



I D C T E C H N O L O G Y S P O T L I G H T

Using Network-Centric Virtualization to Drive IT Consolidation in the Remote Branch

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Remote offices continue to proliferate as businesses enter new markets. Remote branch offices have unique challenges in the current environment, since there are often limited IT resources and skilled personnel available on site, as well as constrained space, power, and cooling considerations. To meet these challenges, IT organizations are beginning to implement best practices learned in the datacenter of the remote branch.

One important approach to reduce cost and complexity involves reducing the number of physical hardware devices needed to be deployed and managed at each location. This can be accomplished by bundling as many functions and services as possible into the smallest number of hardware platforms to increase efficiency and manageability with an integrated services approach. Network-centric virtualized applications can reduce the footprint of networking platforms, allowing a high level of integration, reduced complexity, and ease of deployment to occur.

As a key component of its FlexNetwork architecture, HP's FlexBranch offerings have been designed to address remote branch needs with respect to both IT consolidation requirements and enhancing user productivity by optimizing service delivery. Working in conjunction with an array of AllianceOne partners, the HP FlexBranch solution suite is using network-centric virtualization to significantly increase the scope of applications and network services available at the branch while simplifying deployment and ongoing IT management. This approach optimizes customer flexibility by allowing them to work with value-added resellers (VARs) to create customized solutions, which can be centrally managed to help standardize remote branch offerings more rapidly provision new services using off-the-shelf applications, and reduce time to service.

This Technology Spotlight examines these trends and discusses the role that the FlexBranch architecture plays in the new environment.

Introduction

IT departments are under extreme pressure to deliver higher performance computing, network, and application services. Given these priorities, a key requirement that bubbles to the top is demand for greater efficiencies within the IT infrastructure, and the flexibility to deploy new services quickly to remain competitive. These efficiencies must be delivered in the context of a number of powerful trends defining the new IT landscape, including the use of virtualization across servers, desktops, and networks.

As table stakes, a re-designed IT infrastructure will need to provide additional improvements in cooling, power, and space considerations by reducing IT footprints. Further, as business partners, IT is investing in technologies that enable agile infrastructures. An architecture that is flexible, simplified, reliable, virtualization-aware, and cloud-ready enables IT to respond at the speed the business demands.



In line with these goals, network infrastructure will also need to be optimized. As IDC has predicted, the role of the network continues to rise, with network spending outstripping overall IT investments. The next generation of IT will have at its core a robust foundational network, including Ethernet switching, routing, WLAN, and application delivery. All levels of the network, including datacenter, campus, and branch, will need to be upgraded to provide new levels of flexibility, performance, and scalability with the goal of providing more agile and responsive applications for IT and network staff, as well as for their internal business customers. As a result, enterprises are looking at ways to reduce network silos and move away from traditional approaches that involve buying point solutions that add more complexity and cost.

In this context, networking solutions are embracing virtualization as an enabler that can address these core IT mandates. Within the context of the network, one example of virtualization is its use to unite multiple discrete devices into a unified logical device to ease management and administration. In another example targeted at the remote branch, server virtualization is being used to host network services and traditional server workloads in the same physical device as a network device, such as a router, switch, or network appliance.

The remote branch office represents an area targeted for efficiency-centric innovation and IT consolidation. Enterprises should look to reduce the number of critical network devices at remote branch and regional offices. In fact, branch offices can significantly reduce capital and operating costs by integrating functions such as WAN routing, switching, voice, wireless, and security into a single platform.

By 2015, the remote branch networking market will reach \$11.8 billion in support of expanded network requirements. Expansion to reach new markets, coupled with merger/acquisition activity, is continuing to proliferate remote and branch offices. IDC survey research, for example, shows that in 2009, 39% of businesses with more than 10,000 employees increased their number of branch office sites. In this domain, network-centric virtualization offers the opportunity to create a new wave of infrastructure optimization.

Key Trends in Evolving Remote Branch Environments

The remote branch is evolving into one of the key IT battlegrounds and growth areas. Inherent in the nature of the remote branch is the desire of the business to be closest to its end customer, whether it's a retail operation that needs multiple points of sale, or a hospital that wants to deliver timely patient care. Because the remote branch is closest to the customer, it's the point where the IT organization must be able to deliver the services that meet the fluid needs of the business.

