



VitalSoft Whitepaper

Business Transaction Management

Aligning Application, Network Performance and Business Objectives

Introduction

In today's competitive business environment, the corporate enterprise — the physical network infrastructure, as well as the applications that run on top of that infrastructure — plays an integral role in day-to-day business operations.

The growing influence of the Internet as a vehicle for communication and eCommerce as a legitimate and critical business practice has changed the way most organizations conduct business, setting new standards for efficiency, reliability and convenience. The resulting paradigm shift alters user expectations, moving from an "anytime, anywhere" approach to a more demanding "all the time, everywhere" philosophy. The increasing speed, efficiency and availability of the network has effectively raised the bar by which business users measure IT services; expectations have been reset, and now users demand nothing less.

Aligning IT with Business Objectives

The demands of this emerging eCommerce environment require today's IT organizations to leverage their network and applications infrastructure in order to gain, and maintain, a competitive market edge. Aligning IT investments and activities with the interests of the business is now a top priority. Fueling these pressures is a new requirement for a flexible, extensible application performance management architecture that provides visibility into business transactions by specific user, network and eCommerce application activity.

This shift toward "business transaction monitoring" changes the way IT organizations are measured and evaluated. In the past, IT's performance was typically judged against resource-specific (e.g. network or server) availability goals; if the goal (say 99 percent availability) was achieved, the organization was considered successful.



Today, however, the yardstick is no longer resource availability but the more complex and elusive issue of “business transaction performance” — the overall, end-to-end availability and performance of applications that support the organization’s critical internal and eCommerce business processes. This new method of measurement requires aligning IT performance with business metrics, bridging the gap by translating IT services into business terms that are *meaningful* to the user.

Using IT to Support Critical Business Processes

For years, business users have relied on IT services to perform their day-to-day operations. And although the convergence of network and business isn’t new, the blending of business and technology into a single, seamless entity that is critical to the ongoing success and competitive stature of the organization is a fairly recent development.

Simply put, today’s networks exist for one reason: to support the applications that run the business. Users don’t care what’s behind the walls or inside the PC. Platforms, protocols, objects, databases — to the typical user, these words mean nothing. The business user cares about the application’s availability as a means of performing a specific task, whether it’s a day trader placing an online stock order, a home-based business owner accessing his credit line, or a channel partner visiting a website searching for product update news. In this scenario, what matters most is that the transaction be completed quickly, efficiently and reliably, regardless of the myriad “behind the scenes” activities required to complete the task. To business users, the transaction is a single activity that is absolutely critical to perform their jobs.

Clearly, as businesses grow more dependent on the network, it becomes increasingly important to monitor the performance and availability of these transactions from the perspective of those who are affected most: the users themselves. The driving force behind this requirement is much more than financial; the high costs associated with downtime means businesses that operate online can’t afford delays and bottlenecks, let alone catastrophic failures. The more integral the IT technology is to the business, the greater the cost of downtime, whether it’s lost employee productivity or loss of a valued customer. Either way, the repercussions of poor eCommerce business transaction performance reverberates far beyond the bottom line (see Figure 1).



The Consequences of Application Downtime

Source: The Standish Group

IMPACT AREA	CONSEQUENCE
Revenue	<ul style="list-style-type: none">• Lost \$\$\$ from application outages• Market capitalization reduced• Billing records lost
Business Interruption	<ul style="list-style-type: none">• Data inaccessible• IT operations disrupted• Customer orders lost
Competitiveness	<ul style="list-style-type: none">• Market share lost• Future business lost• Higher expenses
Litigation	<ul style="list-style-type: none">• Investor lawsuits• Supplier misunderstandings• Customer contracts unmet
Reputation	<ul style="list-style-type: none">• Customer perception damaged• Investor uncertainty• Lender uncertainty

Figure 1. Downtime affects more than the bottom line.

