

## ZAPTHINK ZAPNOTE™

### SARVEGA *APPLIANCE AND EMBEDDABLE SOFTWARE APPROACHES THAT ADDRESS XML PERFORMANCE CHALLENGES*

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#### **Abstract**

As XML continues to proliferate on the corporate network, companies increasingly desire approaches that provide capabilities for security, management, process, and data manipulation without degrading overall network performance. As a result, hardware platform vendors are providing solutions that are able to offer substantially higher performance over purely software-based solutions. As a result, companies need new approaches to deal with messages on the network that stress the capabilities of the general purpose hardware and software that now deals with the problem.

Sarvega aims to meet these needs with a family of appliance and OEM-able software solutions that provide wire-speed solutions for XML and Web Services security, transformation, and emerging messaging needs. The company has also recently announced the Sarvega *XML Context Router*, an XML appliance that provides secure and reliable routing and messaging capabilities for XML at wire speed based on deep content inspection and publish/subscribe messaging.

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## Hardware and Embeddable Software Approaches for XML Performance

The rapid adoption of XML-based infrastructure has a significant downside. As network traffic based on XML increases, IT data center administrators and developers are quickly realizing that the operational inefficiencies of XML are bogging down their general-purpose hardware and software. The addition of more advanced security, reliability, and process capabilities puts an overwhelming burden on existing network infrastructure that is already stretched to the limit handling basic XML processing tasks.

While there are many different approaches to providing high performance XML solutions, the hardware solution remains a good option for IT data center administrators looking to manage corporate-wide XML and Web Services traffic. Many hardware platform vendors are able to offer substantially higher performance over purely software-based solutions, and also offer security-hardened environments that prevent tampering as well as simplified administration. Hardware solutions also free application developers from being responsible for protecting their applications from every possible type of attack, and focus them on the primary responsibility of building application logic.

IT personnel can configure hardware proxy solutions so that they are ready to install by simply plugging the equipment into the appropriate rack. As a result, IT shops can control their installation and maintenance costs and complexity, making sure that they have properly configured certain security, routing, transformation, and management features prior to installation.

In addition to rack-mountable appliances, another hardware form factor rapidly gaining acceptance is the blade form factor, increasingly used in emerging virtualized environments for high-performance computing. A blade server is actually a group of individual, general-purpose, commodity servers pulled together into a single appliance called a chassis that provides the group of servers with a common set of infrastructure like power supplies, cooling fans, and networking capabilities. Blade computing seeks to reduce IT complexity and administration costs by simplifying the management of groups of servers, speed deployment by allowing the swapping of individual servers at very low cost and with significant ease, conserving space and power by consolidating servers into small form-factor chassis, and providing for significant agility by allowing the provisioning of servers at runtime.

A blade server consists of general-purpose computing hardware adapted with specialized software to perform specific processing tasks, instead of purpose-built hardware like network appliances. For this reason, companies that are looking to solve XML performance issues are increasingly looking to the blade form factor to deploy their solutions. In particular, the embeddable software approach enables companies to deploy their solution on a flexible, as-needed basis to available blade servers as XML performance requirement demands change.

## XML Messaging and Routing: New Requirements for Performance?

Another recent trend among XML appliance vendors is the development of capabilities to meet a range of high performance, wire speed routing and messaging infrastructure needs. At its most basic level, routing is simply the intelligent movement of a document or message

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from one location on the network to another location that may or may not be in the corporate network. In the general network context, routing usually is based on information such as IP packet headers, URLs, or other information that doesn't have anything to do with the actual content of the message. However, XML routing demands upon deeper inspection of the content itself to determine the most suitable recipient of those messages, as well as the headers of the messages.

Companies also require that their IT infrastructure deliver messages in a reliable manner. As such, the routing capabilities that companies require are more like reliable messaging infrastructure and asynchronous message queues than simple point-to-point routing. In effect, an emerging class of XML appliance enables companies to implement loosely coupled, asynchronous Web Services messaging through the deployment of hardware solutions, rather than through the deployment of technologies such as emerging Enterprise Service Bus (ESB) or Message-Oriented Middleware (MOM)-based infrastructures. Such appliances provide a network of interconnected devices in a mesh that in effect provides an XML routing infrastructure.

These appliances also provide message reliability and quality-of-service (QoS) delivery for content, and can offer XPath-based routing and publish/subscribe-based messaging that allow endpoints to subscribe to particular message topics and receive messages based on events and notifications. These products can also provide seamless integration with existing messaging middleware such as IBM WebSphere MQ, TIBCO buses, or JMS-based applications. However, what makes these products unique is that they can also extend the messaging infrastructure outside the walls of the company, touching external parties in a reliable, cost-effective, and high-performance manner.

