



Supporting a New Era in Retailing

Managing and protecting core network services
through transformation

Outline:

The Evolving Network

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IP devices, applications and systems are transforming the modern retail organization, unlocking new possibilities for consumer interaction, data analysis and automation across the value chain. At the same time, the speed of change around technology use in the sector is bringing new challenges to network management. This white paper examines how large retailers can improve the scalability and reliability of their IP networks at a time when revenue and competitive advantage is reliant upon their availability. With reference to EfficientIP's SOLIDserver, it reviews the technical options for network teams as they respond to the demands of a new era in retailing.

The Evolving Network

Transformation Places New Demands on the Network

Like many sectors, retail is in the throes of transformation. Volatile economic conditions and the more connected consumer are creating new market dynamics that are challenging the very fabric of the industry. Growth lies in the ability to adapt quickly. Many of the transformation plans being introduced by retailers in response to new market challenges rely heavily on the capabilities of their IT infrastructure. The IP network has become the lifeblood of the modern retail enterprise and the demands being placed on it are growing at an unprecedented rate.

Explosion of IP Devices

Over the past few years, the number of IP-enabled devices connecting to a retailer's network has increased dramatically, incorporating not only computers, routers, printers and firewalls but CCTV surveillance systems, digital signage, wireless access points, fridges, self-service cash registers, telephony, face recognition solutions, employees' and consumers' personal devices and more.

There are now a variety of ways to retrieve and input data, track products and manage inventories and connectivity is becoming more embedded in business process. The Internet of Things (IoT) expands what can be connected to the network to include not only different form factors of computing devices, but also sensors and objects. According to analyst firm IDC, connected 'things' are expected to proliferate at five to ten times the rate of PCs installed. With the move to IPv6 providing a limitless number of IP addresses, the ability to assign an IP address to almost anything, now becomes possible.

The Move to a Data-Driven World

The retail IP network is also becoming more fluid as we move from a PC to a data-driven world and new virtual and cloud computing platforms reshape the nature of IT services delivery. With more applications and an increase in the velocity and volume of data, the network must be able to handle the transaction and retrieval of information at the speed of business, and respond to new security challenges. The complexity of network management is fuelled further where there is an ambitious expansion plan or mergers and acquisition activity in force, expanding the scale and diversity of the network.

Addressing Today's Challenges to Prepare for the Future

Today's retail environment is already complex to manage. To be able to secure and manage the network as we enter a new phase in retailing requires many of the traditional tasks involved in managing core network services to be simplified and ultimately automated. With already constrained resources, network teams must find new ways to reduce their administrative loads so they are freed up to support the new demands being placed upon them. A good place to start is in the area of DDI (DNS, DHCP and IP Address Management).

The Challenge of Managing Diversity

Retailers with hundreds of stores to support, across distributed locations, will have diverse IT requirements. Some stores will require local infrastructure while others can be managed remotely. In most cases the services of an outsourcing company will be deployed for the initial set-up and maintenance of machines and devices. Maintaining transparency across networked operations is a major challenge.

All stores need DNS and DHCP services to provision and ensure access to web applications and devices, resulting in numerous servers to manage, from different vendors with different characteristics and configurations. Maintaining availability, upgrades, security updates and security mechanisms across the server environment is an onerous task.

Handling IP Address Management

Supporting the huge variety of IP-based services also requires an extensive IP addressing and VLAN plan. This results in large numbers of diverse subnets requiring daily administration to ensure the retailer's ability to provide reliable and secure services. When a new store opens, multiple subnets, DNS and DHCP servers and network devices have to be allocated. When a store closes, these resources have to be released and re-allocated to a new store, but in a different way. The IP resource provisioning process for each store typically involves hundreds of manual tasks, taking time and running the high risk of misconfiguration due to the complexity of the infrastructure organisation. This constant change increases the complexity and fragmentation of the IP and VLAN plan and means that automating many of the processes involved in IP address management solutions is now critical.

