



Pocket E-Guide

How to Prepare for the Impact of Cloud Computing

This is the year for cloud computing as the next big thing in the convergence of network and IT management and telecom service providers have a serious play in developing IT-infrastructure as a service. This E-Guide provides insight into how service providers can broaden their reach beyond bandwidth and hosting services; learn how to capitalize on the cloud computing age.



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Cloud computing's impact on the network: How to prepare

Cloud computing is one of the hottest topics in all of information technology today. This is the outsourcing of data center functionality and resources to a third party via a network connection. For many companies with highly variable IT needs, cloud computing can be an alternative to maintaining an expensive oversupply of in-house computing power. The challenge may come in ensuring that your network costs don't eat all of the savings.

There is no such thing as a "typical" application of computing. Companies use IT for highly distributed activities including transaction processing, Web retail and customer support, data analysis and mining, and regulatory reporting. If these applications are hosted via cloud computing, it will be necessary to link cloud resources to a company's own data center resources for data access, and it will also be necessary to provide user access to the applications in the cloud. How this will affect the network will depend on three important dimensions.

The first is the source data dimension. Applications running in the cloud will need data, and where they get it is the most significant single factor in the network's impact on cloud computing cost and performance. Where there are large quantities of data involved (a large database or several large databases) in an application, access to the data must be fast and reliable or the application's runtime will be excessive. That means you'll either need to store the data in the cloud (which may present cost and privacy concerns) or have a very fast network with very high QoS to support your cloud connections.

It's also critical to consider a second dimension, the question of source data updates and backup. If the source data for the application is highly dynamic, or if it has to be backed up or synchronized with other company data, the link between the cloud data resources and enterprise data resources will need to be very efficient. Where the data is more static, network requirements for maintaining the data will be less stringent and there may be little impact on a company's network.

The third dimension is the distribution of access. If the application is to be accessed from many locations in many countries, most of the access will probably have to come via the Internet or an Internet VPN. If access is primarily from a company's own facilities, then it may be necessary to connect the cloud computing resource to the company's own network.

Where a cloud application is highly integrated with a company's own data center resources for any reason, the performance of that connection is absolutely critical. If it fails, not only is there a risk that the application will fail, there is a risk that data between the cloud and the enterprise's own storage resources will lose synchronization, requiring a complex and expensive restructuring. Thus, this kind of cloud application should probably be supported with a private data link to the cloud computing resource. Tight integration between cloud computing information resources and the data center may also increase requirements on the data center network and on any trunk connections between the data center and other primary or regional headquarters locations.

The Internet and Internet VPNs can be used to provide cloud computing communication, provided that the quality of service and availability are adequate, that the cloud resource can be properly secured, and that the connections needed between the cloud resource and the enterprise IT infrastructure are robust enough to handle the traffic.

Companies often neglect the traffic generated by their own employees' access to cloud resources if that access is provided by the enterprise WAN through an Internet portal. Since these portals are normally maintained in or near the headquarters location, cloud computing may increase branch network traffic significantly.

The most difficult application class to support effectively in cloud computing outsourcing is simple "overflow" or backup applications where traditional enterprise applications are run in the cloud instead. This class of application can create enormous data access requirements unless the entire enterprise database is hosted in the cloud, something few organizations would consider. If this application of cloud computing is supported, the only effective strategy will be to create a high-speed connection between the cloud computing data center and the enterprise data center, so that traffic can then jump to the normal enterprise network.

The easiest application of cloud computing to support in the enterprise network is one where access to the application is via the Internet/VPN, where the cloud computing host can be joined to the VPN, and where little synchronization of data is needed between the cloud host and the enterprise data center. In this case, there will be little traffic impact on the enterprise network, but the support of a cloud resource as a member of the VPN will pose security considerations that will have to be resolved both in a technical sense and through a contract with the cloud computing provider.

Nobody should jump into cloud computing on a massive scale; it must be managed as a careful transition. A smart enterprise will trial out applications of cloud computing where network impact is minimal and gradually increase commitments to the cloud as experience develops. That way, network costs and computing savings can both be projected accurately.

About the author: Tom Nolle is president of CIMI Corporation, a strategic consulting firm specializing in telecommunications and data communications since 1982. He is a member of the IEEE, ACM, Telemanagement Forum, and the IPsphere Forum, and he is the publisher of Netwatcher, a journal in advanced telecommunications strategy issues. Tom is actively involved in LAN, MAN and WAN issues for both enterprises and service providers and also provides technical consultation to equipment vendors on standards, markets and emerging technologies.

Verizon's cloud-based Computing as a Service moves telecom solutions forward

If this is the year of cloud computing as the next big thing in the convergence of networking and IT management, Verizon Business's new cloud-based Computing as a Service (CaaS) solution shows that telecom service providers have a serious play in developing IT-infrastructure as a service.

Verizon's service, which has been in development for the past two years and was announced a year ago, gives the provider another avenue to increase enterprise revenue and makes the statement that telecom service providers, with their network expertise, have a strong role to play in the emerging cloud services market.

"I think of cloud services as a high-concept that service providers are trying to get into -- something more of a pay as you go, pay-per-use service," said Amy Larsen DeCarlo, principal analyst of IT Managed Services at Current Analysis.

This is an area where telecom service providers have a special place, as do hosting companies and systems integrators, because of their expertise, she added.