Holding IT Accountable

With the deployment of mission-critical client/server applications across global enterprise networks, business executives demand that IT organizations be held accountable for the performance of the critical applications that support important eCommerce business processes. With so much at stake, these executives need to know that business applications are available when they need them, as they need them, and that these applications perform at acceptable levels. Without such assurances, organizations suffer the consequences of lost opportunities, reduced productivity, ill-informed decision-making and dissatisfied customers.

This white paper describes how the right application performance management tools can help IT professionals meet these challenges head-on. By introducing a new approach to application performance management, this paper illustrates how IT organizations can move beyond simple network and application performance management into managing and improving the overall performance of critical eCommerce business processes.

Transactions, Subtransactions and Business Transactions

What exactly is a business transaction? How does it differ from a regular transaction or a subtransaction? In general, any generic application activity can be categorized as a transaction for units of measurement.

Specific activity within a transaction can be further broken down into additional categories: subtransactions and business transactions.

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info@n3k.co.uk
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The Nature of a Transaction

In client/server and Web-based computing, a transaction can be defined as a user-initiated sequence of data exchange between the client and a server. A monitoring solution that looks at transactions from the user's perspective can provide a valuable and insightful view of eCommerce application performance. In many instances, however, it is even more valuable to determine *what specific transaction is occurring* and report performance at that level. This is achieved by identifying subtransactions.

Subtransactions

A subtransaction, or verb-level transaction, is defined as the *action performed in any given transaction*. For example, a database SELECT statement is distinguishable from a database INSERT statement at a granular subtransaction level. Certain common networked applications perform subtransactions that can be recognized via specialized packet analysis. For example, POP3 and SMTP e-mail traffic is recognizable. Once recognized, the application can be monitored at the subtransaction level.

This granular analysis is quite valuable to the network administrator or the application manager concerned with quality of service for his or her particular application. However, as IT aligns more closely with the eCommerce business processes it supports, and as business managers become more interested in the performance of the technology as it relates to the business, a new level of visibility is required — visibility into the actual *business transaction*.

Business Transactions

A business transaction is a collection of client activity and network traffic that accomplishes a specific, *meaningful* unit of work for the end user. Figure 2 illustrates the difference between transactions, subtransactions and business transactions for a sample business transaction: *add expense report*.

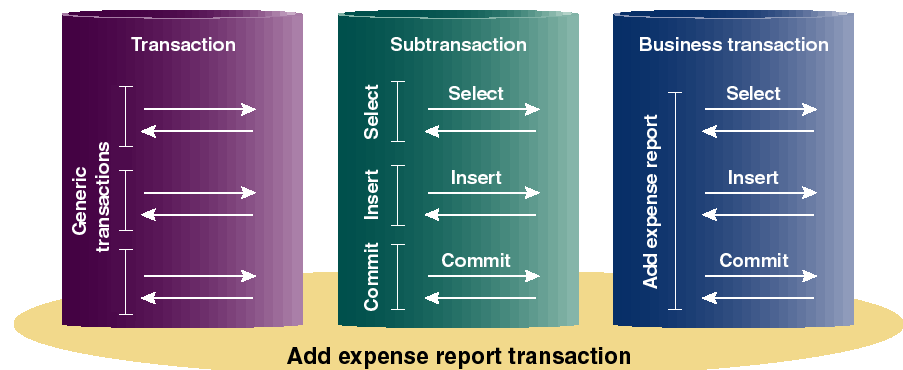


Figure 2. Transaction, subtransaction and business transaction.

Why Measure Business Transactions?

Why is it so important to measure business transaction performance? Because any organization striving to increase its chances for success must first improve the underlying business processes that support the operation. And, improving business processes first requires the ability to *measure* those processes.

This requirement is driving a fundamental shift among IT organizations around the globe. In the past, IT was primarily concerned with improving the technology infrastructure and therefore monitored networks and applications through technology metrics such as availability, packet loss, throughput, etc. As today's IT organizations move from an ancillary support function to a critical organizational component, the challenge arises to link the technology measurements to the business meaning — identifying how this technology impacts critical business processes.

