

## WHITE PAPER

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# GroundWork: Bringing IT Operations Management to Open Source and Beyond

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## EXECUTIVE SUMMARY

IT organizations are constantly looking for cost-effective ways to manage increasingly complex, heterogeneous infrastructures to meet business demands. Executive leadership teams need to have more visibility into the IT infrastructure and the delivery of their IT services to reduce the risk of security failures, drive process and technology integrations, and meet stringent service-level agreements (SLAs). As many IT organizations have deployed monitoring solutions, open source solutions have emerged over the past several years to monitor the health of heterogeneous systems. IDC recommends that IT organizations assess their business and technology requirements and determine if open source management solutions should be added to their short list for network and systems monitoring. Often, the answer is yes. However, IT organizations must understand that while open source management solutions license costs are usually much lower than related suites, other factors such as staff training, custom coding, and integration work will drive up the cost of deployment. These solutions usually complement existing management tools by improving the monitoring and management of a heterogeneous infrastructure. A solution, such as that provided by GroundWork Open Source, can drive more value from the existing deployment of open source tools by providing a common data model, integration platform, and presentation layer for IT organizations moving away from component management to service management.

## KEY TRENDS IN NETWORK AND SYSTEMS MANAGEMENT

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### **Availability: A Key Business Requirement**

Customers increasingly expect 24 x 7 IT service availability via Web sites, portals, email, and mission-critical applications. When these systems and applications experience degradation, it can negatively impact customer reputation and revenue. Maintaining availability and preventing downtime begins with the successful deployment of network and systems management solutions. However, solutions alone are not enough to meet service-level agreements (SLAs) that hinge on IT service availability. To be successful, IT organizations must deploy a combination of capabilities consisting of solutions and management processes that empower IT staff to more crisply understand and delegate responsibility throughout a problem, change, or incident management workflow. People (IT staff), process, and management technology working in concert enable IT organizations to exceed their availability

objectives for the business. The need to maintain systems and network availability across a heterogeneous, global infrastructure is now a requirement in delivering an agile infrastructure that is ready to meet the needs of the business. Many IT organizations today are looking for new management solutions that deliver heterogeneous visibility across an IT service.

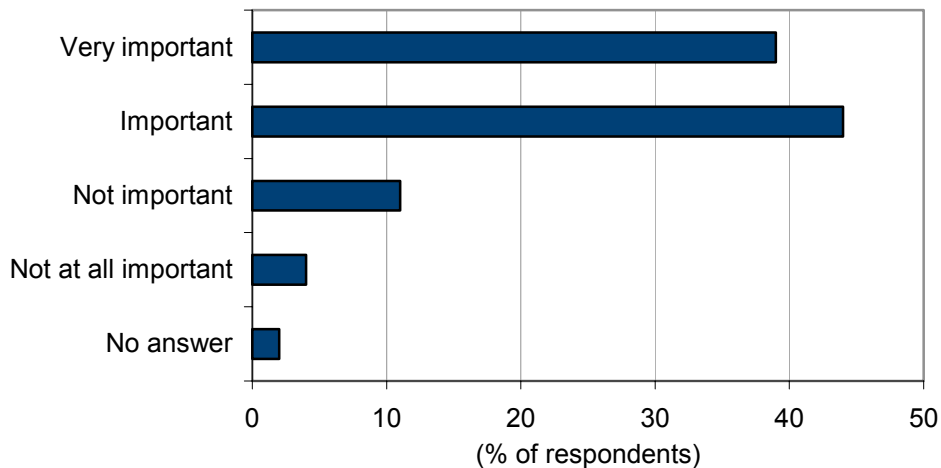
## Heterogeneity: A Key Technology Requirement

Business pressures and the need to quickly respond and meet business objectives are driving adoption of network and systems management solutions. As more IT organizations build out service oriented architectures (SOA), IT organizations are examining their heterogeneous infrastructures to determine "best-fit" management solutions. In fact, heterogeneity is often a critical purchase decision criterion for management solutions (see Figure 1). This is nothing new for IT organizations; however, what is accelerating is the pace of change within heterogeneous architectures and the need to control and monitor changes to assure compliance, reduce costs, and achieve business alignment. SOA is also driving more heterogeneity by requiring sophisticated monitoring of transactions and infrastructure change. If these capabilities are not present, IT is put in a poor position to deliver effective and efficient services. The bottom line is that heterogeneity and its importance to IT organizations are here to stay and are key requirements for management solutions.

