

Telecom Companies Profit as Cloud Providers

Most telecom providers rely on a large computing infrastructure running a diverse set of applications to deliver, manage and bill services. Transforming this infrastructure into clouds can reduce internal computing resource needs and release the excess for use by paying customers. Doing so reduces internal costs and increases revenue streams — a win-win situation for a telecom cloud provider. This paper will cover different aspects of cloud services and identify some of the considerations telecom providers must address in order to deliver and sustain quality cloud services to their customers.

About the Author



Keith Hanna is Director, Communications Sector, for TeamQuest and is responsible for serving the communications industry in North America. Keith's background includes 20 years of experience having worked for various telecommunications systems suppliers.

Keith is an active member of the TM Forum and his objective is to raise the profile and priority of Capacity Management to communications service providers world-wide. Keith received his BS in Mechanical Engineering from the University of Iowa.

Is Cloud Computing All Hype?



Cloud computing is looming large on the horizon. It is one of the most talked about business models for enterprise computing in recent history. Is it all hype? What is cloud computing? Why is everybody talking about it? What does it mean for your IT operations?

A recent Forrester Research survey of 962 enterprises showed that 25% are budgeting for, implementing or already using cloud computing from external service providers. 22% are budgeting for, building or using internal clouds. So while there is an enormous amount of hype surrounding cloud computing, certainly more than for any business model in a long time, it's hardly a fad, and many feel cloud services will become more and more prevalent in the future.

What Is Cloud Computing?

“Large full-service telcos are in a position to use their global networks and datacenter footprints as service delivery platforms (SDPs) for the creation, distribution, and management of infrastructure- and applications-oriented capabilities for enterprises, SMBs, consumers/prosumers, and partners.... [Telcos] need to jump into the cloud feet first and put a stake in the ground to influence the evolution of the cloud ecosystem.”
— IDC, July 2009

Many of us are already using cloud services and don't even realize it. The hundreds of thousands of users of Salesforce.com's CRM platform already know the benefits of a Software-as-a-Service approach, and many others are using outsourced applications like Google Apps. Cloud can deliver immediate technical and profitable business value. It makes sense to look past the hype and examine the real issues, challenges and potential problems that need to be addressed before it can truly be a ubiquitous and beneficial computing tool.

The National Institute of Standards and Technology (NIST) defines cloud computing as “a model for enabling convenient, on-demand network access to a shared pool of configurable resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”

NIST also defines three service models for cloud computing:

- **Software-as-a-Service (SaaS)**
The capability provided to the cloud consumer is to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through a thin client interface such as a web browser (e.g., web-based email). The consumer does not manage or control the underlying cloud infrastructure including network, servers, operating systems, storage, or even individual application capabilities, with the possible exception of limited user-specific application configuration settings.
- **Platform-as-a-Service (PaaS)**
The capability provided to the cloud consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages and tools supported by the provider. The consumer does not manage or control the underlying

cloud infrastructure including network, servers, operating systems, or storage, but has control over the deployed applications and possibly application hosting environment configurations.

- **Infrastructure-as-a-Service (IaaS)**
The capability provided to the cloud consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems, storage, deployed applications, and possibly limited control of select networking components (e.g., host firewalls).

Every Cloud Has a Silver Lining

“With cloud computing promising to be the biggest thing in the technology world since the invention of the word processor, you can bet [TM Forum is] going to be front and center in areas where we excel, such as managing cloud services; developing and adopting standards; bringing together all players in the value chain; creating a viable marketplace; removing the barriers to growth; creating a platform where buyers and sellers of cloud services can cooperate; accelerating agreements on cloud service components and processes and achieving transparency of product features, service levels, metrics and benchmarks.”
—Martin Creaner, President & Chief Operations Officer, TM Forum

Currently, typical applications of cloud computing include:

- Test and development
- Functional offload such as batch processing and/or storage
- Cloud bursting or overdraft protection to handle peak workloads
- Web application development and hosting

Cloud computing offers the promise of lowering infrastructure spending by allowing resources to be shared and used more efficiently; lowering telecom providers costs and permitting them to offer additional pay-as-you-go computing services to their customers. This form of sharing computer resources across all business units and optimizing utilization of resources in the data center is appealing to telecom C-level executives and their customers.