Consider an insurance company's claims call center, where all staff members use a networked Claims Processing application. When a client calls to provide new claim information, the claim handler initiates a number of business transactions — in this case, "Lookup Policy," "Edit Claim" and "Update Collision Record." Figure 3 illustrates the difference between typical network performance metrics and business transaction data that directly impacts the bottom line.

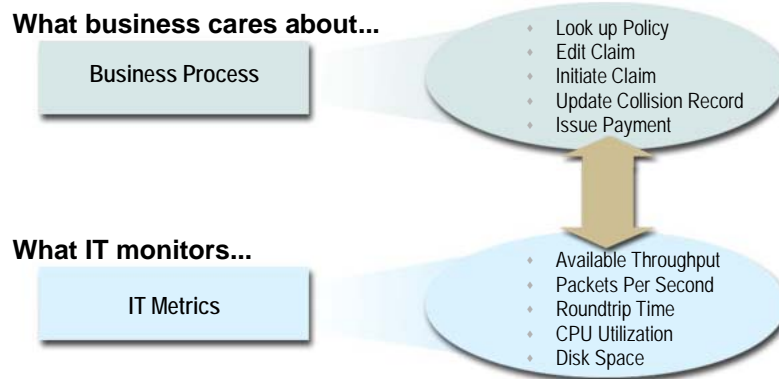


Figure 3. Network performance metrics vs. business transaction data.

Anatomy of eCommerce Business Transaction Management

As an extension of application performance management, business transaction management solutions must share a number of attributes that are indispensable to application performance management solutions. These include reporting performance with three critical characteristics:

End-user perspective: The business transaction management solution must monitor performance from the desktop, as experienced by the end-user. After all, a business transaction is ultimately all about what the end user needs. By using an agent at the client desktop, it is possible to measure performance as experienced by the end user because the agent can provide a complete end-to-end view of any eCommerce transaction from the time of its inception at the client until the application completes the request. Through TCP/IP packet analysis, the agent also can demarcate how much transaction time was spent in the client, the network or the server. (See the VitalSoft white paper *Characterizing End-to-End Performance* for more information on agent-based monitoring.)

Historical analysis: The business transaction management solution must report on eCommerce network and application performance over days, weeks and months to provide a broad historical overview. This historical perspective is critical in order to give the network manager a reference point to determine how performance is evolving — is it improving or is it declining? Using this information, the network manager can then assess improving the technology infrastructure in order to support future eCommerce demands. A historical view enables analysis of the data to understand the changing nature of demands on the network and changes in the quality of services related to those demands. In many cases,



service level agreement (SLA) thresholds have been established to baseline acceptable performance standards. An effective and powerful analysis tool will provide a display that includes all components within the network, showing SLA violations at a glance.

Real-time: In addition to providing a historical summary, the business transaction management solution must also report alarms and faults in a real-time, help-desk environment to enable rapid event troubleshooting and resolution. The client-side approach, achieved via the agent at the desktop, gives the help desk an additional level of detailed client data, enabling troubleshooting capabilities that were previously unavailable. For example, when an agent detects an eCommerce transaction time that exceeds an accepted or established threshold level, the agent immediately sends an alarm to the help desk, allowing technicians to quickly identify, diagnose and resolve performance problems as they impact the business, minimizing their residual effects.

Another area where business transaction management capabilities must exceed typical application performance management solutions is in the ability to monitor and manage different types of applications. Because eCommerce business applications are so complex and varied, visibility into all types of networked applications within an organization is absolutely critical. These include:

Custom Applications: Typically, an organization that has invested in developing custom software has tailored it to support very specific, high-profile business needs. For example, consider a large retail bank that is enabling its services over the web so its customers can access their accounts and conduct various on-line transactions. A complete performance management solution must track the unique application activities that comprise this business transaction.

Packaged Applications: Often, companies rely on packaged software to support critical business functions for everything from human resources and financials to supply chain integration with other organizations. A complete performance management solution must monitor these applications at a meaningful, business transaction level.

Browser-based Applications: The future of application development is the Web. Distributed applications, the Internet, intranets and extranets all use browsers to interface with the end user. A complete performance management solution must monitor critical business transactions as they are redefined for a Web environment.



