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Retail Industry Networking: Drivers for Managed Network Services

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EXECUTIVE SUMMARY

Faced with intense global competition and dramatic consumer shifts, retail industry network managers need broadband networks to reduce cost, improve payment processing time, and get more value from network-based applications.

Thanks to telephone company and cable MSO investments, DSL and cable modem networks are widely available at price points affordable for retailers. However, a gap remains between the demand for reliable broadband network solutions for retailers and the ability of carriers and service providers to deliver these solutions. There are three complicating factors: the difficulty of managing multiple carriers, ensuring security and compliance with payment card standards, and ensuring that uniform end-to-end service levels are guaranteed and delivered.

The price and reach advantages of broadband networks can be outweighed by challenges of management, performance, and security. To address this issue, managed services providers have emerged to provide customized, comprehensive, yet cost-effective solutions for retailers seeking the benefits of broadband networks.

The business benefits of managed broadband services include:

- **Seamless reach.** The services can go where a retailer wants to go with the best mix of access technologies, prices, and performance.
- **Performance backed up with service level agreements (SLAs).** SLAs that specify network performance are mandatory to ensure end-to-end management and reporting, and they provide guarantees on traffic delays between sites, network availability, packet loss, and outage notification intervals.
- **Security.** A virtual private network (VPN) isolates business applications from open Internet traffic, and a network partner that is compliant with the Payment Card Industry Data Security Standard (PCI DSS) security guidelines ensures certification by payment processors.
- **Proactive managed solution.** A centralized network operations center (NOC) provides around-the-clock monitoring to proactively identify and respond to any customer-affecting issues.
- **Aggregated and integrated billing.** Managed services providers consolidate all invoices into one format with no hidden charges while itemizing locations, regions, or any other metric that the business requires.

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COST OF PAYMENT PROCESSING

Many retail store locations typically have one dial-up business line for voice, one dial-up business line for point-of-sale (POS) transactions, and an ISP subscription for Internet access. Business dial-up lines cost about $40 a month, and ISP access costs about $20. The monthly cost for the three circuits is in the range of $100 to $150 per month. A managed DSL service can support POS transactions and deliver Internet access for a cost of $100 per month, or $120 per month if delivered as a fully managed service. It enables elimination of the ISP subscription and one business line — a $60 per-month charge plus the cost of administering and managing these services. For a $60 monthly increment, small retailers get much improved credit card processing and a broadband Internet connection.

Larger multilocation retail chains typically use frame relay or private-line circuits to connect store locations to headquarters. DSL offers significant price performance improvements in this environment. IDC estimates that 50–60% of retail industry frame relay circuits installed today have 56kbps port speeds. Frame relay circuits cost $250–300 per month per location for 56kbps ports. Upgrading frame relay bandwidth from 56K to 256K entails a major hardware upgrade and a three- to fourfold increase in network costs. A business-class DSL service with 192kbps synchronous bandwidth can be purchased on a fully managed basis for $120 per month. The equipment upgrade expense can be held to 10–15% of the total project cost. This approach triples the speed for half the price.

Shaving Minutes Off the Transaction Time

Cutting transaction times speeds up lines at checkout counters and drives sales growth. Retailers measure speed and transaction times in nanoseconds. It is a truism of retail that forcing customers to wait in long lines discourages spontaneous buying decisions. Jack Greenberg, former CEO of McDonald's Corp., gave a speech in which he stated that sales jump 1% for every six seconds saved in the drive-through lanes. A core element of transaction time is consumed by payment processing.

A credit card transaction that takes 12–25 seconds on dial-up can be reduced to 2–3 seconds on DSL. This difference is clearly meaningful to a company on the scale of McDonald's, which has more than 13,000 restaurants, but it is equally significant for a 20- to 30-store chain. A 34-store apparel chain in Texas that converted to a broadband network and cut transaction time from 35 seconds to 3 seconds saw a major impact during the state's annual tax-free weekend. By reducing customers' wait times and frustration levels, the retailer avoided losing sales and salespeople didn't waste their time putting back merchandise after it was dropped by customers who abandoned the checkout line.

