

Solution Guide

**IT Infrastructure Management:
10 Non-Negotiable Features
You Need to Show Real Results
and ROI to the Business**

Many IT optimization efforts fail because of management's inability to recognize the importance of an integrated infrastructure management approach. Managers often embrace one-dimensional ideas and evaluate them on cost-saving potential alone—with insufficient insight into customer, competitive, and operational factors—or even the organization's ability to execute.

Managing IT infrastructure performance is a constant challenge. IT personnel today face distributed, multi-tenant storage, virtualization layers, heterogeneous vendors, and bloated or restrictive existing system-management solutions—all while trying to identify and solve problems faster.

Using a vendor-agnostic, cloud-based Software as a Service (SaaS) approach to your infrastructure performance management can easily assemble and quickly visualize complex IT enterprise environments regardless of vendor—proving itself superior to existing domain-specific and big-platform solutions.

What ROI can you expect from the implementation of such an approach? From customer case studies of Galileo Performance Explorer, we have proven the amazing ROI from information that IT management could not access before. With implementation that users have called “simple and uneventful,” ROI has proven dramatic and quick. Examples from current customers include:

“Reduced four hours to four minutes”

“Prevented \$102K upgrade in five minutes”

“Multiple tools consolidated to one”

“Saved \$86,000 in just two minutes”

“Avoided activating 595 CPUs from COD”

“Eliminated need for costly onsite Storage Resource Management tools”

By using the right infrastructure performance management tool, you can expect to:

- Decrease CAPEX and OPEX while getting more out of existing assets
- Eliminate risk and predictively troubleshoot performance slowdowns and application failures
- Align expenditures on server, SAN, and storage infrastructure with business and application requirements
- Proactively improve data center performance
- Manage and monitor multiple data centers and complex computing environments
- Create customized dashboards and comprehensive reports on the end-to-end environment

In this document, we discuss the non-negotiable, “must-have” features that the ideal infrastructure performance solution will provide to create the best approach. With decades of experience and deep subject matter expertise, we have built Galileo to handle these must haves for guiding IT spending and investment.

Use this as a guide for evaluating your current capabilities vs. the ideal feature scenario we feel is required.

Must-Have #1: Planning & Monitoring Data Center Migration

Data center migrations have become an increasingly important IT planning strategy for companies looking to seamlessly relocate an entire data center environment to a new facility or to a managed or cloud environment.

In the case of any data center migration, extensive testing and predictive analysis should occur before any attempted migration. The ideal solution will deliver predictive analysis for a planned data center migration and real-time monitoring of performance, capacity, and configuration during actual migration. In this way, it can proactively troubleshoot potential problems and evaluate post-migration results.

While this may seem like a daunting task, it is common for businesses to maintain offsite data center facilities for disaster recovery or impending system downtime. In such cases, the secondary data center can perform business operations until the primary facility is back up and running and migration from the secondary facility back to the primary facility can occur. During routine migrations, it is good practice to run a monitoring and alerting system to apprise administrators of potential problems.

Must-Have #2: Server/Storage Consolidation

Utilizing an extensive monitoring and alerting solution during a physical or virtual server migration or consolidation helps identify issues and provide measurable before-and-after results.

Must-Have #3: System/Application Upgrades

While system upgrades are generally a good thing, they may cause IT interruptions. As system and application changes occur, unforeseen problems can adversely affect many applications and operations. Conducting a controlled data center migration to a third party before a system or application upgrade can ensure continued uptime while monitored migrations and upgrades can take place on the primary system.

Must-Have #4: Cloud Migration

Cloud migrations—managed-provider migrations in particular—can present unseen troubleshooting events. Running data centers in the cloud has become popular because—when done correctly—companies can reduce costs and drastically reduce their footprint. During cloud migrations, however, the system operating behind the cloud may differ from the system performing the migration. This presents potential problems that could drastically affect operational efficiency.