Maintaining Consistency

As networks grow, it becomes more difficult to maintain consistency between DNS servers, DHCP servers, the IP addressing plan and VLAN. This is a concern for network teams when consistency is a key factor to service availability, and is a particular challenge if the retailer is working with local partners in different countries and has outsourced the configuration of local devices. Ensuring that deployments have been correctly implemented and are compliant with corporate policies requires new approaches to monitoring.

Widespread infrastructure can also suffer from lack of best practices enforcement. It may be implemented at the beginning but not maintained over the long term. Best practices include security policies that guarantee a reliable and secure infrastructure and naming conventions that simplify troubleshooting and limit fragmentation.

The Role of Unified DDI

Continuity, Security and Control with Integrated IPAM, VLAN, DNS and DHCP Management

Having an organised and controlled IP-VLAN plan, where VLANs are deployed consistently alongside the IP addressing plan, significantly reduces the risk to the network's security and ensures continuity of services to users. EfficientIP's SOLIDserver IP Address Management appliance (IPAM) tackles these issues. It integrates the IP address management repository with the VLAN plan and therefore makes it possible to design the addressing plan to be completely consistent with the VLAN plan, automatically applying allocation rules and simplifying deployments. For example, VoIP-type (Voice over IP) subnets can automatically be associated with a predefined range of VLAN IDs.

Network teams can also create subnet templates for each type of store (for example hypermarket, supermarket or minimarket) and be able to very easily search, find and allocate new subnets for a new store opening, while maintaining the address and controlling its consistency. Templates allow network administration teams to enforce corporate policies, naming conventions and best practices to any deployment, even those tasks performed by an outsourcing company. Uniform, automated management of the address plan, DNS-DHCP and VLANs is strategic to control deployment, security and service quality for users.

Control Service Capacity and Resource Deployment

The ability to easily and quickly deploy virtualized devices coupled with the expansion of datacenter-hosted services has huge implications on the network and on maintaining the visibility and control of the network topology. Network teams not only need to inventory the equipment (virtual and physical) and its properties but also describe and manage how ports are connected to one another. Having complete visibility and control over the network topology design provides a real ability to plan device deployments and manage network equipment capacity. This is critical not only for optimizing investments but also for increasing infrastructure security.

By unifying the management of the IP addressing plan (for IPv4 and IPv6) and VLANs with device interfaces, EfficientIP's SOLIDserver appliances give retailers end-to-end control over the physical and logical resource capacity in their stores by enabling them to define and automate the provisioning process. SOLIDserver will automatically pick-up required resources at the right place in the IP plan organization as well as activate required DNS and DHCP services. Hundreds of manual tasks can be done automatically while applying retail best practices, standards and policies.

Network teams can control where each device on the network – such as routers, CCTV, PC, switch, firewall or printer – is deployed and how it will be named and documented. Policy-driven deployment processes increase IT team efficiency, streamline network infrastructure management, cut operating costs and give control over delegated device deployment to outsourcing companies. When a new device is required in a store, head office, branch office or warehouse, policy-driven processes will ensure that the right device is deployed on the right subnet, to the right switch, with the right name.

Ensure Business Continuity with High Availability of DNS-DHCP Services

In a business where time is revenue, any network downtime implies financial loss from the first second of unavailability. As in any network infrastructure, high availability of DNS and DHCP services guarantees continuity of access to the network and to applications. For retailers with multiple sites that are managed centrally and remotely, having back up servers in each location means significant ownership and maintenance costs. The challenge is to provide reliable services to all stores while limiting server acquisition and operating costs. For DHCP, a star-shaped architecture (called Star Failover or many-to-one) meets these goals. A DHCP server is deployed on remote sites and a central server assures service redundancy. If the local server in the store becomes unavailable, users will still have access to the network through the DHCP server at the central site. The advantage of this type of architecture is that it is not necessary to deploy a pair of servers at each site, therefore dramatically reducing costs.

The SOLIDserver DDI appliance suite (DNS-DHCP-IPAM) offers a powerful, simple and fast tool for deploying a Star-Failover-type DHCP architecture or cluster that is scalable. SOLIDserver embeds architecture templates that automate the configuration of DNS and DHCP services. All templates are best practices compliant and are fully adaptable to any context.