Overall, IDC expects remote branch IT spending to increase to \$31.7 billion in 2013. IDC defines a remote branch as a location geographically separate from the headquarters datacenter. It can include multiple offices, branches, or remote sites, domestic or cross-border, connected to a larger organization and communicating with the datacenter over a wide area network.

Remote branches have unique challenges in the current IT environment. Many branches have relatively slow and unstable access. In addition, there are often limited or very limited IT skills available on site, as well as constrained space, power, and cooling logistics. Other challenges relate to new real-time-based application sets, such as unified communications, which are driving performance considerations. IDC estimates that the total market size for worldwide unified communications and collaboration will have a compound annual growth rate of 18.3% from 2010–2015. This includes IP PBXs, desktop IP phones, enterprise videoconferencing and telepresence equipment, and collaborative applications.

To meet these challenges, IT organizations are beginning to implement at remote sites the same best practices learned in the datacenter, such as standardizing IT infrastructure to achieve economies of

scale, reducing cost via consolidation, improving service levels, and implementing more controlled and automated management. However, IT staff must do a balancing act to reduce costs at the branch, while also driving growth in the business.

Another key trend is the mandate to secure corporate data, which is driving centralization of IT assets into the datacenter. There is a demand for centralized, datacenter-based management of distributed IT infrastructure, including the remote branch. In conjunction with this, IDC survey data indicates that consolidation is beginning to take hold in the remote branch, including the areas of servers, applications, and network infrastructure.

The enterprise network is an important part of this process. At a time of tight IT budgets, the goal of many IT departments is to simplify operations as much as possible in the remote branch. To do this, the emphasis will increasingly be to depend on systems vendors and VARs to supply more turnkey, easy-to-use and managed devices that provide high levels of performance without incurring significant maintenance and management costs.

Another important approach to increasing efficiency and manageability is to reduce the number of physical hardware devices deployed in the remote branch, since network managers are looking to achieve as small a footprint as possible. This can be accomplished by bundling as many functions and services as possible into the smallest number of hardware platforms. Fortunately, the network using both network-centric virtualization and integrating the benefits of server virtualization can be employed to help solve this challenge. Virtualized applications can reduce the footprint of networking platforms while enabling a high level of integration and consolidation.

How Network Virtualization Can Optimize Remote Branch Performance

It's no secret that virtualization is having a major impact on the entire enterprise compute and network infrastructure. However, interestingly, it's also changing the way that individual products are designed, allowing new levels of functionality not previously possible. Increasingly, network devices hosting virtual servers are being used to reduce the number of physical network devices that need to be deployed at remote branches. For example, routing and switching platforms can now integrate various types of networking appliances and are excellent candidates for this type of consolidation.

Examples of key network appliances that can take advantage of this approach include but are not limited to WAN acceleration and optimization devices, unified communications and collaboration, security applications such as firewalls, branch survivability devices, custom point of purchase applications, and session border control. Vendors that supply these types of products are also increasingly depending on virtualized servers to host their network services. Further, network devices such as switches and routers are now hosting traditional IT services such as file and print services. Using this approach, the number of physical devices in the remote branch can be greatly reduced, resulting in a reduction in the physical footprint at the remote branch.

Using the network as the focal point of branch consolidation brings unique attributes when compared to a server. By its very definition, the remote branch is a satellite location within a larger IT deployment. Network communications is the lifeblood that connects revenue-generating systems, supports customer care applications, and enables global employee collaboration. Trusting a network system for IT consolidation is an attractive option for network or infrastructure services. Many customers with limited space at the branch also find that the network can be a great point of consolidation for all IT services.

To accomplish this, virtual machines (VM) hosting the application are embedded on an integrated module. Each VM can host both the core application (e.g., WAN acceleration) and the associated operating system necessary to support it. The virtualized module can then be instantiated into a routing or switching platform, thereby greatly increasing its functionality and providing significant IT

consolidation benefits. It's worth noting that this approach allows for much greater flexibility than previous hardware-limited solutions typified by the "one application to one blade" model. The expansion in the use of virtualization is clear. As organizations become more accustomed to virtualization, they are expanding its use at the remote branch.