Speed is so important in the retail industry that fast-food restaurants, drugstores, and movie theaters are adopting "contact-less" payment systems to transmit payment information. These systems may use cards or key fobs that communicate with a terminal using radio frequency waves without requiring any physical contact. Banks, credit card companies, and merchants are using this approach for small-dollar purchases in which credit cards haven't previously been used. Using "fast plastic" eliminates the delays associated with swiping a card through a terminal, signing a receipt, or getting change and thus moves customers quickly through checkout lanes.

The success that banks, airlines, gas stations, and some grocers have had with order-taking kiosks is now being applied more widely throughout retail and fast-food industries. Touchscreen kiosks are being tested that allow people to browse menus, select items and quantity, and pay with credit or gift cards. These kiosks shorten customer wait time, improve accuracy, and can even be programmed to make suggestions for upselling and higher check size.

Some fast-food chains are going even further to transform the drive-through process by outsourcing the order-taking function to a call center. The call center forwards the order to the restaurant kitchen, and by the time the customer drives from the ordering kiosk to the pickup window, the food is ready. By separating the food preparation from the order taking, the restaurant benefits from lower costs, greater speed, and fewer mistakes. Any given restaurant becomes a node on a network, with growing dependencies on that network.

RETAIL INFORMATION SYSTEMS AND GROWING NETWORK DEPENDENCIES

Efficiency and productivity at the point of sale are clearly key considerations in retailers' need for fast, reliable, and secure data communications. However, retail networks are being expanded beyond the point of sale to incorporate a wide array of information services and systems required to operate the business.

For instance, quick-service restaurants, convenience stores, specialty stores, strip mall chain stores, and national retailers are taking advantage of flexible, always-on broadband Internet networks to reduce operational costs, improve worker productivity, and develop new revenue applications.

There is a growing demand for network-based applications, such as email, Web-based inventory tracking and ordering, intranet portals for employee training, and real-time polling of sales data. Additionally, new revenue-generating applications, such as gift cards, customer loyalty programs, interactive customer kiosks, check cashing services, cash-back credit authorizations, and networked cash machines, rely on swift and secure access to centralized remote databases.

No longer limited to back-office applications, networks are now being used to directly improve the customer experience. Wireless is being adopted for everything from temporary POS stations and wireless devices for sales associates doing real-time inventory checks to in-store WiFi hotspots for customer access. In addition, digital video surveillance cameras are being linked into the network so stores can be monitored from a central location to improve loss prevention and eliminate frivolous lawsuits.

The retail industry is filled with examples of new network-based applications driving revenues or reducing costs, or doing both at once:

- Gas stations and convenience stores want to connect automated fuel tank monitors to a network for central processing and greater fuel dispatch efficiencies.

- Digital signage has seen dramatic improvement over static displays to influence customer decisions, allow virtual handling and demonstration of expensive products, and so forth. Distributing, tracking, and managing the multimedia content require a network.
- Time sheets and clock-in cards are being replaced with automated time and attendance systems, which transmit all data to headquarters for central processing and automated payroll.
- Video surveillance is increasingly important not only for cash register monitoring but also for eliminating frivolous lawsuits. At $100 per camera, the technology is easily justified. An always-on link to in-store cameras via a broadband-connected WAN provides management with visual access to stores and aids law enforcement.
- Intranet portals and computer-based training are being applied to ensure that store managers and sales associates are knowledgeable and up to date about their jobs and their customers' needs. Offering in-store online training is a more efficient option than sending workers to remote training locations.
- Application service provider (ASP)–hosted solutions are attractive for retailers that want to outsource the infrastructure (data, software, or equipment) associated with specific functions, such as workforce management, payroll services, and credit card solutions.
- Self-service kiosks are helping to shorten wait times and provide greater customer service and convenience.
- Call center technology is being used to expedite drive-through orders in fast-food restaurants.

