

Web Site

Quality Of Service

With more and more shoppers purchasing products online, companies need to step up their e-commerce efforts and make their sites easier and more efficient to use.

Everybody is implementing e-commerce these days. Or so it seems. You can't scan an IT magazine (like *HP Professional*, for example) without reading an article or watch your favorite TV program without seeing a commercial for e-everything. Conventional wisdom says that the Web has redefined the retail business.

The trade of goods over the Internet was \$43 million in 1998, a figure that will double every year over the next five years to \$1.3 trillion in 2003. Certainly, the media's back-offices and IT managers are taking notice. They will invest upwards of \$10 billion on Internet technology to accommodate company news and other service organizations by the year 2002, according to International Data Corporation. Media General business managers saw completely new areas of

services opening up for its customer advertisers. This, in turn, catalyzed a new, more sophisticated breed of Web services for its clients. Some of these Web sites are attracting over 1 million page views per month.

And, although not inevitable, click-and-mortar companies (CAM) have seemingly eclipsed their brick-and-mortar (BAM) counterparts. However, all is not well for cyber-merchants and cyber-shoppers. There's anecdotal evidence floating around about one newspaper that lost \$1 million on a failed online business directory venture — a powerful, disincentive for investing in e-commerce.

Many online shopping sites are a frustrating waiting game of error messages and time-outs. If a customer is shopping for a high-end product,

merchants don't want to lose the sale just because

the server is slow. In order to optimize service processes and avoid issues that can cause slow or seemingly unresponsive Web sites, an increasing numbers of new e-merchants are connecting with service providers like LocalNet.

Besides common problems, LocalNet and Media General also have a common solution: HP's Web Quality of Service (WebQoS) software, first introduced in May 1998, is now in its second version (see *HP Professional*, May 1999).

In this month's issue, we're highlighting how IT teams from Media General and LocalNet are building better e-commerce infrastructures using HP's WebQoS solution.

— George A. Thompson
Editor-in-Chief

Traditional merchants jumping into e-commerce often have an inadequate knowledge of the technical issues. They want consumers browsing their Web sites, viewing product photos and details and placing orders securely with a credit card. But dealing successfully with the technical underpinning to build and deploy a Web site with truly responsive service levels, one that actually encourages on-line sales activity, is key.

Obviously, e-merchants want their Web sites to be responsive, but a number of design decisions they'll need to make along the way significantly affect Web server performance and complicate that goal. Few business managers could be expected to suggest that a site serving a U.S.-only market could optimize its speed by running on a U.S.-only network. Simpler issues, such as the use of too many frames or large graphics, can also detract from a customer's experience while visiting a Web site. But slow responses are also caused by deeper technical issues — for example, transferring data across the wrong backbone.

NATURE OR NURTURE

Another aspect affecting performance, beyond the intrinsic design of a Web site and the selection of a proper network backbone, is the nature of a Web site's traffic and should be used to determine the best packet transfer methods. The most commonly used packet switching approach to date operates on a first-come, first-serve approach to serving Web traffic. However, many service providers would like to take the highly desirable step of packet switching that prioritizes server resources for their premier customers.

One of many possible examples is web traffic related to a retail store. In such a website, a merchant could have "checkout lanes," which could include cash-only, ten-items-or-less,

or credit-card purchase order modes. By directing the cash payment customers, a group we'll assign as priority-one customers, the merchant can serve them very quickly and complete the order.

Think back just a few years to 1995 when the term e-commerce had yet to be coined. It was at this time that Local.Net (San Bernadino, Calif.) took the plunge and incorporated. The first customers relied on Local.Net for e-commerce hosting, web development, order fulfillment, back end accounting, and inventory

more than 40,000 SKUs, and is followed closely by Cardservice, a leading transaction service for over 110,000 merchants. The company processed over \$6 billion in bank-card volume last year.