This use of virtualization modules works very well in VAR environments. VARs can integrate customer-selected, best-in-class solutions with network platforms provided by the systems vendor. This mix-and-match flexibility represents a win/win for both VARs and their customers, and offers the advantages of reduced time-to-service, as well as savings in power cooling and costs via IT consolidation. Another advantage is that IT departments can use this approach to centrally provision and consistently manage new service rollouts to a large number of remote branches while standardizing the functionality provided to each.

Considering HP's Approach to Remote Branch Virtualization

As a part of its converged infrastructure strategy, HP has developed HP FlexNetwork, a unified architecture for datacenter, campus, and branch, optimized for virtualization, mobility, and cloud computing. FlexNetwork is intended to simplify and speed service delivery, taking aim at the cost and complexity associated with many current deployments.

The FlexNetwork architecture has the following three modular building blocks:

- FlexFabric
- FlexCampus
- FlexBranch

FlexBranch represents the portfolio associated with remote and branch offices. FlexManagement is a management layer across the entire architecture intended to eliminate the complexity of multiple systems by providing single-pane-of-glass management. With the FlexBranch offerings, HP has been working to address the goals of network modernization by developing products which use the latest advances in virtualization to provide branch consolidation. The goal is to minimize the footprint of network devices as well as IT asset and maintenance costs, and to optimize the speed and delivery of new services.

HP Networking MSR Series routers enable customers to consolidate all their mission-critical network devices including WAN router, Ethernet switch, firewall, VPN, 3G, 802.11 wireless LAN, and voice gateway all in a single platform at remote branch and regional offices. The use of virtualization allows partner-provided applications to be integrated into existing routing and switching products via modules that can support multiple separate applications and operating systems simultaneously.

Currently centered on HP 5400 and 8200 series switching products, this approach consolidates the number of different multifunctional hardware devices deployed in a remote office into a single unit, simplifying the provisioning of new applications and offering single pane-of-glass management. . This integration is achieved by creating VMs on integrated modules using VMware vSphere 5 or Citrix XenServer hypervisors. Another benefit is that the tools used in the datacenter to manage server virtualization can be used remotely to manage and administer virtual machines at the branch.

These modules allow off-the-shelf virtualized applications to be deployed in the switch or router without the use of extra devices, cables, and power supplies. This stands in contrast to an appliance-based approach where many different hardware devices might be found at the remote site. In terms of specific applications currently available, HP's AllianceONE partner program represents an ecosystem of applications sourced from an extensive array of partners. By incorporating VMware and

Citrix XenServer, customers can benefit from the expansive ecosystem of applications these products support.

Challenges

The challenge for HP and other providers looking to deliver consolidated solutions to the remote branch is the often fragmented approach to supporting the remote branch. The IT staff, typically responsible for remote branch infrastructure, can range from desktop to network to server/storage teams. While this disjointed approach is changing, HP will need to demonstrate that its consolidated platforms can meet the comprehensive requirements for service delivery at the branch. Additionally, HP will need to demonstrate how its FlexBranch networking architecture can meet the overall goals of IT for high levels of agility and simplicity.

Conclusion

The consolidation goals that are driving datacenters toward optimizing IT and networking hardware and associated costs are making their way to branch and remote offices. Remote branches have unique challenges in the current environment, since there are often limited IT skills available and they are on the front line of providing business value. To meet these challenges, IT organizations are beginning to implement best practices learned in the datacenter in the remote branch.

One important approach to increasing the flexibility of service delivery is to leverage the power of virtualization. This provides the benefit of moving at the speed of the new economy by providing simpler approaches to reduce branch deployment and ongoing management costs, as well as increasing the flexibility in applications offered.

HP's FlexBranch products are using virtualization to significantly reduce the footprint of multiple vendor appliances, and expand the ecosystem of applications available. This approach is designed to optimize customer flexibility by allowing them to work with VARs to create highly customized solutions on standard VMware vSphere or Citrix XenServer hypervisor environments, which can then be centrally managed to help standardize remote branch offerings, quickly provision new services using off-the-shelf applications, and significantly reduce time-to-service.

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