All retailers understand the value of sub-five-second credit card authorizations, and many can justify broadband network deployment on that basis. But broadband opens the possibilities for numerous technology applications to positively address many other business operations. Retailers that build a broadband network today for POS transaction needs should make sure it is a modern, adaptable network that is not susceptible to outages, meets stringent security requirements, and is easy to manage from a datacenter so that it can support all their business needs into the future.

CHALLENGES OF BROADBAND NETWORKS

There is clear growing demand for bandwidth in the retail industry. Carrier and cable MSO investments for residential services have already made DSL and cable modem networks widely available at affordable price points for retailers.

Even so, three complicating factors hinder the ability of carriers and service providers to deliver reliable broadband network solutions for retailers:

- **Multiple carriers with multiple offers.** A 20-site retail operator may have 10–15 different broadband service providers to consider for its footprint. Each operator offers different speeds, SLAs, equipment and price plans, and contract terms. Some operators include a DSL modem; some don't.

- **Security and compliance with payment card standards.** Use of the open Internet makes retailers vulnerable. To meet security requirements, retailers must implement a VPN. Selection, deployment, and ongoing management and support for the VPN require time, money, and professional expertise. In addition to business-level security, retail merchants and restaurants have to comply with the special network security specifications defined by the PCI DSS.

- **Service and support.** Not all broadband access is equal. Regional carriers provide DSL SLAs at Layer 2, but not at Layer 3. Cable MSO cable modem service does not have SLAs. Service providers use different equipment that relies on different signaling systems. For DSLAMs, for example, MCI uses Copper Mountain, Covad uses Nokia, and SBC uses Alcatel. A reliable multilocation network depends on managing these inconsistencies so that uniform end-to-end service levels are guaranteed and delivered.

Payment Processing and Compliance with Cardholder Security Specifications

Retailers are focusing attention on card security compliance to maintain good relationships with credit card companies as well as to provide their customers with assurances that appropriate precautions are taken to secure their sensitive cardholder data. Many retailers are replacing traditional dial-up connections with broadband to expedite credit card processing, gain efficiencies, and comply with card information security standards.

To maintain consumer confidence and reduce the risk of merchant loss, Visa and MasterCard developed Visa Cardholder Information Security Program (CISP) and MasterCard Site Data Protection (SDP), respectively, to define security standards for protecting sensitive cardholder data when used in online credit card transactions. These card associations, as well as Discover, American Express, and others, merged their security requirements in one set of standards: the Payment Card Industry Data Security Standard (PCI DSS).

PCI DSS governs how cardholder information is processed, stored, and transmitted. Under these requirements, the entire information system, including servers, networks, PCs, storage, and software, must be compliant. These standards apply to all entities in the payment industry supply chain, including payment processors, payment gateways, and merchants, and they are being increasingly enforced. Several card associations have made compliance with the security standards mandatory for all their merchants.

Because PCI certification is required on all circuits, routers, and switches touched by cardholder information, it is a core consideration for the network solution supporting point-of-sale (POS) transactions. Not only do networks need to meet PCI DSS security guidelines, but they must also regularly test security systems and processes to ensure ongoing PCI DSS compliance.

Traditional POS networks connect the retail store location to headquarters location, which then routes the traffic to a payment processor. Although store-to-headquarters connectivity is a good thing for most applications, it may be a disadvantage for payment processing. A managed PCI-compliant network drives several benefits for retailers:

- Because the credit card transaction goes directly from the store location to the processor's, the network avoids the cost of routing credit card traffic between headquarters and the store location.
- The network avoids the cost of bandwidth capacity between the store and headquarters or enables use of that bandwidth for other activities, such as sales polling, inventory management, workforce management, computer-based training, digital media servers that feed digital signage, visual catalogs, back-office support, and alarm monitoring.
- The network also avoids the cost of CISP certification for the credit card data stored in the server at headquarters while awaiting transit to the credit card processor.

