCP ports and assign them to an specific network monitoring template, depending on the network, OS or port profile. Recon server also detects the network topology and will try to "attach" to the more direct known parent to the new host.

1.2. *Performance & Availability Monitoring*

Pandora FMS provides a complete solution for performance & availability, monitoring the key resources across the infrastructure, to ensure that all devices are ready to respond to end user requests.

It is possible to run these tests in the software agent or from Pandora FMS Server, which eliminates the risk associated with running monitoring software on target systems.

Pandora FMS specific tests and features include:

- Scheduled Availability Tests
  - ICMP response and delay
  - SNMP response
  - Standard TCP/IP services (HTTP, SMTP, etc.)
  - Specified TCP/IP ports with regular expression matching
  - Windows service availability
  - Windows process availability
  - Linux/Unix process availability
  - URL availability
  - Nagios Plug-In Support (for both, availability and performance)

- Scheduled Performance Tests
• CPU Usage
• Disk Usage
• System overload
• Connections on a database
• Number of occurrences in a logfile per second
• Temperature on a system
• Incoming network traffic
• Network latency

1.3. Fault & Event Management

Pandora FMS event system keeps a log of everything that has happened. When a service or a host goes down, or it comes up again, when an alert is fired, when new hosts are discovered at the network, etc...

It is possible to search events, filtering them by group, type, severity, or event status. All this is done from the Web Console.

Events can be exported to a CSV file, or be linked to feed readers, thanks to its RSS feed.

1.4. Visual console for custom defined service-level monitoring.

Pandora FMS allows to each user to define their customized view of the monitoring, this is a customized-defined graph view, based on a representation in the space, selected items, represented status, data, graphs or other visual console status, scaling always the critical event.

This feature, combined with the service-based monitoring on weights, in a much more flexible way and with user-defined margins. Unlike as with the "specific" monitoring, where there are kept specific values from specific indicators, the service monitoring with Pandora FMS is though to monitor "groups" of elements, from different kind, with certain "margin of error", based on the failure accumulation.

The need of monitoring services as something "abstract" appears when we ask ourselves this question: What happens when an element that initially is not critical? such as, for example, one of the twenty Apache servers. Firstly, we could not to warn, in fact, could be it has frequent falls, so there are 20 nodes, it shouldn't warn us for the fall of only one node (let's imagine that this warning wake up someone who is sleeping). In fact, a service with so many redundancy is for giving us more peace, not more work. It should only warn us if a more critical element is down (such as a router) or if "several" WEB servers are down, for example, four or five of them.

See more details in our Service-level monitoring section.

1.5. Virtualization and cloud computing monitoring.

Enterprise version has a specific enterprise plugin (included in the Enterprise licence) for automatic
detection of VM in VMWare 4.x infrastructure using a single centralized point (VCenter) to gather all information, using the VMWare API. There are Opensource plugins available for VirtualBox, Xen, KVM and EC2.

See more details in our Virtualization & Cloud computing section.

1.6. Full featured multiplatform agents for Windows, HP-UX, Solaris, BSD, AIX and Linux

There are software Agents for Windows, Linux, AIX, HP-UX, Solaris, BSD and Mac: lite agents that provide information about the system where they are installed (CPU, memory usage, disc usage, the output of any command, ...).

There are also hardware Agents to monitor temperature, humidity, smoke, Gas, flood and any device that send dry contact.

1.7. High Availability

Pandora FMS has multiple server based structure (Data Server, Plugin Server, Network Server, ...), a Web console and a Database. It has redundancy over all its items. Any amount of servers or consoles can be created, as well as a MySQL cluster for the Database.

HA concepts are also related with Export Server, Metaconsole and the history database (all of them, Enterprise features). Read more about this advanced topics in our Architecture section.

1.8. Role-Based Access Control Levels

Pandora FMS has an user role and a permission system, that allows to define new users with different permissions over the different monitoring groups. This way, an user could be administrator of the Accounting System, having only permissions to see the events of the Human Recourses group. There is also an enterprise ACL system which expand this feature.

1.9. SNMP Monitoring

Simple Network Management Protocol (SNMP) is a UDP-based network protocol. It is used mostly in network management systems to monitor network-attached devices for conditions that warrant administrators attention. Pandora FMS can monitor any device with SNMP protocol directly from the Pandora FMS Network Server

1.10. WMI Monitoring

Windows Management Instrumentation (WMI) (or Windows Management Interface[1]) is a set of extensions for the Windows Driver Model that provides an operating system interface through which the instrumented components provide information and notification. Pandora.

Pandora FMS can monitor any Windows System SNMP protocol directly from the Pandora FMS WMI Server or using the WMI module in Windows Agent.
1.11. SNMP Trap monitoring

Pandora FMS has a Trap Console that shows the SNMP events that have been received by Pandora FMS server, showing the following information about the event: its status, the OID source and the associated Agent, the date, if it has any associated alert, and the action to take on the event. From the same Console, alerts could be assigned in order to receive traps.

Pandora FMS Enterprise SNMP traps console has a few interesting features for Enterprise customers:

- It has a MIBs loader for traps definition.
- User can define a Traps alias to show the information differently.
- It can forward a TRAP to agent, as a string module.

SLA & Reporting

Pandora FMS can create HTML reports for any monitored element. Data, such as graphs, SLAs, metrics, events, ... can be added to these reports. Reports are created for a configurable time frame, that goes from an hour up to six months.