By outsourcing Web site provisioning to LocalNet, these companies were able to quickly begin leveraging the Internet as a sales engine and pipeline — then take advantage of technology optimizations thereafter as often as the hardware and software evolves. These companies don't want to delay their entry into e-commerce

Local.Net Helps To Enhance E-Business

Vince Palmieri, President of Local.Net

reporting. In its first year, Local.Net lured seven customers. One, the Rotolo Chevrolet dealership (*rotolo.com*), led e-commerce activities by selling 11 cars a month and established car sales as a permanent feature of the Internet landscape. The dealer's presence on the Internet scene has grown since then. Rotolo expanded its online sales to include used car inventory, parts, financing worksheets, directions, customer service desk, and has even hired a dedicated Internet salesmanperson.

Another client, Ricoh, the renowned Japan-based manufacturer of photographic equipment, is well known for its technically advanced systems. More recently, one of Ricoh's newest digital cameras got the attention of *PC Magazine* as Editor's Choice, recognizing its feature rich and easy-to-use nature that is prominently featured in Ricoh's direct sales Web site.

The largest of LocalNet's hosted sites, *govtstore.com*, provides secure access for government employees to

or add to their overhead costs with in-house Web site expertise. So to provide customers with prioritized packet transfer, Local.Net uses HP's WebQuality of Service 2.0 (WebQoS) software. WebQoS 2.0 is server-based software that works with the Web server and network transport to support its features.

THE HOST WITH THE MOST

Local.Net hosts multiple sites on one server, an HP 90000 Model A180C, and the new provisioning service directs traffic flow according to several service levels or plans that are established. WebQoS reads the URL of the request, and URLs that match the high priority customer get more CPU power. This means that processing requests for customer URLs on one service plan type are deferred momentarily if a customer URL on a higher priority plan comes in at the same time. Additionally, WebQoS enables the company to inform site visitors how quickly their request will be completed.

Local.Net developers, working closely with HP's WebQoS product engineering group, were among the first to apply the e-business enhancements commercially. Most Web sites are not integrated well with real-time inventory data. By leveraging WebQoS technology to apportion and prioritize service it is possible now to implement a unique advantage, one which figures prominently in Ricoh's Web site. A bulleted feature is displayed for customers who are filling out orders online. It calls attention to the fact that if a product is not in stock, then the site will prevent users from ordering it saying, "If we do not have it in stock, we will let you know ahead of time."

Web site users who think they deserve some preferential treatment and response from vendors may be right. But for web site developers, this has been a real problem, there has not

been an efficient way to provide server priority to preferred customers.

