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Connecting and Protecting the Networked World℠

Mission Critical Apps in the Cloud and New Connectivity Challenges

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Datamation®
Executive Brief

Introduction

Businesses of all shapes and sizes have been creating innovative and valuable resources and services in the cloud. From entertainment and retailers to financial services and healthcare, companies in almost every industry have been using cloud infrastructure to deliver richer, higher quality services to their business and retail customers while reducing costs.

With cloud computing, companies can easily access and scale IT infrastructure, technology platforms and a variety of different services on demand on a self-service basis over the public Internet; without extra admin, management and start-up overhead. Resource pooling allows businesses to leverage economies of scale and shared resources to lower costs. Rapid elasticity ensures fast and easy turn up as well as scalability. And, measured services enable businesses to pay for only what they consume.

It's no surprise then that enterprises are now looking at how their back-office, mission-critical applications could benefit from cloud services. Cloud application growth is booming. According to Gartner 2013 analysis, the total cloud services market is expected to grow from $76.9 billion in 2010 to $210 billion in 2016.

While on-demand, multi-tenant, elastic and usage-based billing are well-documented benefits, there can be new challenges to enabling a successful cloud operating environment.

Employees and customers have certain expectations when it comes to application uptime and performance. Business users, for example, are accustomed to working with on-premise applications that are very responsive. It turns out that many applications are very sensitive to poor or inconsistent network performance. When latency is slow or changes, it can cause an application like a database or email server to stall or even time-out.

This is why any company considering a cloud initiative needs to closely consider network performance between users, applications and their cloud services. While many businesses have been sold on the idea of cloud services, connectivity is frequently overlooked — even though this is where critical performance issues come into play.

Using the Public Internet to Connect to Cloud Services

An important factor in cloud application performance is the network. The public Internet is the most common conduit to cloud applications and data, and for

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good reason. The public Internet is ubiquitous, it scales rapidly and with a few clicks with your cloud service, you are up and running. To protect information and networks, IT organizations can install firewalls and encrypt their data. The public pipe, however, is not always ideal for specific types of workloads, organizations and processes. There are limitations.

The Internet routes traffic on a best effort basis, so increased packet loss and latency during periods of heavy usage and network congestion can negatively impact important traffic used by mission-critical applications. Many applications require consistent and sometimes very low latency, especially those that generate frequent database calls or move large volumes of data as poor network performance can result in slow application response times or even time outs. Poor application performance and downtime can cause frustration for users, inefficient use of bandwidth, lost productivity and even lost revenue. Take for example, a large volume of transaction data migrated to the cloud for overnight analysis to deliver production recommendations. If the job times out and has to be re-started in the morning, the data transfer may need to be restarted, the insights, decision-making, recommendations and potentially other supply-chain activities can be delayed.

Security is often an issue, as well. Businesses can protect their data with encryption and secure their internal networks from threats with firewalls. But this requires additional management and network overhead. The obvious solution to managing this within the walls of the enterprise is to create the most ideal IP network and data centers available, secure them appropriately, manage bandwidth overhead and permissions, run encryption, re-tool applications for better performance, and so forth. However, this can be costly and difficult especially when IT could be focusing on strategic initiatives, not rote commodity activities.

Security issues tend to tie up technical staff, too. If open ports expose a cloud application to the public Internet, there are vulnerability issues to contend with. Anyone that detects an opening can launch an attack on your site or application and bring it down. Many companies are able to manage this on their own, but as the number and complexity of cloud applications increase, so does the need for more diligence. Any minor security lapse can be cause for concern, and security issues directly impact network performance and availability.

A Private Network Solution

Private networks allow businesses to control how data moves between users and the cloud by providing guaranteed throughput, consistent latency, unlike the public Internet. Performance and availability is predictable even when managing large workloads. Private networks offer deterministic performance and guaranteed bandwidth.

Private networks come with security built in. When a business controls points of entry to cloud services and data centers using private network services, it reduces exposure to potential threats. If back-office applications don't need to be accessed by the public Internet, then the security of the private network architecture itself may be sufficient. If there are public ports in a hybrid-type scenario, then additional security measures will be required, but the use of private network services can reduce the overall complexity of your security regime, reducing risk and freeing up valuable IT resources to focus on other things.

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Consider financial and healthcare organizations that handle large volumes of highly personal information. These companies pay close attention to managing their on-premise application environments. The IT staff are stewards and protectors of application performance and information security across the local and wide area network. Naturally, when building new apps for the cloud, the staff would apply the same careful analysis and attention. Carefully containing applications and information and minimizing exposure to public Internet connections helps de-risk their new operating environment.

With a private network connecting to cloud resources, the enterprise gets a better, more predictable experience. Performance benchmarks and user expectations are met and frustration eliminated. The company can support continued growth in data and the systems to manage it while avoiding the high upfront cost and long lead times associated with private data center build outs. Offices spread across the globe can be connected to company data centers as well as cloud resources via this dedicated private network. They can deliver cloud-based applications quickly and without interruption while realizing greater efficiencies.

Level 3 as Technology Provider

Level 3 makes it simple and easy to establish private connections to cloud services. With both dedicated and virtual private network services, Level 3 can easily attach a new cloud service to an enterprise's WAN. Level 3 has pre-established connectivity to leading cloud service and data centers around the world. Point-to-point transport gives Level 3 customers full transparency and routing control so they can build and manage their own high-speed, high-performance backbones with guaranteed throughput and defined latency. Point-to-multi-point and any-to-any VPN services provide greater efficiency at lower speeds, dynamic bandwidth, guaranteed class of service and usage-based billing. Regardless of the customer's architecture, they have complete control. Level 3's benefits include:

- **Improved Performance:** Deliver cloud-based mission critical applications quickly and without interruption with Level 3's highly redundant fiber network, low latency offers and virtual network class of service guarantees.

- **Greater Security:** Customers can entrust proprietary information to the cloud with Level 3's private network and comprehensive portfolio of security services.

- **Ultimate Flexibility:** Customers choose connectivity solutions that meet specific requirements and tap into bandwidth dynamically, so they pay only for what they consume.

- **Global Connectivity:** Offices around the world can connect to the local cloud and data center resources

needed to run mission critical applications.

• **Reduced Costs:** Turn-up new connections and scale bandwidth quickly and efficiently. Minimize upfront capital expenditures and lower your cost per unit by utilizing shared infrastructure

In terms of the technology and the shift in the way businesses work via networks, this really is a brand new world. The cloud adds a new level of ease and efficiency, but that also comes with additional considerations. There are huge numbers of end-users out there that demand a "real-time" feel to their computing experiences. And, in any given enterprise, users are separated by multiple locations that span vast distances.

Enterprises will continue to roll out cloud applications, create more and more data, and demand complex computation and analytical capabilities. This growth is occurring at blinding speed, and most local IT departments are not equipped to handle the challenges at hand. Most companies can't afford to spend budget on the staff and resources required to expand their existing infrastructure.

Level 3 is here to relieve some of that burden and deliver tangible results related to specific customer pain points and ambitions.

To learn more about how Level 3 helps companies manage cloud application growth and performance issues, please visit: www.level3.com.

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