

Introducing VERITAS i3 v7: Performance & Availability Management for Distributed Applications



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Abstract:

A multitude of applications operating across various tiers of fully distributed IT architectures can be found in today's corporate information ecosystem. These highly integrated and inter-dependant application environments are increasingly complex and too often susceptible to performance and availability challenges. This latest version of the VERITAS i3 Application Performance Management suite provides an application-centric end-to-end framework that enables a variety of stake-holders to prevent and control performance and availability challenges in today's modular, distributed application ecosystems.

Introduction

As the complexity of managing distributed business applications increases, many organizations find themselves suffering from inconsistent application performance, unsteady availability and a tedious process for application enhancement or upgrade – all at the price of higher operating costs. These application performance and availability challenges can cause IT organizations to miss SLA targets which can hamper the effective execution of business opportunities and obligations.

Many businesses, particularly enterprise-class organizations, are using a variety of system and application management tools to normalize application performance and behavior. Yet, normalized application performance may result in the use of most common denominator performance thresholds or availability schedules which may constrain an application's responsiveness in a dynamic, around-the-clock business environment. Many of these tools are bound to a specific application or architectural type and are distinctly challenged in today's modular, multi-tiered and fully distributed application ecosystem.

This white paper discusses the complexities and challenges of managing these application environments in-line with pressing and dynamic business demands. The discussion focuses on the technologies and methodologies of the VERITAS i3 Application Performance Management product family and its integration with VERITAS availability management solutions.

VERITAS i3 Application Performance Management suite delivers end-to-end application performance monitoring, reporting and tuning for a variety of distributed application components such as; web servers, Java-based application servers, database systems and variety of business system software packages.

Complex Businesses Need and Use Complex Applications

In today's corporate Enterprise, every form of business practice and activity is conducted in or through a software application. Over the years, application design and implementation models

have changed significantly. Application design has evolved from traditional two-tier client/server architectures to modular, multi-tier architectures. Today's contemporary modular applications can be more easily integrated with applications from various software providers, leading to a heterogeneous environment for inter-process communication and transaction chains. These applications also facilitate multiple end-user accessibility interfaces from web-browsers and portals to rich clients.

The transition has been driven by the limitations of the two-tier model in which a business process and the underlying transactions are performed in isolated "stove-pipes" limiting inter-process data sharing and users' ability to view and influence those transactions across dependant business processes. For example, inventory or manufacturing process applications were deployed independently, each running on separate "stove-piped" client/server infrastructure. Yet the business processes these individual applications support actually require a significant amount of interaction. In addition, certain users, or knowledge workers, may be stakeholders in both the inventory and manufacturing processes, yet had no efficient way to simultaneously view and influence the transactions or activities occurring in each distinct application "stove-pipe." Thus, the two-tier model limited communication and information exchange which was essential for business processes effectiveness.

In response to end-users demands for more extensible application suites, business software vendors redesigned their applications to be modular, supporting a multi-tiered deployment model. This shift in design paradigms has enabled IT organizations to more transparently integrate "best of breed" ERP, supply chain, HRM and other applications from vendors such as SAP, Sapien and Oracle to meet the need of their unique business practices. These applications are deployed across "n" numbers of tiers which enables "loosely coupled" application integration and enhanced knowledge worker accessibility. While the integrated approach helps streamline business processes, the multi-tier architecture introduces application performance and availability challenges far beyond those in two-tier architectures. Application performance management solutions must be able to monitor, control and report on an increasingly distributed application ecosystem that includes multiple system components and functionality tiers.

Performance and Availability Challenges of Complex Applications

The two-tier model is, relatively speaking, a simple architecture. It consists of server and client application components as well as the requisite server hardware, storage devices and local area network. The multi-tier environments consist of a variety of technologies such as Web servers, proprietary and J2EE application servers, database systems, single duty and clustered computing platforms and networked storage stretched across a local or wide area network. End-users' ability or requirement to use "best of breed" solutions has led to rich multi-vendor heterogeneity across these tiers and across campus or wide-area application ecosystems.

In the two-tier model, isolating performance issues was frequently a simple matter of identifying system availability problems. If the system was available, the application was generally performing to acceptable levels. The multi-tier model introduces complexity that is an order of magnitude greater than in the two-tier model. The complex nature of these application implementations is not solely a function of the number of elements; but is further multiplied by the web of integration points and communication dependencies that stretch across n-tiers. A problem with a singular component in one tier can cause a cascading "ripple effect" of performance issues across the entire ecosystem. Furthermore, a "ripple" can be mistakenly interpreted as the problem's root cause where it may only be a symptom of the root problem in another tier of the multi-tiered ecosystem.