**FIGURE 1**

### Importance of Heterogeneous Management Support

Q. How important is heterogeneous support for management tools?



n = 100

Source: IDC IT Enterprise System Management Software Strategies, November 2005

Most application architectures and transactions depend on cross heterogeneous environments: mainframe and distributed. To ensure business objectives, visibility into these architectures is critical to monitoring availability.

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## **Infrastructure Monitoring: An Increasing Commodity**

During the past 10 years, most IT organizations have implemented infrastructure monitoring to better understand the health of their systems, networks, and applications. As such, infrastructure monitoring is a growing commodity for IT organizations that require the collection of management information from across a heterogeneous architecture. The maturation of monitoring solutions in data collection, analysis, and reporting has continued to drive up the general adoption and deployment of monitoring solutions. Another key factor in the commodity movement is the fact that some monitoring solutions are platform specific, often sold as freeware or along with a hardware platform by a system vendor. Essentially hardware providers have increased their interest and product offerings aimed at managing their own solutions. These factors are increasing the deployment of monitoring capabilities that assist IT organizations in setting a foundation for managing the availability of IT services.

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## **Open Source Monitoring Solutions: An Introduction**

Over the past 10 years, as the monitoring market and related solutions have developed into a mature market, a new era of technology and management solutions have been created. Open source code and community development are creating monitoring solutions for IT organizations considering low-cost monitoring tools. Some open source solutions have started to get deployed by IT organizations that want to complement existing management infrastructure and processes.

Open source management solutions have moved forward quickly in terms of community development and capabilities. It is notable that many open source-based tools now have key product capabilities, sometimes found in more expensive solutions. Some of the areas that have been developed include:

- ☒ Scalability and heterogeneous infrastructure support
- ☒ Reliability and tool integration
- ☒ Data collection, monitoring, and reporting
- ☒ Fast deployment and ROI

Open source solutions for infrastructure monitoring have come a long way. Users should consider adding open source monitoring tools to their short list for infrastructure monitoring to drive more efficient, cost-effective management.

## **THE GROUNDWORK APPROACH AND SOLUTION**

The GroundWork approach to systems and network management is based on the fundamental idea that community developers versed in open source create solid monitoring solutions. However, they don't go far enough in terms of integration, cross domain expertise, and consolidated data collection and analysis. GroundWork Monitor adds the "integration and presentation" layers for disparate open source monitoring solutions. Through APIs, a common data model, and data model adapters, GroundWork enables IT organizations to increase their ROI from open source solutions and bring a more meaningful, service perspective to IT management. IT organizations often download and deploy various, disconnected open source monitoring solutions, such as Nagios for network monitoring, Round Robin Database (RRD) for performance reporting, SNMP TT (trap handling), MySQL (database), and SyslogNG (Log collection). These tools are often utilized without integration into a broader management solution stack or process workflows.

GroundWork offers IT organizations the ability to bring together disparate open source-based monitoring solutions and third-party systems to drive a service-centric approach, rather than component perspective. The ability to collect and consolidate data such as monitoring, alarms, traps, and logs from open source tools, normalize the data into a database, offer business value through performance and availability reports across a heterogeneous environment, and interface extensions to integrate the data with other dashboards is powerful. GroundWork enables enterprises to leverage open source tools and elevates the value proposition by integrating them and collecting their critical data into a common data repository.