Maximise Resource Use with Advanced Network Monitoring

Keeping network services available and secure requires constant monitoring of the infrastructure, such as device tracking, traceability of administrative operations (including operations performed by the outsourcing company) and monitoring of network activity or use of resources. In a dynamic, diversified and expanded retail environment, it is a challenge to regularly check that what is defined in the IP addressing plan corresponds to what is actually deployed. EfficientIP's NetChange solution is a network discovery tool that offers device mobility tracking and network reconciliation capabilities. NetChange provides real time analysis of IP address locations (across switches, ports and VLANs) and allows network teams to compare SOLIDserver IPAM, VLANs and devices repository with the discovered information, identifying inconsistencies on an on-going basis and consistently maintaining an up-to-date IP/VLAN plan and device port allocations.

This proactive approach avoids unnecessary downtime by eliminating misconfigurations and allows savings to be made by detecting and reallocating unused resources, therefore avoiding buying unnecessary new equipment. Also, comparing planned and actual data allows the retailer to see how well resources are deployed according to corporate policies and ensures that best practices and network topology are being maintained.

Control Outsourced Services with Optimized Workflow and Granular Delegation

One of the main concerns of a retailer's IT team is the need to streamline and control the deployment and management of the network infrastructure handled by separate teams or a third party. SOLIDserver enables specific administrative rights to be created for internal teams and outsourcing partners. For example, a local team will only have access to the resources of the store they are in charge of. They may only need to have access to printers, servers and cash registers, while central management handles cameras and fridges. Control by device type coupled with advanced workflow process management brings an unparalleled capability to organize, streamline and control the delegation of administrative tasks.

Mergers and Acquisitions: Managing a Smooth Integration

Mergers and acquisitions are increasingly common in the retail sector and the integration of two or more IT structures can take a long time, indeed some IT departments just manage the two systems in parallel and never actually integrate them. This approach implies limited control, lack of visibility, significant effort to maintain communication between both systems, plus the additional operational costs due to duplication of equipment.

EfficientIP's SOLIDserver appliance consolidates all IP addresses, VLANs and DNS-DHCP services data in one single appliance, which gives network administrators global visibility over their network. Thanks to NetChange, they also can audit the IP infrastructure of the other company's network and detect which addresses are allocated to which equipment. Therefore, prior to the merger, they can easily design the consolidated architecture, anticipate their needs and organise appropriate merging planning.

SOLIDserver's ability to easily integrate existing multivendor DNS-DHCP-IPAM resources (Microsoft and Open source servers) with import templates ensures a fluid migration of the data and services. Administrators are able to monitor each step of the deployment, manage task delegation and establish regular and strategic reporting. Visibility, anticipation, flexibility and global control are the four key points that make EfficientIP's solution a valuable asset for merging network infrastructures.

Conclusion

The speed of change in the retail sector is immense. The connected retailer will need to manage an explosion of IP devices in various forms from sensors to objects, computing devices to machines. The IP network will enable new opportunities to increase revenue and competitiveness. However, scaling its capabilities and ensuring maximum security to protect uptime will bring new challenges. By integrating DNS, DHCP and IPAM services, network teams can save time and deliver the new levels of efficiency and protection that are vital in the new era of retail business.



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As one of the world's fastest growing DDI vendors, EfficientIP helps organizations drive business efficiency through agile, secure and reliable network infrastructures. Our unified management framework for DNS-DHCP-IPAM (DDI) and network configurations ensures end-to-end visibility, consistency control and advanced automation. Additionally, our unique 360° DNS security solution protects data confidentiality and application access from anywhere at any time. Companies rely on us to help control the risks and reduce the complexity of challenges they face with modern key IT initiatives such as cloud applications, virtualization, and mobility. Institutions across a variety of industries and government sectors worldwide rely on our offerings to assure business continuity, reduce operating costs and increase the management efficiency of their network and security teams.

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