GALILEO Performance Explorer®

WHY GALILEO
Solution Guide

WHY GALILEO

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

Using Galileo's vendor-agnostic, cloud-based Software as a Service (SaaS) approach to infrastructure performance management will allow you to easily assemble and quickly visualize complex cloud, hybrid or on-premise IT enterprise environments regardless of the technology vendor. Unlike domain-specific and big-platform solutions, Galileo gives you the big picture. It also replaces reactive alarms with predictive insights, allowing you to plan ahead for IT infrastructure needs so you can enhance user experiences while minimizing costs.

What can you expect from the implementation of such an approach? From customer case studies of Galileo Performance Explorer, we have proven the amazing ROI that IT management can achieve because Galileo provides users with information they could not access before. Because implementation is "simple and uneventful," according to users, ROI has proven to be dramatic and quick.

Here's what some of our customers are saying:

> *Reduced (troubleshooting from) four hours to four minutes.*

> *Prevented (an) $102K upgrade in five minutes.*

> *Multiple tools consolidated to one.*

> *Saved $86,000 in just two minutes.*

> *Avoided activating 595 CPUs from COD.*

> *Eliminated (the) need for costly onsite Storage Resource Management tools.*

Galileo gives you the big picture.

By using Galileo you can expect to:

- Decrease CAPEX and OPEX while getting more out of existing assets.
- Predictively troubleshoot performance slowdowns and application failures and, thus, reduce risks.
- Align expenditures on enterprise storage, servers, database, SAN and cloud 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.

INFRASTRUCTURE PERFORMANCE MANAGEMENT SOLUTION MUST HAVES

Galileo's co-creators have more than six decades of combined experience in enterprise open systems and storage technologies. They have poured their deep subject matter expertise into Galileo to equip you with what you need to guide your IT management and investments.

The chart that follows presents the "must-have" features that Galileo provides to give your company the best approach to performance management. It is the first cloud-based, SaaS-architected performance management system with a unified interface on the market. With our annual customer renewal rate approaching 100 percent every year, we feel Galileo is living up to the challenges clients face.

GALILEO ADVANTAGES OVER OTHER SOLUTIONS

ADVANTAGES	USES				
	Maintenance & Management	Strategic Planning	Cloud Migration	Data Center Migration	Mergers, Acquisitions & Divestitures
Resource Requirements					
Does not require a full time resource to run it, nor dedicated equipment & maintenance.	✓	✓	✓	✓	✓
Cloud based – SaaS application that does not cause any performance or capacity problems to due excessive monitoring.	✓	✓	✓	✓	✓
Comprehensive Oversight (broad and deep)					
Inclusive of servers, storage, SAN, and applications across your enterprise.	✓	✓	✓	✓	✓
Allows you to monitor multiple brands.	✓	✓	✓	✓	✓
Monitors the environment 24/7/365.	✓	✓	✓	✓	✓
Offers high degree of granularity to avoid skewed data.	✓	✓	✓	✓	✓
Keeps historical data as long as you require it.	✓	✓	✓	✓	✓
Can drill deeply in data to determine root causes.	✓	✓	✓	✓	✓
Monitors cloud, hybrid and on premise environments.	✓	✓	✓	✓	✓
Ease of Use					
Enables you to set thresholds for easy monitoring & prevention of business disruptions.	✓	✓	✓	✓	✓
Includes visually appealing dashboards that provide key insights at-a-glance.	✓	✓	✓	✓	✓
Dashboards distill the most critical information.	✓	✓	✓	✓	✓
Offers advanced performance management services to support you if required.	✓	✓	✓	✓	✓
Data Precision					
Data is granular enought to avoid skewed data that can mislead you.	✓	✓	✓	✓	✓
Advanced Analytics for Planning					
Supports ability to tag and group assets from part of your IT environment virtually and for analyses.		✓	✓	✓	✓
Supports ability to execute “what if?” scenarios without exporting data to a spreadsheet.		✓	✓	✓	✓

USES FOR GALILEO

Galileo and 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 a managed or cloud environment.
- In the case of any data center migration, extensive testing and predictive analysis should occur before any attempted migration.
- Galileo delivers predictive analysis for a planned data center migration and real-time monitoring of performance, capacity and configuration during migration. In this way, Galileo can proactively troubleshoot potential problems and evaluate post-migration results.

Galileo and Server/Storage Consolidation

- Galileo's extensive monitoring and alerting during a physical or virtual server migration or consolidation helps identify issues and provide measurable before-and-after results.