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### **Leveraging Partners**

As a small company, GroundWork realized that in order to achieve wide adoption it is essential to partner with solution providers with IT management domain expertise. These partners can provide installation and configuration services around the GroundWork Monitor Professional platform to a wide range of customers and environments. To that end, GroundWork has introduced the GroundWork Partner Network, a comprehensive worldwide program aimed to attract and support solution providers with training, mentoring, certification, and attractive revenue opportunities to help grow their businesses. It is a pioneer in opening up the open source IT management space to an indirect channel by offering all the back-end support that partners have come to expect from closed-source vendors.

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## Key Solution Portfolio Overview

GroundWork has three solutions available for IT organizations that have varying degrees of operations management requirements:

- ☒ **GroundWork Monitor Professional.** A comprehensive open source software solution for systems and network monitoring and management that includes configuration tools, out-of-the-box profiles for common applications and devices, an integrated console, performance monitoring, and SLA reporting capabilities. Platform coverage includes Linux, Unix, Netware, and Windows. The solution is offered as a subscription-based model with an annual cost of \$16,000. There are multiple subscription options, such as high availability and backup of monitoring servers, Web-based application monitoring utilizing synthetic transactions, and network-monitoring capabilities. This is the only GroundWork solution that offers third-party application integration via a Web services API or interface.
- ☒ **GroundWork Monitor Small Business.** Starting at a cost of \$8,000 for an annual subscription, this is for small to mid-sized organizations that need to monitor less than 50 infrastructure devices.
- ☒ **GroundWork Monitor Open Source.** A free, starter application that is downloadable open source software offering basic monitoring.

The architecture for each of the products is fundamentally the same; however, it's important to note that functionality differs depending on the solution. IT organizations should have a deep understanding of the level of functionality required to meet monitoring and business objectives. For most organizations, the GroundWork Monitor Professional option is most appropriate. For organizations that require an entry-level solution or are interested in experiencing the look and feel of GroundWork, the free GroundWork Monitor Open Source solution is the suggested starting point.

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## Key Benefits

It's important for IT organizations to understand the business, technology, and process objectives prior to selecting a management solution. IT organizations should consider the following benefits for using a GroundWork solution:

- ☒ **Lower cost monitoring.** There is an opportunity to lower the existing costs of infrastructure monitoring, or increase the ROI of existing legacy monitoring systems by utilizing GroundWork via the subscription licensing approach.
- ☒ **Move from a "component" to a "service" perspective.** Many enterprises have point solutions deployed in their environment; bringing the data together via a database, integrations, and reporting architecture offers a service (versus component) view of infrastructure.
- ☒ **Faster management workflows.** Through the common data schema (foundation), collecting and normalizing data from disparate tools into a common data repository can drive faster problem, change, and incident management workflows by creating knowledge from vast data points.

- ☒ **Speed process adoption.** Management technology alone is not enough to drive IT and business alignment. Incorporating management processes across "IT silos" requires an end-to-end view of an IT service from disparate data sources.
- ☒ **Broad data collection and monitoring.** Windows integration and extensive APIs come out of the box to expand platform coverage and third-party tool integration.
- ☒ **Encapsulated monitoring "best practices."** GroundWork has precoded monitoring values inside their data collectors to define the best parameters for various monitoring tasks to drive improved analysis and data collection in an automated fashion and with reduced complexity. Out-of-the-box support is included for Apache, IIS, Exchange, SQL, Oracle, and others.

IT organizations should consider the value proposition across IT staff, management processes, and existing legacy management solutions when considering new management opportunities. Moving from component to service management should be a key consideration during the product selection process.

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## Architecture Overview

The GroundWork value proposition stems in part from a 3-tiered technology architecture that enables scalability for third-party solutions. A few of the key architectural highlights include:

- ☒ **Data collection and normalization "best practices."** Enables the architecture to manage the collection and normalization of performance and configuration data taken from external open source-based solutions such as Nagios, nmap, RRDtool, and others. This layer prepares the data for presentation into MySQL GroundWork database (foundation layer). There are additional interfaces available for open source network management tools, such as Cacti, ntop, NeDi, and Network Weathermap. Data collectors (open source tools) are deployed based on monitoring needs for systems, applications, servers, and network devices, which then assist in producing round-robin databases (RRDs) or log files. Data collectors have default values that dictate "best practices" for the specific monitoring task. Message APIs are responsible for interacting with the data during normalization to prepare and feed it to the Foundation layer.
- ☒ **Foundation layer.** A core piece of the GroundWork architecture, receives the data, parsed from various open source monitoring tools, and stores it in a normalized data schema. To enable easy retrieval and insertion of data, a Web services API has been created. This is an open source project and integrates with various open source components such as Eclipse BIRT, MySQL, Spring framework, Jetty, and Joram.