## **Sarvega XML Guardian and Speedway: Securing and Accelerating XML**

Sarvega provides compelling solutions for both XML and Web Services security as well as performance optimization. The company's XML security gateway product, called the XML Guardian, is a performance-optimized solution that assures trust amongst XML Web services. The product provides XML firewall functionality by detecting and protecting against XML Web Services denial-of-service (DoS) and unauthorized Service access. The Guardian XML security gateway offers hardened integrated cryptographic and XML acceleration capabilities at wire-speed. In addition, the product complies with OASIS WSS Core and WS-security specifications, provides an authentication, authorization, and auditing framework, with support for multiple token types, such as username, X.509 certificates and SAML, and supports XML digital signatures and XML encryption.

With Sarvega's XESOS™ Gauntlet multiple layer defense-in-depth architecture, the company provides sophisticated detection and protection capability against known denial-of-service attacks, advanced data validation for threats that cannot be addressed by schema validation alone, acceleration of digital signatures, encryption, and SSL, on-board digital forensics capability with signed and encrypted security audit logs, on-board hardware-based private key storage and FIPS 140-2 validated module for cryptographic operations, and enforcement of Web Services Quality of Service (QoS) at a granular level. Other features include extensive standards support for WS-Security, raw XML Security and ebXML Security, integration with LDAP, Active Directory, SiteMinder, Tivoli Access Manager, IBM Tivoli Event Console, various Web Services Management offerings, and the Sarvega Command Center - a centralized configuration and provisioning utility for security.

In addition to security, the company also provides optimized XML transformation through its Speedway XSLT Accelerator. Operating at wire-speed, the product enables rapid transformation of XML documents into a range of document types, meeting emerging needs for cross-organizational collaboration.

One of the key differentiators of the Guardian product is high performance based on a software, rather than hardware, approach leveraging Sarvega's 5 years of development of the XESOS technology. In addition, the company has focused on security starting from the

hardware layer (FIPS compliance, on-board digital forensics, private key security), to operating system (no rogue processes allowed, process monitoring) and the data path (default deny, XML Malware protection beyond Schema validation), and enhanced reliability and availability of the platform with a demonstrably long mean time between failure (MTBF) of their components and application processes.

## Introducing the Sarvega Context Router

Sarvega has also recently announced the Sarvega *XML Context Router*, an XML appliance that provides secure and reliable routing and messaging capabilities for XML at wire speed based on deep content inspection and publish/subscribe messaging. With Sarvega's XML Context Router, enterprises can create "semi-private" networks where XML and Web Services-based interactions are routed securely, quickly, and reliably to the end-point subscribers.

A semi-private network of Sarvega XML Context Routers provides a publish/subscribe-based infrastructure that scales to support thousands of XPath-based subscriptions at each node as well as at geographically distributed sites. The system also enables efficient processing of XML messages by leveraging the company's *XML Event Stream Operating System* (XESOS) to optimize XML processing at each router in the network. Sarvega's XML Context Router, when deployed as an edge router, is built with support for local area messaging environments such as IBM WebSphere MQ, JMS, and other messaging formats in order to interoperate within existing environments. It also will support, in future releases, the emerging messaging standards such as ebMS, WS-Eventing, WS-Notification and WS-ReliableMessaging.

In addition to message routing capabilities, the Context Router also provides security capabilities including authentication, authorization and auditing capabilities throughout the XML network. It operates securely by locking down its operating system, providing strong centralized authentication through RADIUS, isolating management ports, securing encrypted administrative interfaces, saving and safeguarding forensic information used to track unauthorized use, and protecting itself through hardening at the hardware, operating system, and operational layers.

The company offers its product in an XML appliance form factor, but Sarvega can also embed its core XESOS technology within blade form factors or for other OEM needs. Through this flexible approach to deployment, the company hopes to position itself as an XML optimization solution that offers the necessary scalability, reliability, content-level security, performance, and flow control for widespread adoption of XML at the core of an enterprise's network. The product is also well differentiated with their Sarvega Command Center - a centralized configuration and provisioning utility for security and messaging capabilities, aimed at reducing overall implementation complexity.