Different Business Disciplines Require Focused, Personalized Information

Simply monitoring business transactions from the end users' perspective, both in historical and real terms, isn't enough. Tailoring that information to different audiences, in terms that are important and meaningful to them, is also critical.

IT professionals at every level must have access to the specific performance data they need to solve problems unique to their position. And personalized options, without the clutter of irrelevant details, are essential. CIOs and other executives, for example, want a quick overview—high-level summaries that show how IT resources are performing. Other IT professionals with varying degrees of technical expertise require business-level metrics to understand how well the enterprise is supporting the organization and, more importantly, the part of the organization for which they are responsible.

For instance, network managers require detailed performance data for all network devices to help them optimize performance and efficiency. Capacity planners must have access to application performance for provisioning resources, allocating costs and planning new application rollouts. Application managers demand reports that provide detailed insight into traffic volumes, transaction response times, and other critical parameters — information that helps them evaluate performance to ensure maximum availability and efficiency. Application reports also give help desk managers the critical historical data they need to anticipate problems, predict peak usage periods, and allocate resources to ensure maximum coverage is available when it's needed most.

Each of these business disciplines can benefit immensely by receiving relevant, targeted data that helps them understand enterprise performance from the end user's perspective. By gathering details about how both packaged and custom applications are performing for the people who rely on them every day, these IT professionals can gain unprecedented insight into the quality of services being delivered to users — especially essential to today's burgeoning eCommerce businesses.

The Changing Face of Network Performance Metrics

Business transaction management has the potential to change the way IT professionals perform their jobs. In the past, relatively simple SLA and performance data about the infrastructure — technology-centric metrics such as device availability, packet loss, round-trip-time, etc. — was sufficient. As business processes become more intertwined with the



technology, however, IT is challenged with providing executives and other non-technical personnel with performance data in the form of business-centric metrics — i.e., how well is the network supporting the business?

Consider, for example, a claims processor who is experiencing problems with a business application. While a network manager may analyze performance data and see problems in the application servers, the claims manager may analyze the same data, presented in the form of business transactions, and see that a specific transaction — *look up policy* — is where claims handlers are experiencing delays. By presenting the information as a business metric, it becomes possible to understand where and how poor network and application performance affects actual *business processes* — and determine how to improve that performance

With the right performance management solution, IT can continue to monitor and manage technology-centric metrics while providing executives and others with the business-level equivalent. The right solution can present network and application performance statistics, including information about SLA violations, availability and demarcation of infrastructure problems (client, network, or server), and how they impact the eCommerce business process — critical to the growing online nature of today's economy.

The VitalSuite Business Transaction Management System

The VitalSuite product family from VitalSoft, the software division of Lucent NetworkCare Professional Services (NPS), delivers a new level of functionality that addresses the realities of today's competitive business environment. With the Business Transaction Management System (BTMS), VitalSuite allows IT professionals to identify, capture and define the performance of specific application business transactions. Whether it's a credit authorization for another eCommerce vendor or online billing for a service provider, the BTMS provides unprecedented visibility into critical business transactions.

The BTMS extends the capabilities of the VitalSuite product family — VitalAgent, VitalAnalysis and VitalHelp — by letting IT professionals monitor the performance of these business-critical transactions as experienced by the people who rely on them every day: the end users. By providing unprecedented visibility into specific business processes as they move from the user's desktop, through the network, to the destination server and back again, the BTMS makes it possible to understand where business problems are occurring and how to fix them. As a result, with the

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info@n3k.co.uk
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BTMS, the IT organization now has the ability to measure business performance and take the necessary steps required to reduce downtime, improve service quality, and increase overall user productivity and customer satisfaction.