INS AND OUTS OF WEBQoS

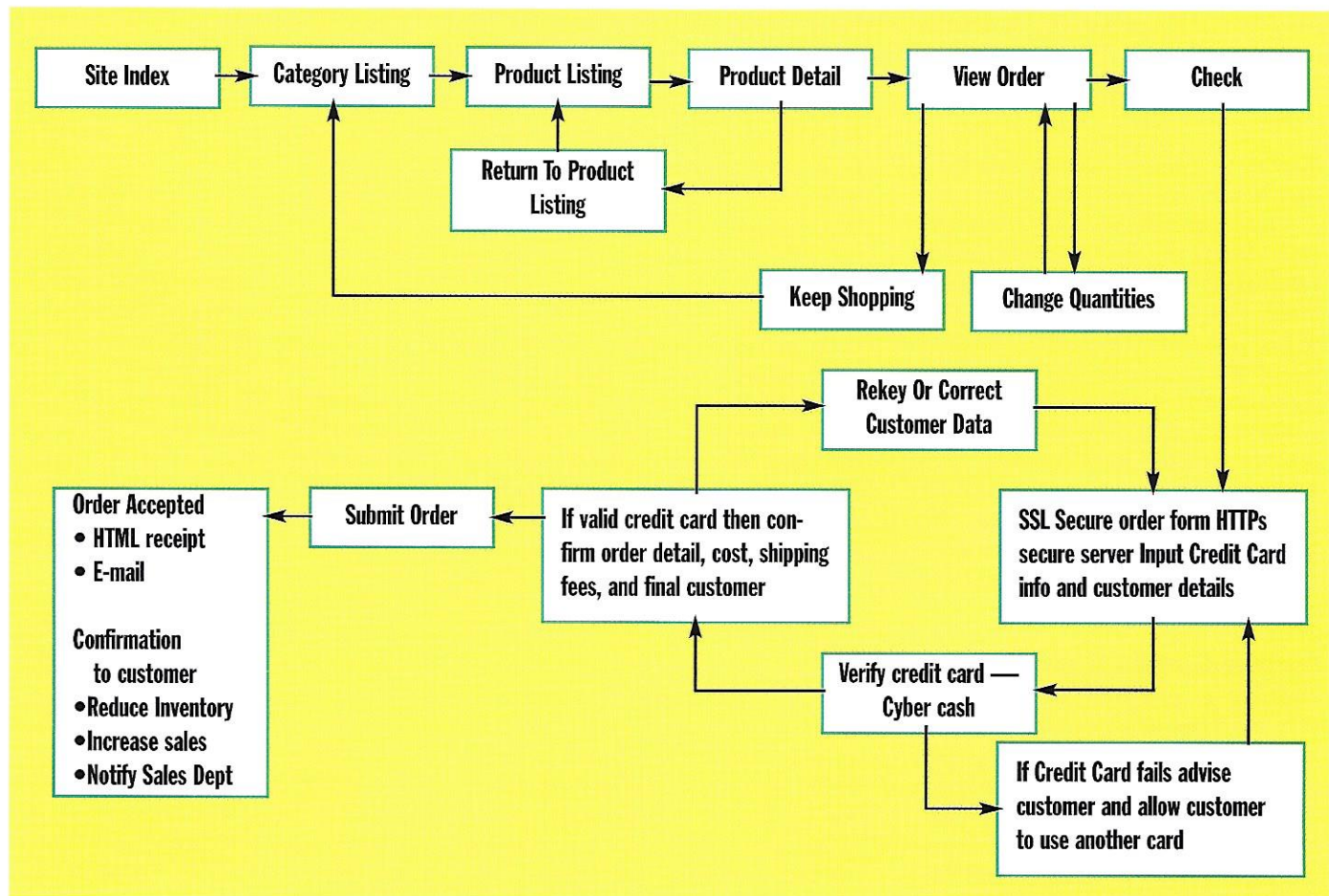
Using WebQoS, Local.Net's engineering team can now offer differentiated services. Internet software and routing equipment can tag IP packets, creating the mechanism for distinction and for enhanced levels of service. This capability is at the heart of HP's WebQoS, which allows HP 9000 and other servers running HP-UX to stabilize service during periods of heavy demand, optimize equipment use, prioritize customers and enable Local.Net to deliver consistently exceptional Web-based Internet service.

There are three key aspects underlying WebQoS: peak usage management, user class tagging, and service class identification. Peak-usage management, similar to the "take a number"

method of traffic control is used in many face-to-face customer service situations. The software can limit the number of a site's concurrent users to keep a service provider's performance high and help avoid failures. With a soon-to-be released feature, users trying to access a full site may be shown a window with a clock counting down until the site is available — this window then automatically connects them to the site. Identifying user classes allows Local.Net to assign priorities and offer higher service levels to its premier customers.

Service providers can use WebQoS to offer quality of service assurances to their customers' customers. For example, a banking Web site can assign Level 3 Quality of Service to its corporate accounts to make sure they get the fastest, most efficient use of the Web site, over less profitable customers.

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Website transactions are handled in two stages: In Stage 1 customers select products and the merchant collects customer data. Stage 2 is characterized by order acquisition, payment and credit card verification.

Local.Net Helps

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System resources are prioritized, as previously described, to ensure that priority transactions, such as purchasing, are given precedence over general browsing.

Even among the most prominent service sites today, there exists security gaps. Solving these concerns was a priority for Local.Net. One can gauge the need for "industrial-strength" handling of security from *govtstore.com*.