The early cloud adopters are pursuing these benefits:

- Cost economics — (OPEX vs. CAPEX and reduced TCO, personnel, and maintenance costs)
- Flexibility and agility
- Scalability
- Speed to Market

While the opportunities associated with cloud computing appear to be very attractive, there are risks that need to be considered:

- Security
- Performance and availability
- Legal/regulatory
- Runaway customer capacity usage

In order to avoid these risks and reap the benefits of the cloud, proper planning and enhanced service management policies are an absolute necessity. Without good plans and proactive service management, significant business and technical problems will occur. Poor virtualization strategies, service delivery and service restoration plans can put your organization in position where the failure of just one server results in wide-spread service disruptions, lost transactions, dissatisfied customers, reduced revenues, and damage to the company's reputation and brand.

Before you can formulate the plans needed properly implement cloud, a provider needs to assess where they are now in terms of service delivery performance and capacity. Once plans are underway and a cloud project is underway, further monitoring and analysis is needed in order to ensure that implementation is proceeding according to plan. In other words, measure twice: before the planning exercise and after implementation. You can't manage what you don't measure.

Leveraging the Cloud for Service Provider Benefits

“A telecom network is at heart a multitenant environment that telcos leverage to offer multiple services to multiple customers through the use of capacity management techniques that ensure optimal resource allocation and quality-of-service levels. Telcos also have massive OSS/BSS infrastructures that tie together network layer... and datacenter elements.... This infrastructure..., anchored by datacenters that centralize service and management functionality previously distributed across multiple [central offices]..., can serve as back-end infrastructure that end users access via the front-end service delivery method known as cloud.”
—IDC, July 2009

The initial entrants into the cloud computing service provider space are primarily offering Infrastructure as a Service which offers customers the ability to purchase compute power based on consumption, much like electricity. Almost all early entrants to the market use virtualization technologies and support a variety of operating systems and applications. Virtual servers can be allocated dynamically and assigned to cloud subscribers.

An IaaS cloud provider needs a good understanding of capacity and an ability to predict capacity and deal with huge fluctuations in demand. When wading through hundreds or thousands of opportunities for performance improvement, predictions may be based on rough “rules of thumb” estimates and linear trends, but ultimately capacity plans should be based on a more accurate prediction method. We recommend the use of analytic modeling technology based on proven queuing theory, because this can facilitate fast and accurate predictions.

From the perspective of the cloud service provider, performance management and capacity planning best practices and software tools can enhance your cloud-based business models by offering solutions to ensure subscriber satisfaction and provide premium revenue generation options. Below are strategies that can help you maximize profitability and customer satisfaction for your cloud computing service.

Premium Revenue Generation

In the highly competitive communications industry, you need to consider all potential revenue generating strategies for your cloud computing business. To date, the market's pricing models and associated Service Level Agreements (SLAs) are fairly uniform. As the famous Henry Ford quote goes, “You can have any color you want as long as it's black.” However this philosophy will not last long, so cloud providers need to position themselves to be able to quickly react to a changing marketplace.

By integrating performance and capacity management technologies into your operation, you have the ability to provide differentiated services and SLAs that will give your customers more service options and provide you with additional revenue streams. You may consider adopting one or more of the following services for your business:

- Tiered SLAs (Platinum, Gold, Silver, Best Effort, etc)
- Storage & management of historical performance & capacity data
- Workload performance & IT resource utilization reporting
- Co-planning: Hybrid cloud architecture performance analysis & capacity planning

- Analytics-as-a-Service
- Predictive modeling: performance vs. demand projections
- Pre-deployment planning
- Application performance benchmark vs. load profiles
- Performance analysis and capacity planning

Avoid SLA Penalties

Are you meeting your negotiated performance thresholds in contracted Service Level Agreements (SLAs)? How do you know if the SLAs that you've set are reasonable? What is the basis for defining acceptable compliance penalties? What reporting mechanisms are you using for your real-time, weekly, and/or monthly SLA compliance reviews? Do you have alarm and alert mechanisms to warn you when you are nearing SLA threshold violations? With state-of-the-art capacity management software tools you can provide visibility to the performance of your customer's applications in your cloud infrastructure to ensure SLA compliance, maximize customer satisfaction and minimize SLA penalties.

Oversubscribe Your Cloud

Oversubscription, or overselling of your network is standard operating procedure. It's been around as long as the telecommunications industry has been selling dial-tone. So why shouldn't you oversubscribe your cloud compute infrastructure too?

In order to stay competitive and maximize the utilization of your investments, you must think in terms of overselling your cloud infrastructure. Oversubscription provides you the capital and cash flow to continue to grow your infrastructure. What are the chances that 100% of your customers will be using 100% of their provisioned capacity at any one point in time?