"This is a big deal. Of course there's a lot of hype about cloud computing, but this is real. This isn't just something Verizon renamed," Larsen DeCarlo said. "There are a lot of good pieces to this announcement, and the really important thing is that it really seems to be in demand. Over the long-term, it brings a lot of what service providers have been talking about forever into a real service, and it's going to make service providers real revenue."

Computing as a service isn't one size fits all

Verizon Business isn't touting CaaS as the solution for all enterprises. Instead, the providers appears to be targeting certain types of enterprise customers, whether in terms of size or specific IT needs. Some of the useful purposes for the cloud service, include using it for new development projects, major events, and mergers and migrations to shift IT resources quickly, Verizon said. In addition, the quick and flexible provisioning suits retailers with seasonal demand, companies with annual benefit enrollment or sales promotions that drive temporarily spike traffic to Web sites.

How much an enterprise is going to do with cloud computing is a pretty significant debate, according to Tom Nolle, president of CIMI Corp. "Cloud services won't catch on the form most people talk about. It won't replace enterprise computing. But it will supplement enterprise computing."

In CIMI Corp. enterprise surveys, Nolle said companies cited the need for backup, overflow infrastructure and special applications as the main reason enterprises would consider supplementing their IT infrastructure.

Telecom service providers find place in cloud computing

While Verizon's much-anticipated move is making a splash, it isn't the first provider to offer services that are more than bandwidth and hosting services. AT&T recently rolled out Synaptic Storage as a Service, where customers can

log on and decide how much storage they need and where they need it. "It's another recent example of cloud computing because storage is an IT service that can be offered in the cloud, just like processing capabilities," Larsen DeCarlo said. AT&T and Verizon are going down remarkably similar paths and are in the lead as service providers in cloud services because they can also handle hosting, integration and security.

"We're at the beginning of the evolution of cloud computing services being offered by service providers, she said. You can make a good argument that a lot of these services have been around forever and that it's not new, but Computing as a Service is maturing.

Global Crossing puts a variety of services under a cloud computing label, from straight server collocation to hosted servers for enterprise customers that don't want to build their own data centers. "Technically, that's cloud computing because the server is sitting in the cloud, as far as the customer is concerned," according to Dave Siegel, Global Crossing's vice president of IP services product management

Taking the hosted server concept up a couple of levels to fully managed applications services, outsourcing hosted applications has been adopted more in Europe and Latin America than in the U.S., Siegel said. "But the size of the company more than its location, influences the value of outsourcing. Large companies have the most internal resources, but even the largest of the large may outsource some applications."

Verizon's CaaS: The nuts and bolts of the service

To join Verizon's cloud, CaaS customers will pay a one-time fee of \$500 and a \$250 monthly access subscription fee. Customers pay usage-based fees for the data center resources they consume, including application hosting and storage. Using the CaaS Web portal, customers can adjust the amount of infrastructure they use daily. Verizon estimates that customers should expect to save between 30% and 60% in IT costs using CaaS.

CaaS enables internal charge-backs for resources consumed by individual business units or departments. Customers have access to self-service portal that operates in real time and enables them to dynamically provision and manage physical and virtual servers, network devices, storage and backup services.

CaaS was designed for mid-market companies and larger companies that want to use a Web-based portal to employ computing resources in the quantities and for the duration they need them. With this model, companies can pay for resources used and not for build-out or peak capacity requirements by buying new equipment and adding staff.

Verizon is working with HP, VMware and Red Hat to deliver the solution.

CaaS can be used for Web-based or corporate applications running over Verizon's public IP network or over its MPLS-based private network Private IP service. It is currently available in the U.S. and Europe and will be rolled out in Asia-Pac in August.

Plenty of competition in the cloud market

Verizon is far from the only player in the cloud services market. Competitors include not only AT&T, but Amazon as an over-the-top (OTT) player with its EC2 cloud computing offering, HP and Cisco, to name a few. Hosting providers and systems integrators like Accenture are also in or eyeing the space, Larsen DeCarlo said.

In general, cloud computing hasn't been available from a company that also provides network services, Nolle said. "One of the realities of cloud computing is that if you're going to offer it, it's going to have to go over a network, and in a lot of cases, network performance and availability are major factors of application performance. If you don't own the network, you won't have control over that."

"The really important thing is that cloud services realistically seem to be in demand. Over the long-term, it will turn a lot of potential capabilities that service providers have been talking about forever into real services. It's also going to make service providers real revenue," Larsen DeCarlo said.

Network security is concern one

Enterprises are concerned about security, and to address that, Verizon says it can reduce security risks with its Cybertrust Security Management program. In addition, CaaS offers secure connections to customer-provisioned resources and multi-tiered networks with virtual firewalls and an audit trail for all changes. Verizon also audits its data centers for physical security.

Verizon also offers additional security services that included identity and access management, host intrusion detection, application vulnerability assessment, network application assessment and professional security services.

"Verizon isn't competing on price. It brings stability to the table because of the networking piece," Larsen DeCarlo said. In addition, Verizon is one of the most important security services providers in the world. That piece is really important, especially if you're talking about a mid-size company."



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[IAAS: A Visual Overview: IaaS for Service Providers](#)

[IAAS: A Visual Overview: IaaS for Service Providers' Customers](#)

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