Enabled	Initial state	Event	Action	Variables set	End state
<input checked="" type="checkbox"/>	Any State	<Type a description here.>	No action	Window Handle	State 2
<input checked="" type="checkbox"/>	State 2	<Type a description here.>	Start Transaction	<None>	State 3
<input checked="" type="checkbox"/>	State 3	<Type a description here.>	End Transaction - OK	<None>	Idle State

Figure 4. The VitalSuite Business Transaction Management System (BTMS) defines, monitors and manages the performance of specific, business-critical application transactions.

My Vital: A Personalized Portal for Monitoring eCommerce Transactions

VitalSuite's fresh approach to business performance management begins with My Vital, a personal information portal that unites business, application and network performance data into a single view, providing unparalleled visibility into everything from complex eCommerce transactions to mission-critical devices. Everyone from executives to network managers can personalize the portal to deliver the specific data they need to do their jobs and keep the business running smoothly.

While My Vital delivers a concise overview of high-level performance metrics, there are times when a more in-depth view is required. With My Business, Internet applications assume a new level of importance for application performance management. Whether an application is Internet,

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 info@n3k.co.uk
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intranet- or extranet-based, business transactions can be characterized and analyzed through My Business as shown in Figure 5 below. My Business reports the current state of specific high-level eCommerce business processes. Presented as color-coded “heat charts,” which show at a glance how custom eCommerce business applications are performing, My Business reveals “hot spots” that indicate potential problems so IT professionals know immediately where to focus their attention.

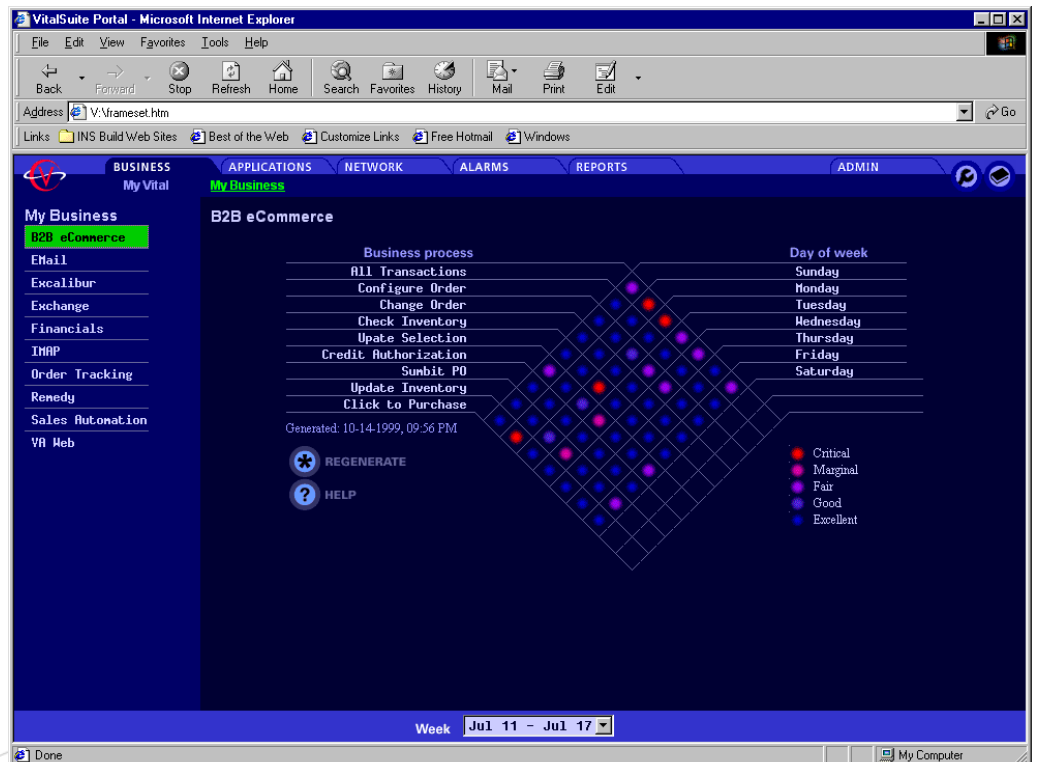


Figure 5. The My Business display for eBusiness applications.