No matter how you've architected your cloud and what your business model is, determining the optimal capacity and having the tools and processes to monitor, analyze, report and model is mission critical to the success of your cloud computing infrastructure and business model. Capacity management best practices and tools allow you to manage the risk of oversubscription with the financial benefits of optimized cloud infrastructure utilization.

Measure & Report Relative Usage

Is your cloud deployment a multi-tenant model? Are many customers sharing the same physical resources through virtualization technologies? If so, how are you determining which customers are using what in multi-tiered environments (Web, application, and database) on your cloud? How do you track all your customers and ensure users are operating within contracted limits? With the right performance analysis technologies you can measure and report on customer usage, and determine if a customer is bursting beyond their contracted capability.

Don't leave money on the table. Having tools that provide the visibility into your cloud to measure and report on actual capacity usage per customer will set your cloud apart and ensure that you are maximizing your profitability.

The right capacity management strategies for your cloud computing business are dependent on your target customer profile. Who are you selling to and what is the core business value that you are delivering? Are you offering web-site hosting, cloud bursting, test & development, functional offload, or other? Understanding your core competencies and those of your target clients will help you more accurately predict your customer's capacity requirements. No one size fits all, but with capacity management best practices and state-of-the-art software tools, your probabilities of success for your cloud computing service will be maximized.

Why TeamQuest?

TeamQuest Performance Software solutions enable telecom companies to plan for future capacity while optimizing the use of existing infrastructure investments. How?

With TeamQuest, you can run your cloud infrastructure closer to the edge of your performance and compute capacity thresholds without risking application performance bottlenecks or down time. By applying capacity management best practices using state-of-the-art software like TeamQuest, you can better assess the optimum amount of oversell to maximize revenue potential. TeamQuest allows you to collect real-time performance statistics and apply highly accurate predictive modeling to give you a clear picture of how the cloud systems will perform in advance. TeamQuest will also help you set alarm thresholds to give you advanced warning before costly service levels are violated which will help you keep costs at a minimum and customer satisfaction at a maximum. TeamQuest can also help with the measurement and reporting of relative cloud usage, allowing for accurate apportionment of charges. Again, you can't manage what you don't measure.

Telecommunications companies must predict IT service performance and determine optimal configurations to assure availability and minimize cost while meeting demand. Maximize the revenue potential of your cloud computing business and ensure customer satisfaction; invest in performance and capacity management tools. Optimize your cloud environment. Validate performance against SLAs. Offer premium revenue-generating services. Don't leave money on the table, invest in TeamQuest. We can help.

TeamQuest Corporation

www.teamquest.com

Follow the TeamQuest Community at:

Americas

One TeamQuest Way
Clear Lake, IA 50428
USA
+1 641.357.2700
+1 800.551.8326
info@teamquest.com

Europe, Middle East and Africa

Box 1125
405 23 Gothenburg
Sweden
+46 (0)31 80 95 00
United Kingdom
+44 (0)1865 338031
Germany
+49 (0)69 6 77 33 466
emea@teamquest.com

Asia Pacific

Units 1001-4 10/F
China Merchants Bldg
152-155 Connaught Rd Central
Hong Kong, SAR
+852 3571-9950
asiapacific@teamquest.com

**Copyright ©2010 TeamQuest Corporation
All Rights Reserved**

TeamQuest and the TeamQuest logo are registered trademarks in the US, EU, and elsewhere. All other trademarks and service marks are the property of their respective owners. No use of a third-party mark is to be construed to mean such mark's owner endorses TeamQuest products or services.

The names, places and/or events used in this publication are purely fictitious and are not intended to correspond to any real individual, group, company or event. Any similarity or likeness to any real individual, company or event is purely coincidental and unintentional.

NO WARRANTIES OF ANY NATURE ARE EXTENDED BY THE DOCUMENT. Any product and related material disclosed herein are only furnished pursuant and subject to the terms and conditions of a license agreement. The only warranties made, remedies given, and liability accepted by TeamQuest, if any, with respect to the products described in this document are set forth in such license agreement. TeamQuest cannot accept any financial or other responsibility that may be the result of your use of the information in this document or software material, including direct, indirect, special, or consequential damages.

You should be very careful to ensure that the use of this information and/or software material complies with the laws, rules, and regulations of the jurisdictions with respect to which it is used.

The information contained herein is subject to change without notice. Revisions may be issued to advise of such changes and/or additions. U.S. Government Rights. All documents, product and related material provided to the U.S. Government are provided and delivered subject to the commercial license rights and restrictions described in the governing license agreement. All rights not expressly granted therein are reserved.