Another element of the technology solution answers the need of companies to streamline and automate tax and shipping calculations. Government legislation for taxing Internet purchases has as much potential impact on e-commerce as the 1996 deregulation of the telecommunication industry did, and businesses want to build systems now with the flexibility to adapt if that happens.

To improve customer service, a company weighs the cost of its investments

in e-commerce technology (i.e., the client-server hardware, back-office software, databases, and network management tools) with service costs it ultimately asks customers to pay. Local.Net sees a unique niche that was not previously cost-effective to serve. By configuring the right mix of Web-enabled technology, it's supporting a range of Web hosting services at commensurately graduated costs.

The approach will clearly appeal to a wide spectrum of companies who want to refine their e-business processes, beyond basic web site development and hosting, and take steps forward with features for Quality of Service, online store designs, order fulfillment, and credit card clearing.

We've looked at some sophisticated operating features of Web sites based on HP WebQoS and, ordinarily, one would think these are targeted primarily to medium-size and larger companies. But the Internet is for everyone, and Local.Net took steps to support the many smaller companies that are

just acquiring online, e-business capabilities. Local.Net developed an on-line Web-design application.

Using this hosted application, newcomers to e-commerce can bypass the delay and cost of an agency to do Web design and setup (users select from graphic templates and are prompted for part numbers, description, prices, etc.) For about the cost of a regular e-mail account with CompuServe or AOL, a business can now open an on-line store in a matter of a few hours.

In the year 2000, virtually no industry will forgo e-commerce opportunities. It's just too important to miss. Companies will need to have an e-commerce presence to remain competitive and those who find more profitable ways to make their Web sites work will be ahead of the game. Using differentiated provisioning is one more way to sell online services while providing exceptional treatment to preferred customers — all while improving the shopping experience for consumers. ♦

How Media General Became

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display of a timer showing how long they'll wait to entering the site.

Providing reliable and responsive Web sites is the foundation of Media General's further efforts at optimizing Internet capabilities and services. One of the next steps is to enable customizing of Web sites to be able to establish customer classes, recognize "preferred customers" and, when appropriate, provide differentiated services. This acknowledges a business fact-of-life that not all customers are equal. It's similar in concept to airline's frequent flier programs to which the public is now well accustomed.

PREFERRED CUSTOMER SERVICE

Defining a preferred customer will vary from business to business. A preferred customer might, for example, be a Web site visitor who has provided background or demographic information. Or, for a more specific example, MGIG is planning to use this customizing next year when they begin

implementing registration, personalization and dynamic content. Preferred customers will be those who have given their registration information, providing MGIG with new and valuable information for targeting ads more directly.

For similar benefits, MGIG is pursuing methods to differentiate service levels among various Internet users. Let's use the frequent flier analogy again. While all frequent flier members meet the criteria for a preferred customer, those flying 100K+ miles a year warrant the offering of premium levels of service above the usual services afforded to fliers with fewer miles.

Similarly, if a person or enterprise has a history of high-volume purchases from one of Media General's hosted sites, then rewarding these customers with enhanced levels of service would be a distinct marketing advantage. WebQoS software and routing equipment does this by marking Internet Protocol (IP) packets with special flags that make it possible for

a web site owner to provide various levels of service to the gamut of customers.

Media General has just finished moving all of their Web sites to the recently deployed HP servers. The next steps will maximize the use of the capabilities inherent in the HP server platform and the WebQoS technology. While user surveys such as those conducted by Opinion Research Corporation International suggest that negative reviews of Web sites spread very quickly among visitors, Media General has already taken swift and sure steps to be sure their Web sites reward and please users.

The features that MGIG implemented with HP WebQoS translate directly into less wait time for business clients and end-customers alike. And with the ability to customize the system and prioritize classes of preferred users, Media General more accurately aims its e-business promotions with confidence, knowing they won't lose a transaction or make a premier customer wait. ♦