As the transition to a broader use of and reliance on multi-tier applications has occurred, legacy

performance and availability management tools have lingered. These legacy tools are now being used in conditions beyond their design characteristics and intended purpose. Enterprise IT managers and application administrators have overlaid additional tools to extend their ability to manage rich multi-tiered and distributed application environments. Even with these overlays, a device-centric management paradigm persists.

Changes or enhancements to production applications present distinct performance optimization and management challenges. Under these conditions, a problem impacting an application's performance may occur in one tier, but remains obscured from or undetected by administrators because each application tier is monitored independently. Multi-tiered, integrated application ecosystems demand an application-centric performance and availability toolkit that is at once intelligent in terms of understanding each component's behavior, yet smartly links the discrete behavior of components across each tier of the application ecosystem.

VERITAS i3 employs a central repository for all intelligently gathered information allowing for deep, real time correlation of behaviors linking them together in an application-centric manner across n-tiers, enabling organizations to assure optimal performance and availability across a multi-tiered integrated application ecosystem.

Introducing VERITAS i3 v.7 Application Performance Management Suite

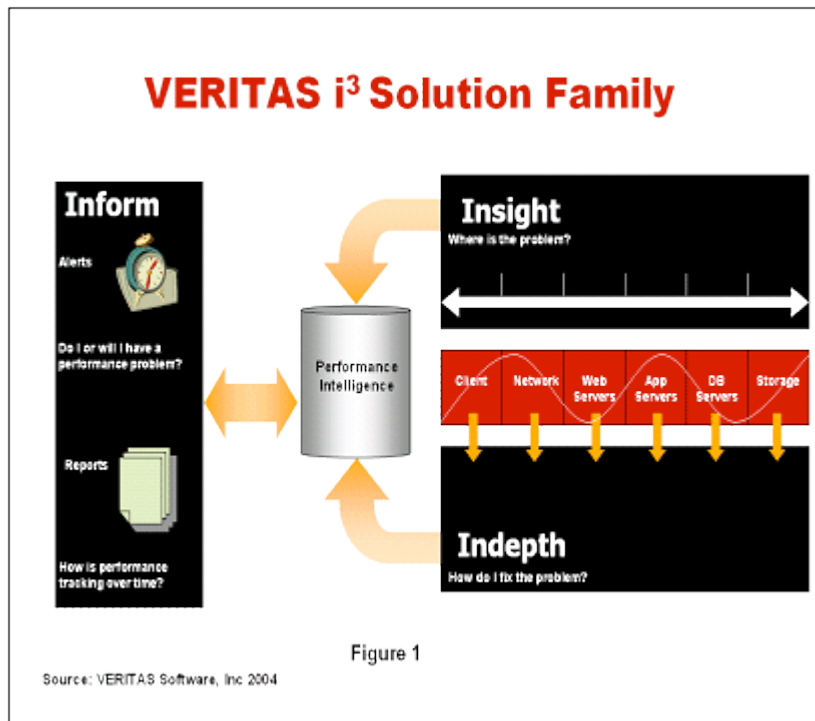
The VERITAS i3 application performance management suite is a technology that came to VERITAS through the acquisition of Precise Software in 2003. By the time of the acquisition, i3 APM had a decade long track record as a leading application and database performance management solution operating across UNIX, Windows and Linux systems, all major database platforms and a laundry list of business system software packages.

VERITAS i3 APM software gives both the IT team and business process stakeholders insight into the complexity of business applications, enabling them to be proactive in resolving application performance issues. Organizations can run their applications at peak performance levels – with transactions and response times as fast and efficient as possible – by using VERITAS i3 software to identify and eliminate bottlenecks as well as to fine-tune applications.

VERITAS i3 software helps IT departments to analyze and improve the efficiency of key business applications, including BEA, Oracle, PeopleSoft, SAP and Siebel, by detecting application performance problems, pinpointing their root causes, and recommending solutions. Based on the service levels set, this process usually occurs before the end-user even notices the problem.

The VERITAS i3 APM suite consists of three core product families, all the built around a centralized database repository known as the performance warehouse. The product families (depicted in Figure 1) are:

- **Indepth** – Provides agent and agentless real-time event collection mechanisms for applications components, database or query behavior and system device health.
- **Insight** – Is a robust correlation engine that provides an end-to-end breakdown of the real end-user response time of multi-tier applications and technology components on an application-centric paradigm.
- **Inform** – Delivers performance information gathered by Indepth and Insight in the form of dashboards, alerts and historical reports.