With Pandora FMS 3.1 Enterprise, it is possible to create PDF reports and send them to an email address at the specified day. And, what is more, the reports could be recurrents and could be sent every week, month, six months, etc.

1.12. ITIL v3 Metrics

Now, it's possible to add the items MTBF, MTTR, TTO y TTRT of any monitored event in the reports.

1.13. Alert Correlation

Pandora FMS allows to configure alerts correlating, with logical operators, the data obtained through more than a module or monitor, being these modules from the same agent or from different agents.

1.14. Transactional advanced WEB Monitoring

Pandora FMS WEB monitoring is a transactional or synthetic test. This one reproduces the complete browsing "process" truly. It could include features such as to authenticate in a form, do click in a menu option, fill in a form, verifying that each process returns an specific text string. Any mistake in a moment of the process, will have as result a failure in the checking. The complete transaction includes the download of all the resources(graphs, animations, etc), that the real browsing has.

WEB monitoring returns a "real" user experience, reporting time of transaction, and it is able to "check" if the complete transaction is complete, checking text output response.
1.15. **Multiple Site Setup Scaling**
The Export Server provides the data escalation feature, making possible to have a completely distributed installation at the same building, office, or even different countries. The different Pandora FMS installations will connect to a Central Pandora FMS, which will collect and centralize the information.

1.16. **Metaconsole**
Pandora FMS has the Metaconsole feature that is a Web environment that works as a manager of independent installations from Pandora FMS, to coordinate them in server farms with only one management. This allows Pandora FMS to get almost an unlimited scalability. Read more about this advanced topics in our [Architecture section](#).

1.17. **Remote Inventory or with Agent**
A new system and service inventory which will act as a system inventory, showing software and hardware in the monitored systems. It is possible to choose whether agent-less or agent-based configuration to get that data.

1.18. **Remote agent management**
With Pandora FMS 3.1 Enterprise version you can modify from the Web Console the configuration of any Agent installed. This allows to add or remove modules from the agent, change the IP address of Pandora FMS server, the interval, the connection port, and any other configuration option of the Agent.

1.19. **Centralized Management using monitoring policies**
This feature is very important for organizations with lots of agents. Pandora FMS is able to manage thousand of devices with thousand modules and alerts. We have developed the policies feature, in order to make easier the administrator's job. Policies are even applicable using command line interface and ready to be used in a multi-tiered enviroenment.

The policies allow to assign modules and alerts to the agents in a centralized way. This is possible because every policy module and alert is propagated to every the subscribed agent. This is an Enterprise feature.

1.20. **Automatic updates with Open Update Manager**
The Export Server provides the data escalation feature, doing possible to have a completely distributed installation at the same building, office, or even different countries. The different Pandora FMS installations will connect to a Central Pandora FMS, which will collect and centralize the information. Since 3.2.1 version, Update Manager can use offile (zip files) for update the system.
1.21. Geolocation (GIS)
With version 3.1., Pandora FMS start providing location information and interactive maps that will show the agent's location. Newest version (3.2.1) includes support for Android Phone, which send GIS information and translate (using Reverse Geocoding) to "human" addresses, showing in a map location of the device, and a list of addresses with timestamps.

1.22. API SOA (Rest) and Command Line Interface (CLI)
AN API SOA and one CLI has been added in order to interactuate withe the Pandora FMS database from the command line or from the Web services.

1.23. Advanced Reporting
Enterprise user has a improved interface, with some specific features for the enterprise user: PDF Reporting, change report logo, add custom headers/footers, design a cover page in a WYSIWYG editor, create automatically a fancy index with contents in the report. Reports also are programmable and could be sent by email using a cron-like interface, to define the execution of the mail report each week, for example.

1.24. Fine Grain ACL System
The possibility of configuring through ACLs the Operation and Administration sections from the menu that could be seen by the user. This allow to define a different interface for each user, removing specific parts of the interface, even if the user has rights to see it.

1.25. Dashboard
Pandora FMS 3.1 has a new main page, called Dashboard. Our dashboard is based on "pieces" of custom-defined information called widgets, and is totally customizable with different screens and frames. Each dashboard will contain different widgets such as reports, graphs, maps, metrics etc. Each user can define its own dashboard.

1.26. History database
A secondary database for store long-term data, not used in daily operations or reporting. This allows Pandora FMS to store huge amounts of data, isolating production realtime data from historic non very often used data, allowing Pandora FMS to manage more information and to have months or years of history detail.

1.27. 3rd Party Product Integration API Library
Pandora FMS external WEB API is used doing HTTP/HTTPS remote calls (REST API). This is the method that has been defined in Pandora FMS to integrate applications from third parts with Pandora FMS. This is a HTTP request with the parameters formated to receive a value or a list of
values, the API also allow to set operations on the server (like apply a policy or insert a value). The API is also used to get event information for an external event manager.

1.28. Embedded agents and Android agent.

Pandora FMS have developed a specific agent for embedded devices, made in Posix C, aimed at devices with very little RAM, and can work with all types of processors (ARM, VIA ...). These kind of agentes should be able to run on any linux-embedded device.

Pandora FMS also have an specific agent for Android phones: Pandroid. This agent, reports GPS information to the GIS system on Pandora, and also returns battery levels, compass information, among other sensor information like proximity information. In the future, this agent could be the plattform to send centralized information from movile devices.