Transact Toolkit: Cornerstone of the BTMS

The cornerstone of the BTMS is Transact Toolkit — the product that allows IT professionals to define and capture business transactions for virtually any TCP/IP-based application, including packaged and custom systems. Ideally suited for eCommerce, IT professionals can record web-based applications and define eBusiness transactions based on URLs through the intuitive user interface that minimizes definition time and maximizes flexibility.

By accessing Transact Toolkit’s main window, users define the specific business transaction they want to monitor. Once the process has been

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clearly defined, the user employs the Transact Toolkit's Transaction Scanner to record the client activity and network traffic that comprises the defined transaction.

The Transaction Scanner provides a visual display of the actual network traffic that occurs within the monitored transaction, allowing users to see what is happening, as it happens, to help them recognize and understand the transaction's unique characteristics.

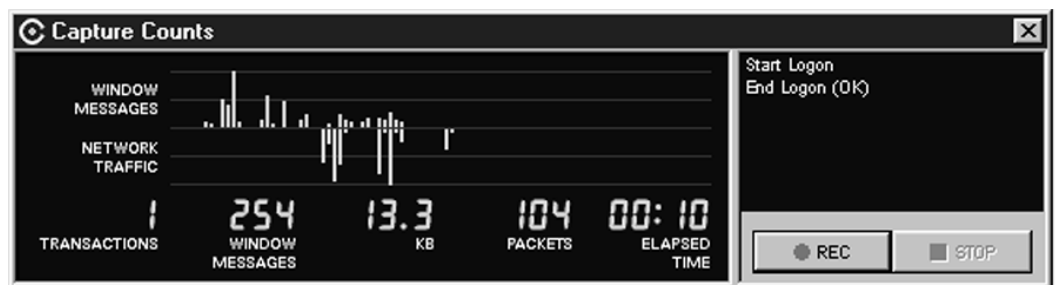


Figure 6. The Transact Toolkit Transaction Scanner provides a visual representation of application activity to help users define the business transaction.

The Transaction Scanner records the business transaction at the user level, specifying the beginning and end of the transaction based on user interaction with the application (in the form of Windows events.) Once the business transaction has been recorded and its "signature" identified, the associated definition is uploaded to the system via the Transact Toolkit interface. From there, the other members of the VitalSuite product family begin monitoring the newly defined characteristics, reporting on how users are interacting with mission-critical applications to perform the specific business functions.

VitalAgent: Monitoring Business Transactions from the End-User Perspective

Once the eCommerce business transactions are defined and uploaded via Transact Toolkit, the VitalAgent component of the VitalSuite product family immediately begins monitoring the identified processes.

Installed on end-user desktops throughout the network, VitalAgent uses VitalSoft's patent-pending passive flow analysis technology to immediately begin tracking the specified characteristics of each defined business transaction. The agent follows the business transaction activity from the desktop, through the network, to the server and back again, providing unparalleled end-to-end visibility into how the business transaction is performing for the user and demarcating the time spent in each component along the path. If a problem or delay is encountered, patent-

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pending root cause analysis technology identifies the source, helping IT quickly locate and resolve issues that are impacting mission-critical business processes.

To provide a comprehensive overview of eCommerce business transaction performance, VitalAgent intelligently consolidates its collected measurements and forwards the results to the centralized VitalAnalysis and VitalHelp applications, where they provide IT with a unique insight into the enterprise. VitalAnalysis aggregates and correlates all VitalAgent data to provide a historical view of network, application and business transaction performance, while VitalHelp displays specific faults, events and other problems that need immediate attention.

From its location on the user's desktop, VitalAgent delivers a detailed and accurate account of actual business transaction performance from inception to completion — measurements that are impossible to capture from anywhere else on the network. This ability to link sophisticated flow analysis technology with meaningful business functions delivers a detailed understanding of eCommerce transaction performance that had never been possible previously.

VitalAnalysis: Understanding the Performance of Business Transactions

Fed with VitalAgent data, the VitalAnalysis component of the VitalSuite product family provides long-term visibility into how network and applications are supporting critical eCommerce business processes, as well as the users who rely on those processes.