The products are intricately linked. Indepth discovers and collects data on all of the components in the application infrastructure while Insight correlates the information and Inform reports on the correlated data to provide a holistic view of the entire ecosystem from an application or process-centric viewpoint. Because the products are so tightly integrated, the new features in VERITAS i3 v.7 impact the effectiveness of the overall solution.

VERITAS has enhanced the auto-discovery capabilities of Indepth,

which quickly feeds information of new or changed application components or parameters into the performance warehouse where Insight smartly correlates new component behaviors and event information which in turn enables Inform to provide timelier alerting and reporting.

Because VERITAS i3 is contextually aware of application implementations (e.g. Oracle, SAP etc.) the solution can suggest or automatically set thresholds and service levels thereby alleviating the need for administrators to have explicit knowledge all of the dependencies in the application ecosystem. VERITAS i3 will auto discover all of the components and, based on its contextual awareness, will determine the appropriate performance and availability thresholds for that each application process within the environment.

With new expert or SmarTune features, the solution can continuously track the behavior of all of the components in a multi-tier application environment and rank performance tuning opportunities so administrators can adjust thresholds accordingly. These auto-instrumentation and auto-tuning features expedite the deployment curve as well as the administrative learning curve. Again, this end-to-end awareness provides automatic tuning of all of the processes in concert, and because of this, the underlying business processes immediately benefit from having a finely tuned ecosystem.

VERITAS also offers a very important and sophisticated feature with the enhanced ranking capability. The strength of the i3 APM solution is its ability to wed knowledge of specific application processes together with the knowledge of the unique business requirements of the organization. While APM understands how a specific application operates, its end-to-end knowledge of integrated processes allows i3 to rank transactions according business impact and priority in the operational environment. As a result, a particular process will be ranked higher than others will, and all of the associated transactions will be given a higher priority within the ecosystem. For instance, i3 could prioritize the processing payment branch of an electronic order over updating an inventory database, considering that the inventory update maybe dependent on aggregate order numbers or on cash-flow triggers.

VERITAS has also added a new Synthetic Transaction feature to i3 v.7. The feature enables any stakeholder to exercise or “stress-test” an application environment by using “real-world” queries and transactions without the need for a separate test/development network. For example, an online retail organization may need to assure their application environment can handle increased traffic and transaction counts due to a marketing campaign or holiday promotion. Without the benefit of Synthetics, testing transaction behaviors and response-times would have required a tightly controlled development environment which could not adequately simulate the dynamic and unpredictable conditions of the production environment.

The Synthetic Transaction feature enables stakeholders to run the test scenario against all of the accumulated data in the performance warehouse without impacting the production environment. Stakeholders create new business processes, including prepared queries, which are run against the latest information about the application ecosystem that is stored in the warehouse. This functionality is the closest users can get to testing in a production environment without actually impacting live operations. The use of synthetics improves application performance and predictability while allowing organizations to better and more expediently change business processes in-line with business or customer demand.

VERITAS has integrated i3 in v.7 into its core availability solution, VERITAS Cluster Server. VERITAS Cluster Server is a key component in many multi-tiered, distributed application environments. In fact, the increasing use of the Linux operating system beyond the web server tier into the application server tier has expanded the theater of use for clustering technologies. VERITAS has recognized that by wedding application-centric performance management tools to core availability technologies it provides customers its with a proven and reliable framework to introduce or expand the use java-intensive processes on highly available application and web server clusters. This integration also provides a clear window into resolving application performance challenges in complex computing environments.

On top of these new features and functionality enhancement, VERITAS has taken the steps to improve operational simplicity of the i3 family. The improved simplicity is achieved through a common interface for all i3 operations. This interface allows administrators to extend accessibility to a variety of stakeholders across the application ecosystem. This interface roll-up gives the i3 family the same look and feel as other VERITAS management tools, such as OpForce and CommandCentral.

The Bottom Line

The enhancements to VERITAS i3 v.7 greatly improve the solution’s value. With business managers demanding ever more sophistication from their business applications, application support and operation stakeholders can not become bogged-down in solving performance problems which may be buried deep with the tiers of today’s distributed application ecosystem. VERITAS i3 v.7 is a reliable framework that can both expedite “root cause” problem identification while expediting necessary application enhancements into production. The common interface allows various stakeholders across the application ecosystem to work in concert ensuring operational efficiencies and optimized application performance. Lastly, the integration with VERITAS Cluster Server puts VERITAS i3 ahead of the pack as a solution for most complex and demanding “around-the-clock” business environments.