Maintaining a watchful eye on performance during cloud migrations and operations is crucial. During the entire migration and ensuing operations, the ideal solution should alert administrators to potential or existing troubleshooting events—even setting expectations on performance requirements and ensuring that service-level agreements are met. Because cloud migrations are unique here are specific examples of the application of Galileo to cloud migrations:

1. Use the Historical Information to “size” the CPU, memory, network, storage, performance and capacity required to give cloud providers accurate, fact-based resource requirements for costing and proposals.
2. Galileo Virtual Grouping can also be used to put existing customer workloads together for what-If’s scenarios to determine what to move to the cloud first, then size and relate that to the costs you’re given from cloud providers. For example, you can test by splitting between two cloud providers and use Galileo to compare performance of the two, equate that their costs and determine which is a better ROI for your data center and if you are receiving better IT performance from one cloud provider vs. another relative to the cost. This is referred to as price/performance ratio.
3. Once moved to the cloud, Galileo can easily monitor your data center, whether 100% cloud or a hybrid where parts are both in the cloud and on-premise.
4. Because Galileo uniquely operates in the cloud, it can also be used to validate any SLA or verify that you are getting the value you anticipated from the cloud provider. You can use Galileo to ensure you are getting the CPU, memory, and response times you were promised OR see if it is slower on certain days of week or at specific times. Galileo will show you all those measurements

Must-Have #5: Advanced Performance Monitoring

Maintaining a high-performance IT data center environment is crucial to any business. If performance slows, operational efficiency across the entire business can slow. The challenge is pinpointing where the slowdown occurs. Locating such problems requires multiple physical monitors and separate performance monitoring tools to examine server environments, storage environments, bandwidth bottlenecks, power allocation, and virtualization environments.

Even for veteran IT administrators, going through those resources individually can be time-consuming and frustrating. To make things worse, the entire system may experience a complete outage before administrators can locate the problem.

The ideal solution will provide performance-monitoring capabilities that allow administrators to monitor an entire data center from a single workstation or smartphone. Using the right performance-monitoring solution, an administrator can view performance of every aspect; including computing efficiency, resource utilization, server operations, storage environments, and virtualization efficiency.

Ideally, a performance-monitoring dashboard interface will be easy to use and navigate. An infrastructure performance management service without complex or expensive installation and support requirements reduces the need for additional appliances on-site and keeps the data center footprint in check.

Must-Have #6: Capacity Planning

Capacity planning is an ongoing consideration for any business that operates an IT infrastructure. At some point, even small businesses must upgrade to larger hard drives or attached drives to accommodate growing data.

For medium-sized and enterprise businesses, the need for careful capacity planning is very important. To stay competitive, companies must embrace emerging technologies. At the same time, they must keep watch over their own data centers to ensure they can rescale quickly when the need arises.

The ideal solution will help companies make short- and long-term capacity decisions. Predictive alerting, for example, can help administrators enter hypothetical parameters to see how a data center will react to certain circumstances in future. This can help guide upgrades to performance or storage capacity.

Advanced monitoring and alert systems can act as a capacity-planning guide. For example; if an administrator notices a recurring alert from a certain area, they can extrapolate what may need to be expanded or upgraded in the near future.

Administrators need a solution that acts as much more than a datacenter monitoring and alerting product. When used to full potential, it should help guide your business IT into the future.

Must-Have #7: Configuration Management

As part of proactive systems-management software, a configuration-management tool should appear in each application module. Configuration management is incredibly useful for quickly identifying essential system details—including device information and code levels—allowing administrators to save time in the end.

Advanced configuration-management processes facilitate changes in software and applications when they occur. This allows administrators to proactively perform and control changes to particular system attributes, ensuring overall system integrity and visibility.

In the same way, proper configuration management allows administrators to set, monitor, and maintain essential system details unique to system interfaces. With the need for various alerting dashboards, a robust, comprehensive configuration-management solution is imperative.

When used in conjunction with available performance-management capabilities, the combination of configuration and performance management can provide valuable insights into infrastructure health, capacity, and overall configurations. Together, they provide system information to help businesses make proactive, informed decisions.