VitalAnalysis displays the aggregated VitalAgent transaction data through a set of high-level heat charts, which provide a summary view of application and business transaction status. With a single glance, you can immediately assess the current health of each and every active application and monitored business transaction; the color-coded display guides you directly to specific problems to help you isolate poor performance conditions.

Drilling down into the heat charts reveals detailed reports related to the specific monitored conditions. Reports are available based on overall application performance, as well as the performance of individual business transactions.

The Transaction Comparison report, for instance, provides performance details about the specific monitored business transactions. Conditions such as client, network and server time demarcation, server throughput calculations, and transaction error counts are reported, providing the IT



staff with an instant analysis of how the system is supporting mission-critical business operations and end-users.

For example, IT can selectively view the total business transaction time, or break the transaction time down by client, network and server to determine where the majority of the transaction time was spent. This breakdown helps IT determine the time, or delay, associated with each component along the end-to-end path, providing critical performance data such as the number of transactions, errors, and throughput to provide unprecedented insight into the business process.

These transaction reports — which can be generated for all transactions collectively, or for one specific transaction for a selected application — include the following information:

- ... **Number of Transactions:** Reports the total number of transactions for the selected business transaction during the specified period (day, week, month). This graph is useful for identifying usage trends and patterns.
- ... **Transaction Errors:** Reports failed and user-aborted transactions as a percentage of the total number of attempts. This graph helps IT managers identify and break out the errors by either user-initiated or hard system failures.
- ... **Transaction Throughput:** Reports the transaction's total throughput in kilobytes per second. The graph also shows transaction size for each period in the report.
- ... **Average Transaction Time (Response Time):** Reports the average time it takes to complete a transaction. The mean transaction time is the total sum of client, network and server time.
- ... **Transaction Time Distribution:** Displays the distribution of transaction times over the specified period. Includes median performance as well as 75th and 90th percentiles, which reveal extremes in performance that get lost among averages.
- ... **Client, Network and Server Time Charts:** Reports the amount of time spent at the client, network and server for the selected transaction during the specified reporting period (day, week, month). Includes the breakouts of 75th and 90th percentile events to reveal top offenders. These charts can be compared to one another to verify where problems are occurring.



For many eCommerce businesses, it is important to understand how all the processes supported by a single application are performing for users. VitalAnalysis' Transaction Comparison table provides that apples-to-apples comparison, showing performance of all defined business transactions for a particular application.

	Count	Errors	Transaction Size	Transaction Throughput		Transaction Time	
			(KB)	(KB/sec)	(violations)	(msec)	(violations)
All Transactions	19466	29	3.69	19.55	0	81.00	0
New Shipment	1839	0	0.67	153.23	0	2.00	0
Update Status	5748	6	0.79	13.31	0	48.00	0
Package Tracking	2128	0	14.28	2.39	0	651.00	0
Account Query	130	0	1.19	250.00	0	2.00	0
Account Update	297	0	1.82	66.29	0	18.00	0
Materials Order	9414	23	3.11	31.75	0	88.00	0
Other	110	0	1.92	78.95	0	8.00	0

Figure 7. The Transaction Comparison report provides an overview of all business transactions and their current status.

VitalHelp: Real-Time Monitoring of Business Transaction Events

When an eCommerce business transaction problem requires immediate attention, the Business Transaction Management System provides VitalHelp with real-time error and alarm reporting capabilities, giving the help desk staff unprecedented visibility into business transaction errors and the environment in which they occur. Problems such as transaction failures and timeouts are detected by VitalAgent and reported immediately to VitalHelp, giving the IT manager a real-time window into how the network and application infrastructure is supporting critical eCommerce business processes.