- ☒ **Web portal presentation layer.** The GroundWork UI, this layer has user interfaces for all of the GroundWork application views, and integrates and extends out to third-party user interfaces. Key capabilities include executive and IT staff level reporting and dashboards, alerting, messaging, and drill-down status, performance reporting, configuration management and administration. Based on the open source Guava framework for PHP applications, the dashboard includes security and permissions management and AJAX-enabled user interaction. Automatic refresh and open APIs offer additional customization opportunities.

The GroundWork Monitor Professional solution offers third-party integration via the presentation layer. However, all solutions utilize various pieces of the 3-tiered architecture.

## IDC OPINION ON GROUNDWORK

The GroundWork value proposition and competitive positioning spans a few critical areas. These are a lower-cost alternative for infrastructure monitoring, an easy-to-use solution, and a utilization of the broader open source community that has developed point management tools. By utilizing the open source community, GroundWork has been able to raise the value of those projects for the IT organizations that have deployed them through integrations, normalized data collection, and reporting. GroundWork is focused on organic development of their platform to further build out functionality, platform coverage, and integrations. The company has experienced steady growth and many opportunities. Some of these include:

- ☒ **Consulting engagements.** The ability to turn custom integrations and projects into products for resale.
- ☒ **Large vendor partnerships.** The open source community is vibrant and growing; most large vendors are looking for partners to deliver open-sourced based, innovative products.
- ☒ **Community development.** The open source community continues to develop a plethora of new management tools that are adopted by all sizes of IT organization; GroundWork can continue to act as the thread to tie them together and increase their value to adopters.
- ☒ **Fast on-ramp.** The GroundWork Monitor Open Source solution will drive increased awareness and introduce the company to IT organizations; the faster the download rate, the faster an increase in awareness and the potential sales of high-function GroundWork solutions occur.

## GROUNDWORK CHALLENGES

IT organizations should consider the following challenges faced by GroundWork as they contemplate using its products and technology:

- ☒ **Funding.** GroundWork is a venture-backed firm. Although its last round of funding was oversubscribed, users should press the vendor on its long-term business model and funding strategy.
- ☒ **Customer base/community dependence.** GroundWork is a fast growth company; however, it is still small relative to most other monitoring vendors. Users should determine their level of risk and ask for customer references that have deployed the applicable GroundWork solution. The company is banking on further community development of open source management tools; some of these tools are not very valuable.
- ☒ **Technology.** GroundWork has knit together a quilt of open source-based projects that together offer monitoring value. Customers and prospects should press the vendor on organic (GroundWork-based) versus inorganic (community-based) development, plans, and product road maps.
- ☒ **Marketing.** GroundWork marketing programs and lead generation and branding campaigns need constant and increasing funding to drive up awareness and product adoption.
- ☒ **Scale.** The business is growing fast and the ability of the company to meet and deliver consulting projects that can become repeatable engagements for customers is critical; building out a certification program on the GroundWork platform is another key challenge.

## CONCLUSION

Heterogeneity and increasing availability requirements are here to stay for IT organizations. As monitoring options continue to increase, the use of open source-based solutions should be added to the short list for monitoring. These solutions will continue to emerge and mature during their product development cycles irrespective of being vendor or community designed. It is important to understand that the notion of component management is disappearing. Service management is the next iteration for IT organizations. Solutions alone will not enable the transition, a combination of tools, IT staff, and process maturity will bring success. The open source movement will continue to evolve, bringing new management solutions to fruition. IT organizations would be wise to consider these tools as they embark on the journey toward end-to-end service management.

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