BUSINESS BENEFITS OF MANAGED BROADBAND SERVICES

Broadband Internet offers very attractive price and reach advantages to retailers, but solving the management, performance, and security threats posed by this new networking approach remains a challenge. A professional mix of design, implementation, and management capabilities is required to exploit the advantages of broadband Internet. Managed services providers have emerged to provide customized, comprehensive, yet cost-effective solutions for retailers requiring advanced networks but lacking the needed expertise.

The business benefits of managed broadband services include:

- **Seamless reach.** The services can go where a retailer wants to go. Frequently, no one carrier can cover all of a retailer's sites with broadband circuits. A real-world network will span several different carriers and transport technologies: DSL, cable modem, frame relay, private line, Ethernet, VSAT. Managed services providers maintain a catalog of hundreds of carriers, products, price plans, and performance levels. This catalog delivers the flexibility to best meet the application and cost requirements of a specific retailer. Rather than managing multiple carrier and ISP contracts, a managed services customer benefits from one network, one help desk, one invoice, and guaranteed security.
- **Performance backed up with SLAs.** The broadband Internet advantages of low cost and ubiquitous reach are too compelling to ignore. But when a business depends on networked applications, SLAs that specify network performance are mandatory. SLAs deliver end-to-end management and reporting, guarantees on traffic delays between sites, network availability, packet loss, and outage notification intervals.
- **Security.** Isolating business applications from open Internet traffic is critical and requires building a VPN. Retailers can address this issue in-house by purchasing and deploying VPN encryption boxes (e.g., IPSec appliances) in all locations connected to the Internet. This approach involves capital expense to buy the equipment and operating costs to manage the equipment. And while a do-it-yourself IPSec solution delivers security, the network circuits have no performance guarantees. In addition to security from Internet threats, retailer networks must adhere to PCI DSS security guidelines. Because PCI certification is required on all circuits, routers, and switches touched by cardholder information, it is a core consideration for any network solution supporting POS transactions.
- **Proactive managed solution.** Even the largest national chain retailers have limited skills and resources at the store level to manage modems, routers, VPN boxes, data circuits, and so forth. IT staffs usually have their hands full with managing applications and don't want to deal with network concerns. Managed services providers deliver proactive managed solutions. From a centralized 24 x 7 NOC, they monitor premises equipment, local connection lines, and the core network. In the event of a problem, a managed services provider opens a trouble ticket, notifies the client, diagnoses the problem, and takes immediate steps to remedy the problem. This process involves not just monitoring up/down performance but monitoring and proactively identifying and responding to any customer-affecting issues around the clock.

- **Aggregated and integrated billing.** The labor associated with receiving and auditing multiple invoices from multiple vendors is substantial. Managed services providers solve this challenge by consolidating all provider invoices into one format with no hidden charges. Customers get a single integrated bill that consolidates multiple locations and access technologies but itemizes locations and any metric that the business requires.

CONCLUSION

Managed broadband services are available today to address retailers' needs to reduce costs, improve payment processing time, and get more value from network-based applications.

Broadband access offers clear cost and reach advantages over dial-up or frame relay networks, but three factors complicate the development of reliable broadband network solutions for retailers: the difficulty of managing multiple carriers, ensuring security and compliance with payment card standards, and ensuring that uniform end-to-end service levels are guaranteed and delivered.

Managed services providers have emerged to provide customized, comprehensive, yet cost-effective solutions for retailers seeking the benefits of broadband networks. Important benefits of managed broadband services are:

- Seamless reach
- Performance backed up with SLAs
- Security from Internet threats and compliance with PCI DSS security guidelines
- Proactive managed solution
- Aggregated and integrated billing