Galileo and 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.
- Using Galileo to conduct a controlled data center migration to a third party before a system or application upgrade will ensure continued uptime while monitored migrations and upgrades can take place on your primary system.

Galileo and Cloud Migration

- Cloud migrations — managed-provider migrations in particular — can present unforeseen 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, Galileo will 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:

- 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.
- You can also use **Galileo Virtual Grouping** to put existing customer workloads together for what-if scenarios to determine what to move to the cloud first, then size and relate that to the costs cloud providers give you.
- Once moved to the cloud, **Galileo can easily monitor your data center,** whether you've moved 100% to cloud or have a hybrid environment where some parts are in the cloud and others are on premise.
- **Because Galileo uniquely operates in the cloud,** you can use it to validate any SLA or verify that you are getting the value you anticipated from your cloud provider. You can also 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 the week or at specific times Galileo will show you all those measurements.

Galileo and Advanced Performance Monitoring / End User Experience

- Maintaining a high-performance IT data center environment is crucial to any business. If performance slows, operational efficiency across the entire business can slow which affects application performance and end-user experience.
- The challenge is pinpointing where the slowdown occurs. Locating such problems requires multiple physical monitors and separate performance monitoring tools to examine enterprise storage, servers and database environments, bandwidth bottlenecks, power allocation and virtualization environments.
- Galileo is an ideal solution because it provides 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 the performance of every aspect including computing efficiency, resource utilization, server operations, storage environments, database configuration and virtualization efficiency.

Galileo and Capacity Planning

- Galileo helps 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.
- Galileo advanced monitoring and analytics 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.

Intuitive dashboards can see across the infrastructure.

Galileo and Configuration Management

- Galileo's configuration management is incredibly useful for quickly identifying essential system details — including device information and code levels — allowing administrators to save time.
- Advanced configuration management processes facilitate changes in software and applications. 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. 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.

Galileo's Powerful Enterprise Dashboard

- Intuitive dashboards can see across the infrastructure (storage, servers, database, SAN and cloud) and give you substantial insight into enterprise-wide IT performance and help you 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 a view with details on:

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

Storage Performance Dashboard

Obtain a view with details on:

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

Server Performance Dashboard

Obtain a view with details on:

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

Server Assets Dashboard

Obtain a view with details on:

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

Database Assets Dashboard

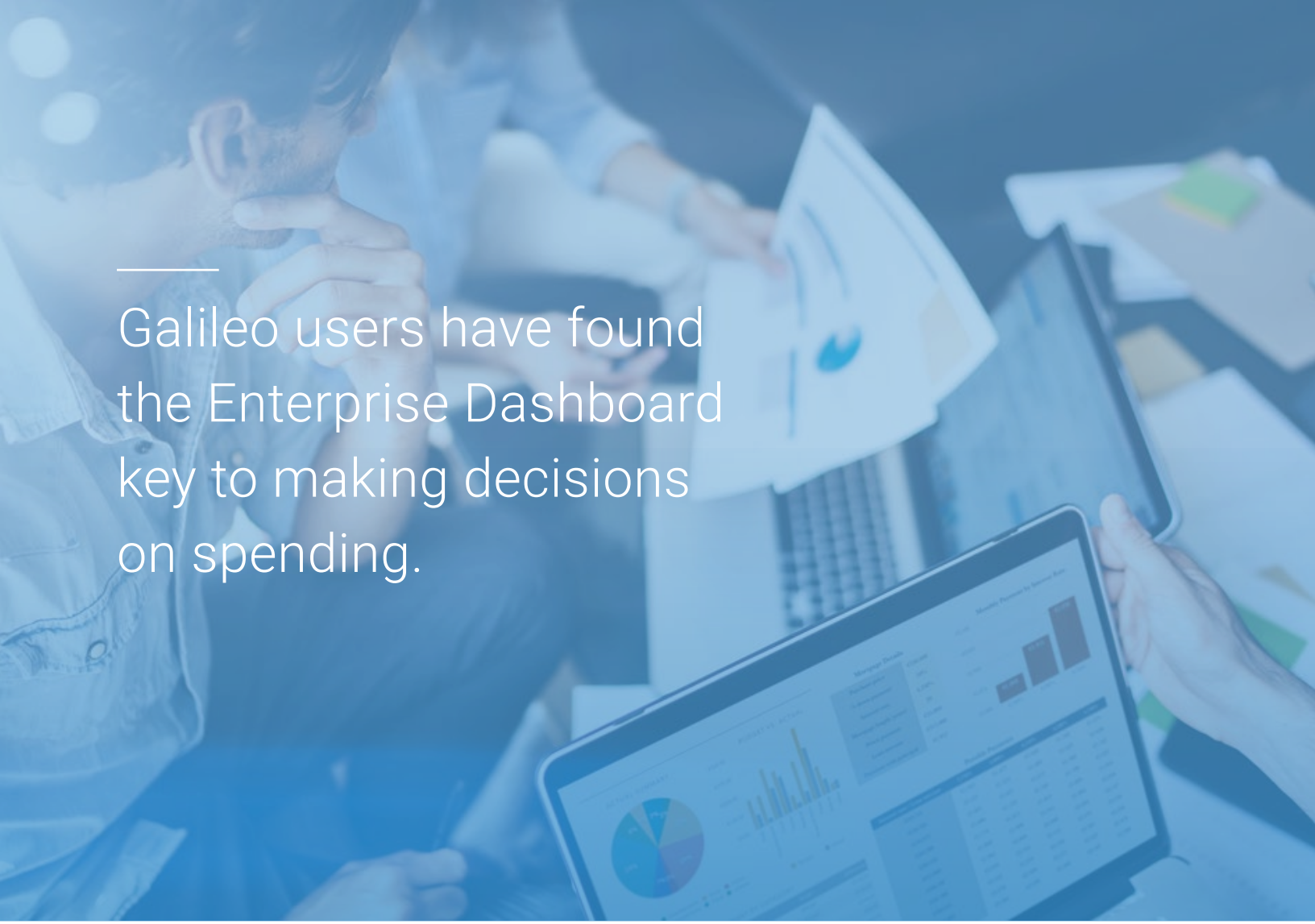
Obtain a view with details on:

- Database name & DBID
- Database uptime
- Hostname & platform of database server
- Tablespace configuration
- Data file configuration
- Control file configuration
- Online redo log configuration
- Used & free disk capacity in the database
- Database memory configuration (SGA & PGA)
- Database archivelog mode
- RAC cluster membership
- Dataguard configuration

Database Performance Dashboard

Obtain a view with details on:

- Number of user commits over time
- Number of log switches over time
- Soft parses vs hard parses over time
- Blocked user sessions over time
- Database ti.me model information such as database time, database CPU, SQL execute elapsed time, PL/SQL execution elapsed time, JAVA execution elapsed time and more over time.
- Wait events over time the by system, wait class, session and service.
- Trend the most common wait events such as Buffer busy waits, Datafile sequential reads and more.



Galileo users have found the Enterprise Dashboard key to making decisions on spending.

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

Galileo users have found this capability key to making decisions on spending. Mukesh Sharma, Sr. Manager IT, Database & ERP Infrastructure for Welch Foods said 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.*

GALILEO'S POWERFUL ANALYTICS DASHBOARD

- In Galileo, there are 15-20 analytics thresholds available for each agent — 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 our subject matter experts created based on their extensive field experience so that you can clearly identify what and where problems are likely to crop up before they occur.
- Users can also leverage 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, the 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.

GALILEO'S SIMPLICITY, FLEXIBILITY IN IT INFRASTRUCTURE MEAN LOWER COSTS AND FAST TIME TO MARKET

Because Galileo is the industry's first cloud-based Infrastructure Performance Management (IPM) Suite with a SaaS architecture, there are no large upfront fees and no infrastructure costs, unlike traditional, on-premise solutions. Installation takes less than 15 minutes and value starts in two hours. With unrivaled time to value, Galileo can save you up to 80% in infrastructure analysis and IT resources while enabling you to gain deeper visibility into systems and storage.

INCLUDED IN ALL GALILEO SUBSCRIPTIONS

- **Unlimited** performance, configuration and capacity data.
- **Unlimited** users and sites.
- **Unlimited** storage of data history.
- **Free** access to Performance Experts.
- **Free** automatic feature enhancements.
- **Free** data exporting (.XLS or .PDF).
- **Free** anywhere access from any device.
- **Get all the insight and power of our entire suite of agents** for enterprise storage, servers, database, SAN and cloud monitoring, capacity planning, and configuration management.

CASE STUDIES

- **Galileo Offers Improved Visibility to Support Database Consolidation for Large Insurance Provider**
- **Long-Standing Galileo Customer Gets New Insights with Enterprise Dashboard**
- **Welch's Cuts Weeks of Planning, Licensing Requirements, and 20% of Workload**
- **Samskip Uses Galileo Performance Monitoring to Maintain a Better Balance of IT Logistics**

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