Must-Have #8: Powerful Enterprise Dashboard

Intuitive dashboards that can see across the enterprise (servers, storage, and SAN) give users substantial insight into enterprise-wide IT performance and help them make data-driven business and IT decisions. More than just another pretty picture, Galileo uniquely offers an Enterprise Dashboard where any level of user can visually review and analyze deep storage, server assets, and performance across the entire enterprise. Detailed drill-down capabilities that expand reporting and analytics for proper decision-making are now based on near real-time information.

VIEWS

Storage Assets Dashboard

Obtain visual view with details on your:

- Total usable storage capacity
- Virtual storage capacity
- Storage vendors
- Storage subsystem class
- Storage device type
- Storage tiers

Storage Performance Dashboard

Obtain visual view with details on:

- Average disk through put by volume
- Peak disk through put per volume
- Average disk IOPS per volume
- Peak disk IOPS per volume
- Average system throughput per volume

Server Assets Dashboard

Obtain visual view with details on:

- Operating systems by server
- Architectures
- Virtualized servers
- Size by memory
- Size by core
- Network connectivity

Server Performance Dashboard

Obtain visual view with details on:

- CPU by server
- Memory
- Disk throughput
- Peak network throughput
- Average network throughput

From the dashboard interface, Galileo users are able to seamlessly drill down to a series of detailed views. Easy, guided visual interpretations of complex data allows them to find the root cause of a problem or perform a more in-depth analysis when needed.

IT users have found this capability key to making decisions on spending. **Mukesh Sharma, Sr. Manager IT, Database & ERP Infrastructure for Welch Foods** says it best: “I think the (Galileo) Dashboards will disrupt for the better how we make decisions across our IT Enterprise. Using Galileo, we have already dramatically reduced our decision making times and these Dashboards will act like a crystal ball across our IT environment.”

Must-Have #9: Powerful Alerting Dashboard

Predictive Alerting Dashboards must be available to monitor health across the entire IT data center from operating system (OS) to storage arrays. What is key is to not only provide industry standard alerting thresholds but also give users the ability to set their own parameters that best fit their business parameters and requirements.

In Galileo, there are 15-20 alert thresholds available for each agent for servers and storage—specific to the operating system and storage system. These include—for example—CPU Busy, Network Adapter Throughput, Disk Service Times, and File System Full.

Galileo utilizes thresholds that are created by our subject matter experts based on their extensive field experience so that you could clearly identify what and where problems were likely before they actually occurred. Also available is the ability to set alerting parameters under hypothetical or theoretical conditions. An administrator can set a series of parameters that do not necessarily reflect current data center conditions but may reflect conditions in the future.

With user-defined alerting parameters, administrators can take proactive—rather than reactive—steps to ensure the continued health and operation of the data center. For example, predictive analysis may suggest a spike in data storage that exceeds current capacity. In this case, the administrator can ensure more storage is available. Users can take the same proactive steps for performance and overall data center health. By setting alerts for their enterprise, IT administrators can focus on critical messages and alerts with easy access to extensive troubleshooting experience.

Must Have #10: Simplicity, Flexibility in IT Infrastructure Performance Management Tools

Because Galileo is the industry's first cloud-based Infrastructure Performance Management (IPM) Suite with a SaaS architecture, unlike traditional on premise solutions you may have that are home grown or vendor specific, there are no large upfront fees, no infrastructure costs, installation takes less than 15 minutes and value starts in two hours. Galileo also offers GSA pricing for Government agencies. With unrivaled time to value, Galileo can save you up to 80% in infrastructure analysis and IT resources you are currently spending while gaining deeper visibility into systems and storage.

Included in all subscription pricing:

- Unlimited users & sites
- 1 year of data history
- Interactive charting of your infrastructure
- Online technical support
- FREE, seamless updates
- Data exporting (.XLS or PDF)
- Anytime access to custom dashboards
- Consultation sessions with a monitoring agent SME
- Suite subscription

Get all the insight and power of our entire suite of agents for server, storage, and SAN monitoring, capacity planning and configuration management. Pricing is based on a flexible month-to-month, quarterly, annual, two-year, or five-year subscription based on number of agents and platforms.

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