## Sarvega Products

Sarvega	Availability: Now
<b>Overview:</b> Sarvega provides hardware appliance and embeddable software solutions that secure and scale XML-based Web services applications. Sarvega's products rely upon the XML Event Stream Operating System (XESOS), an embeddable software technology that addresses core XML processing tasks, including XSLT & XPath processing, XML schema validation, XML security and XML parsing.	
<b>Details:</b> Sarvega's product line consists of the following products:	
<ul style="list-style-type: none"><li>➤ <i>Sarvega XML Guardian</i> – XML appliance that focuses on XML Web Services Security &amp; attack prevention requirements</li><li>➤ <i>Sarvega XML Speedway</i> – Provides wire-speed XSLT acceleration, built for sustained high performance, reliability &amp; manageability, as well as acceleration of XML schema validation, SSL &amp; parsing</li><li>➤ <i>Sarvega XML Context Router</i> – An XML appliance focused on routing secured XML content at wire speed based upon deep content inspection, and supporting publish-subscribe (pub-sub) models.</li></ul>	
<b>Key Differentiators:</b>	
<ul style="list-style-type: none"><li>➤ <i>Rack-mountable and Blade Form Factors</i> – Sarvega's products are based on the company's optimized and hardened XESOS platform. As such, they can deliver their product in XML appliance or in embedded software forms, such as would be licensed and implemented by blade manufacturers.</li><li>➤ <i>Pub/sub messaging in hardware</i> - Sarvega provides much of the infrastructure associated with message-oriented middleware, but in a hardware form factor – providing message queuing, guaranteed delivery, and publish/subscribe infrastructure.</li><li>➤ <i>High performance XML security and processing, leveraging portable software technology, rather than custom hardware</i> – While some other vendors provide accelerated performance through custom hardware / chipsets, Sarvega has approached the problem from an optimized software perspective.</li><li>➤ <i>Hardened Operating System</i> – One of the keys to the Sarvega product line is that their core technology has been security hardened to prevent unauthorized access and intrusion.</li></ul>	

## The ZapThink Take

The market for XML appliances and optimized XML processing has certainly heated up since 2002. In particular, a number of vendors are currently on the market for a wide range of XML performance optimization capabilities including security, transformation, messaging, and general-purpose XML processing. What makes Sarvega unique is their XESOS strategy and



the fact that they are taking the notion of routing one step further with their content-based inspection and publish/subscribe environment for reliable messaging. In essence, the company is taking a hardware approach to aspects of the ESB market. Instead of relying on software infrastructure to provide those core messaging capabilities, Sarvega has shown that an appliance can perform many of those same functions. As the market for XML appliances continues to heat up, ZapThink expects many other competitive vendors to follow suit with similar functionality.

<b>Profile:</b> Sarvega	November 2004
<b>Funding:</b>	Bessemer Venture Partners, InterWest Partners, KB Partners, ComVentures, Blueprint Ventures, and Intel Capital
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## Related Research

- *High Performance and Appliance Approaches for XML* Report (ZTR-DI102)
- *Service Orientation Market Trends* Foundation Report (ZTR-WS110)
- *Conformative Systems* ZapNote (ZTZN-1171)
- *DataPower* ZapNote (ZTZN-1159)
- *F5 Networks* ZapNote (ZTZN-1158)
- *Forum Systems* ZapNote (ZTZN-1170)
- *Reactivity* ZapNote (ZTZN-1161)
- *Teros* ZapNote (ZTZN-1152)



## About ZapThink, LLC

ZapThink is an IT market intelligence firm that provides trusted advice and critical insight into XML, Web Services, and Service Orientation. We provide our target audience of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink's role is to help companies understand these IT products and services in the context of SOAs and the vision of Service Orientation. ZapThink provides *market intelligence* to IT vendors who offer XML and Web Services-based products to help them understand their competitive landscape and how to communicate their value proposition to their customers within the context of Service Orientation, and lay out their product roadmaps for the coming wave of Service Orientation. ZapThink also provides *implementation intelligence* to IT users who are seeking guidance and clarity into how to assemble the available products and services into a coherent roadmap to Service Orientation. Finally, ZapThink provides *demand intelligence* to IT vendors and service providers who must understand the needs of IT users as they follow the roadmap to Service Orientation.

ZapThink's senior analysts are widely regarded as the "go to analysts" for XML, Web Services, and SOAs by vendors, end-users, and the press. They are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry.

ZapThink was founded in October 2000 and is headquartered in Waltham, Massachusetts. Its customers include Global 1000 firms, public sector organizations around the world, and many emerging businesses. ZapThink Analysts have years of experience in IT as well as research and analysis. Its analysts have previously been with such firms as IDC and ChannelWave, and have sat on the working group committees for standards bodies such as RosettaNet, UDDI, CPExchange, ebXML, EIDX, and CompTIA.

Call, email, or visit the ZapThink Web site to learn more about how ZapThink can help you to better understand how XML and Web Services impact your business or organization.

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