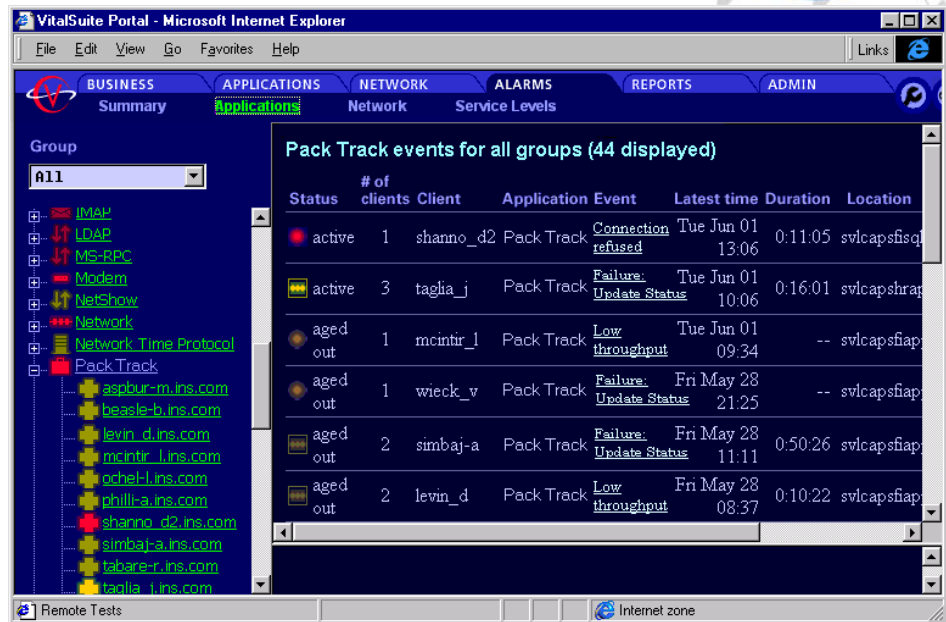


Figure 8. VitalHelp offers a real-time window into business transaction errors and failures.

For help-desk technicians tracking transaction performance problems, VitalHelp delivers a powerful method for proactively detecting, identifying, isolating and resolving problems before users even have a chance to call the help desk.

Summary

The VitalSoft VitalSuite product family with the Business Transaction Management System offers a comprehensive solution for managing, monitoring and measuring the performance of specific processes that support critical eCommerce business operations — without requiring costly application changes or additional hardware.

Transact Toolkit delivers the framework required to identify, define and record the unique network, application and user activity that comprises a complex eCommerce business transaction. VitalAgent, installed on user desktops throughout the network, monitors the performance of those business transactions based on the defined “signature” or characteristics, providing tremendous insight into how your network and applications are supporting your most important business processes.

VitalAnalysis shows you how those eCommerce business transactions perform for your users over time, letting you see which applications and

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info@n3k.co.uk
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which specific processes need your ongoing attention. And VitalHelp reports immediate problems in real time, letting you proactively address and resolve events before they negatively impact your bottom line.

Working together, the VitalSuite components deliver something unique in today's business environment: a comprehensive solution for managing network and application activity as it relates to the larger eCommerce business processes they support.

Why Choose n3k?

We are the leading provider of products and services to blue chip corporate clients in both the UK and via the n3k Alliance to Germany for IP Services Management. Our customers span a wide variety of sectors including Banking, Insurance, Retail, Distribution, Telecommunications, Media, Manufacturing and many more.

Our Consultants bring the experience of working with many blue chip clients. We deliver the perspective of skilled hands on pragmatism rather than a purely theoretical view. From planning a new enterprise system to maintaining and optimising existing operations, our professionals are available to offer the support you need, when and where you need it, so you can leverage your IT infrastructure to meet your business objectives.

Rely on n3k to Deliver Satisfaction

By remaining true to our philosophy we have secured long-term satisfaction with our customers who operate in a broad spread of industries and to whom we have delivered solutions deployed at global, European, national or local level as appropriate to their situation allowing them to focus their energies on running their business, not their network. By partnering with us you can be assured of meeting your network and application performance management needs for years to come.

Call or email us now to discover specifically how we can help you.

n3k Informatik Limited
The Square
Basing View
Basingstoke
RG21 4EB

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